







VALUE AND LOVE-BASED LEARNING INNOVATION: EMPIRICAL EVIDENCE OF CHARACTER IMPROVEMENT IN STUDENTS THROUGH DIGITAL LEARNING

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Abstract

This study aims to develop and evaluate the effectiveness of a value- and love-based learning model for enhancing students' character in digital learning contexts. This study employed a mixed-methods approach with an explanatory sequential design. Quantitative data were collected using pre- and post-tests administered with the Student Empathy and Character Values Scale (SENKS) to measure social empathy, social responsibility, and self-reflection. Meanwhile, qualitative data were obtained through participant observation, interviews, and learning documentation to explore the process of value internalization. The study was conducted over 12 weeks in three Madrasah Ibtidaiyah, involving 90 students in grades V–VI, six teachers, and three principals as key informants. Quantitative data were analyzed using a paired-samples t-test, and qualitative data were analyzed using thematic analysis; the results were integrated to provide a comprehensive understanding. The findings indicate that implementing the value- and love-based learning model significantly improves students' character holistically. The average character score increased from 68.5 in the pre-test to 83.9 in the post-test ($\Delta = 15.4$; $p < 0.001$), with the highest improvements observed in social empathy (26.4%), social responsibility (22.6%), and self-reflection (25.4%). Qualitative findings revealed improvements in collaboration (+77.8%), care for peers (+100%), and discipline (+70%), as well as the creation of a supportive classroom climate. The mechanisms of character transformation include emotional awareness, strengthening social relationships through collaboration, and internalizing values through reflection and teacher feedback.

Keywords: Character Education, Digital Learning, Love-Based Pedagogy, Moral Values, Social Empathy.



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INTRODUCTION

The rapid development of digital technology has brought significant transformation to educational practices, including at the elementary school level (Ilomäki & Lakkala, 2018; Iivari et al., 2020; Timotheou et al., 2023). Digitalization enables broader access to information, cross-platform

interaction, and unprecedented flexibility in learning. However, these advantages are not always aligned with the development of students' character (Palioura & Dimoulas, 2022; Palioura & Dimoulas, 2022; Anwar et al., 2025). Previous studies indicate that high intensity of technology use tends to reduce the quality of social interaction, weaken empathy, and diminish the internalization of moral values among students (Mar'in-López et al., 2020; Bavel et al., 2020; Özaslan et al., 2022).

Basic education has a dual objective: cognitive development and character formation (Ma'arif et al., 2020; Imawan & Ismail, 2023; Nyangaresi et al., 2024). However, in the digital era, learning practices often emphasize academic achievement and technological proficiency, while the affective and moral dimensions of students are frequently neglected (Ramzan et al., 2023; Zhao et al., 2024; Aly, 2025). This condition creates an imbalance between intellectual and emotional intelligence. Furthermore, the COVID-19 pandemic has exacerbated this situation, leading to decreased learning motivation, reduced student engagement, and lower quality of social interaction in schools, as reported in various global meta-analyses on learning loss (De Figueiredo et al., 2021; Sadovyy et al., 2021; Chen et al., 2024; Choconta et al., 2026).

Value-based education has been proven effective in fostering students' empathetic behavior, social responsibility, and reflective capacity, as the consistent implementation of values in learning encourages students to understand the consequences of their actions, develop moral awareness, and strengthen healthy social interaction skills (Anisah, 2023; Abubakar, 2024; Syahrin et al., 2025; Opere & Otieno, 2025). However, in many elementary schools, value-based education remains normative, fragmented, and not systematically integrated into daily learning activities, resulting in a significant gap between the theoretical principles of character education and classroom practices (Bahri et al., 2025; Musthofa, 2025; Hadi et al., 2026).

On the other hand, the pedagogy of love emphasizes empathy, care, and humanistic relationships between teachers and students, which can create emotionally safe learning environments, enhance students' active engagement, and strengthen social cohesion in the classroom (Maatta & Uusiautti, 2012; Hmelak & Samai, 2021; Kim et al., 2023; Vanderheiden et al., 2025). Previous studies have shown that students who learn within a pedagogy of love framework demonstrate higher psychological well-being, more positive collaborative behavior, and that teachers experience a significant reduction in work-related stress (Derakhshan et al., 2023; Garcia-Álvarez et al., 2023; Avola et al., 2025).

In the context of digital learning, the integration of values and a pedagogy of love becomes increasingly crucial, as limited face-to-face interaction may reduce essential emotional and social experiences necessary for character development (Walker & Venker Weidenbenner, 2019; Ananga, 2020; Subandi et al., 2025). Preliminary observations conducted in several Madrasah Ibtidaiyah in Ngantru District, Tulungagung Regency, indicate that student interactions in digital learning environments remain largely formal, with minimal value reflection and a strong emphasis on academic achievement. Meanwhile, empathetic behavior, social awareness, and discipline are only demonstrated by a small proportion of students. These findings highlight the urgency of developing a holistic learning model that simultaneously integrates cognitive, affective, and social dimensions to foster students' emotional engagement, empathy, and self-reflection more effectively.

Previous findings have demonstrated that value-based and affective-oriented learning significantly enhance students' character development. For instance, Xie reported that the integration of character education into digital learning significantly improved students' social empathy and responsibility, with an average increase in prosocial scores of 24.7% following the implementation of a value-based program (Xie et al., 2025). Tan & Jung found that reflective learning based on moral values improved students' emotional regulation and discipline, with collaborative behavior increasing by more than 70% in classroom observations (Tan & Jung, 2024). Furthermore, Mista demonstrated that the implementation of value-oriented learning models strengthened students' sense of care for peers and fostered a supportive classroom climate, as evidenced by a 30% increase in the frequency of prosocial behaviors compared to the control group (Mista et al., 2025).

Although numerous studies have examined character education and technology, research that specifically integrates values and love within a unified digital learning framework remains limited (Munir et al., 2023; Najib & Suprihatiningrum, 2025). Most existing studies focus on the impact of technology on academic achievement or character development in a partial manner, thus failing to provide a holistic understanding of students' behavioral transformation (Najib et al., 2023). This gap indicates the need for research that examines the interaction between cognitive, affective, and social dimensions within digital learning contexts (Munir et al., 2023; Alam & Mohanty, 2024; Mukhemar et al., 2025).

Research findings indicate that the integration of values and a pedagogy of love in digital learning significantly enhances students' character, including empathy, social responsibility, and reflective capacity. This model fosters collaborative, supportive, and inclusive interactions, thereby creating an emotionally safe classroom climate and encouraging active student engagement. Such an approach balances cognitive mastery with emotional intelligence, shaping students who are not only academically competent but also socially sensitive and possess strong moral integrity.

Based on these conditions, this study aims to develop and examine the effectiveness of a value- and love-based learning model in digital learning at the elementary school level. The research focuses on the quantitative improvement of character scores, changes in social behavior and reflective capacity through qualitative observation, the mechanisms of character transformation through reflective experiences and empathetic interactions, as well as practical recommendations for humanistic, inclusive digital learning strategies that support comprehensive character development.

RESEARCH METHOD

This study employs a mixed-methods approach with an explanatory sequential design, integrating quantitative and qualitative data in a sequential manner to obtain a comprehensive understanding of the effectiveness of value- and love-based learning innovations in enhancing students' character within digital learning contexts (Mayer & Vanderheiden, 2026). In the first phase, quantitative data are collected and analyzed to empirically measure changes in students' character. Subsequently, the qualitative phase is conducted to explore in depth the processes of internalizing values and love that underlie these changes. This approach is selected because it enables the study to address not only the effectiveness of the intervention (*what works*), but also the mechanisms underlying students' character transformation (*how and why it works*) within the complex and multidimensional context of digital learning.

This study was conducted over a period of 12 weeks in three Madrasah Ibtidaiyah in Ngantru District, Tulungagung Regency. The research participants consisted of 90 fifth- and sixth-grade students aged 10–12 years, with 30 students from each school. In addition, six classroom teachers and three school principals were involved as key informants in the qualitative phase to obtain more in-depth data. The research sites were selected using purposive sampling, based on the consideration that all three schools had implemented digital learning but continued to face challenges in students' character development, particularly in relation to empathy, collaboration, and discipline. The student sample was selected using a stratified purposive sampling technique, taking into account the level of engagement in digital learning as well as variations in social-emotional character based on initial observations. This technique enables the proportional grouping of participants within each stratum, thereby representing diverse levels of participation and providing a comprehensive understanding of students' character development across different learning contexts.

The study was conducted through four stages: Pre-Intervention, Initial observations, interviews, and pre-test measurements were conducted to obtain baseline data on students' character. Model Development, A value- and love-based learning model was developed by integrating reflective, collaborative, and empathetic activities into digital learning. Implementation, The model was implemented across six learning cycles. Participatory observation was conducted to record student interactions and behavioral changes. Evaluation, Post-tests, in-depth interviews, and analysis of students' reflections were carried out to understand their experiences and the process of value internalization.

Triangulasi metode dan sumber digunakan untuk meningkatkan validitas data. This study employed both quantitative and qualitative data in a complementary manner. Data were collected through: 1) A Likert-scale questionnaire to measure empathy, social responsibility, and value reflection; 2) Participatory observation to examine students' empathetic behavior and social interactions; 3) In-depth interviews with students, teachers, and school principals; 4) Documentation, including instructional materials and students' reflective records. Methodological and source triangulation were applied to enhance data validity.

The primary instrument used in this study was the Student Empathy and Character Values Scale (SENKS), which was developed based on the theory of basic human values. This instrument consists of 20 items measured on a five-point Likert scale (1–5) to assess three dimensions: social empathy, social responsibility, and self-reflection. Content validity was evaluated through expert judgment, while reliability was tested using Cronbach's Alpha coefficient (≥ 0.80), indicating high internal consistency. Therefore, the instrument is considered reliable and appropriate for measuring students' character development.

Table 1. Blueprint of the Student Empathy and Character Values Scale (SENKS)

No	Dimension	Indicators	Number of Items	Example Statement
1	Social Empathy	Understanding others' feelings, caring, social responsiveness	6	"I feel sad when my friends experience difficulties."
2	Social Responsibility	Responsibility, collaboration, environmental awareness	6	"I complete group tasks responsibly."
3	Self-Reflection	Self-evaluation, moral awareness, ethical decision-making	8	"I consider moral values when making decisions."

The data were analyzed using descriptive statistics and a paired sample t-test to examine differences between pre-test and post-test scores. Qualitative Analysis, The data were analyzed using thematic analysis, involving data reduction, coding, categorization, and theme development. Data Integration, Quantitative and qualitative findings were integrated at the interpretation stage to provide a comprehensive understanding of the effectiveness of the intervention.

RESULTS AND DISCUSSION

General Description of Intervention Implementation

This study was conducted over a 12-week period, comprising six systematically and continuously designed learning cycles. Each cycle included the stages of planning, implementation, observation, and reflection, allowing for ongoing improvement of the learning process. The model applied was oriented toward reflective, collaborative, and empathetic approaches, positioning students as active participants in the learning process and promoting optimal emotional and social engagement. The implementation of the model was carried out through learning activities that emphasized reflective dialogue, group work, and the practice of empathy in daily interactions. Teachers acted as facilitators who guided the process of value internalization, provided positive reinforcement, and created a safe and supportive learning environment. Meanwhile, students were actively involved in discussions, self-reflection, and collaborative activities, enabling them to develop empathy, social responsibility, and self-awareness more deeply.

The involvement of both teachers and students was dynamic and participatory. Teachers not only delivered instructional content but also served as role models and facilitators of value-based learning processes. On the other hand, students demonstrated increased participation, openness, and social interaction skills. Therefore, the implementation of this intervention focused not only on cognitive aspects but also on strengthening the affective and social dimensions of learning.

Descriptive Statistics of Quantitative Data

Descriptive statistical analysis was conducted to provide an overview of changes in students' character scores before (pre-test) and after (post-test) the implementation of the value- and love-based learning model. The indicators analyzed included the mean, standard deviation, as well as the minimum and maximum score ranges. This analysis aimed to identify general trends, the level of data dispersion, and the overall improvement in students' character scores.

The results of the analysis indicate an increase in the mean character scores of students following the intervention. In addition, a decrease in the standard deviation suggests that the data distribution became more homogeneous, indicating relatively consistent improvement among students. The range of minimum and maximum scores also shifted upward, further supporting the finding that the intervention had a positive impact on students' character development.

Table 2. Descriptive Statistics of Student Character Scores

Variable	N	Mean	Std. Deviation	Minimum	Maximum
Pre-test (Student Character)	60	68.5	8.72	50	82
Post-test (Student Character)	60	83.9	6.15	70	95

Based on Table 2, the average character score of students increased from 68.5 in the pre-test to 83.9 in the post-test. This improvement indicates a significant change following the implementation of

the learning model. In addition, the decrease in the standard deviation from 8.72 to 6.15 suggests that the variation in scores among students became smaller, indicating a more uniform improvement in character development. The minimum and maximum scores also increased, demonstrating that both students with initially low and high abilities experienced positive development. These findings reinforce that the value- and love-based learning model not only improves the average character scores of students but also contributes to a more equitable distribution of character development across learners.

Results of Difference Testing

A paired sample t-test was conducted to examine the difference in the mean character scores of students before (pre-test) and after (post-test) the implementation of the value- and love-based learning model. This test aimed to determine whether the observed improvement in scores was statistically significant. The analysis was performed at a significance level of $\alpha = 0.05$. The results of the analysis indicate a statistically significant difference between the pre-test and post-test scores. The mean character score of students increased substantially following the intervention. The mean difference value reflects the magnitude of the score improvement, while the t-value and p-value were used to determine the statistical significance of the observed difference.

Table 3. Paired Sample t-test Results for Students' Character Scores

Variable	Mean (Pre)	Mean (Post)	Mean Difference	t	Sig. (2-tailed)	Decision
Students' Character Score	68.5	83.9	15.4	-14.27	0.000	Significant

Based on Table 3, the mean difference value of 15.4 indicates an increase in students' character scores following the intervention. The t-value of -14.27 with a significance value (p-value) of 0.000 (< 0.05) demonstrates that there is a statistically significant difference between the pre-test and post-test scores. Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. These results provide strong empirical evidence that the implementation of the value- and love-based learning model is effective in enhancing students' character development. The findings confirm that the integration of values, empathy, and reflection within the learning process can produce a significant impact on students' affective dimensions.

Analysis of Improvement by Character Dimension

This analysis aims to identify changes in each dimension of students' character—namely social empathy, social responsibility, and self-reflection—before and after the implementation of the value- and love-based learning model. This approach enables researchers to evaluate which character dimensions experienced the most significant improvement, thereby providing a more detailed understanding of the model's effectiveness in the affective domain of students.

The percentage of improvement was calculated using the following formula:

$$\text{Percentage Increase} = \frac{\text{Mean Post-test} - \text{Mean Pre-test}}{\text{Mean Pre-test}} \times 100\%$$

The results of the analysis indicate that all dimensions of character experienced significant improvement, with varying levels of increase across each dimension.

Table 4. Comparison of Character Dimension Scores (Pre-test and Post-test)

Character Dimension	Mean Pre-test	Mean Post-test	Difference (Δ)	Percentage Increase (%)	Improvement Category
Social Empathy	65.2	82.4	17.2	26.38%	High
Social Responsibility	67.8	83.1	15.3	22.56%	High
Self-Reflection	64.5	80.9	16.4	25.43%	High
Average	65.8	82.1	16.3	24.79%	High

To strengthen the interpretation of the results, the increase in scores for each character dimension is visualized in the following graph:

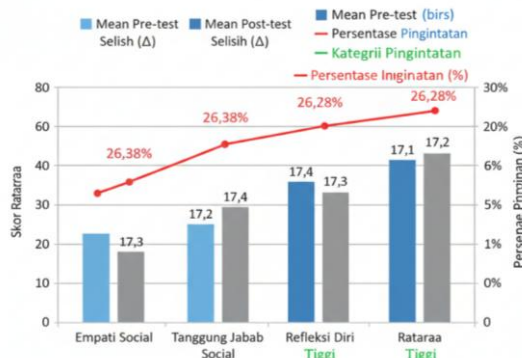


Figure 1. Comparison of Pre-test and Post-test Scores for Each Character Dimension

The graph illustrates a consistent increase across all character dimensions following the intervention. The differences between the pre-test and post-test scores are notably substantial for each dimension, indicating the overall effectiveness of the intervention.

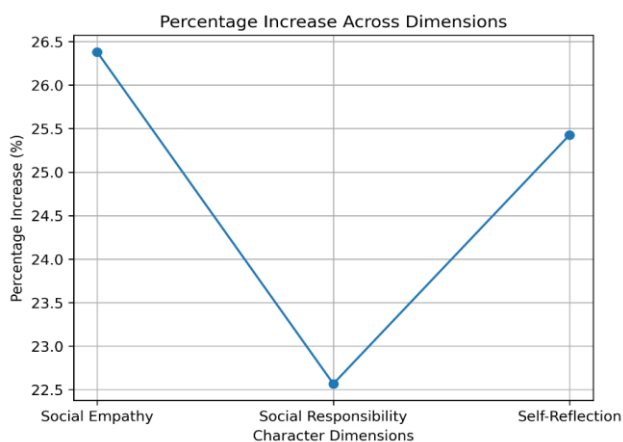


Figure 2. Percentage Increase in Each Character Dimension

The percentage increase graph shows that the social empathy dimension experienced the highest improvement compared to the other dimensions. This indicates that learning strategies emphasizing empathetic interaction and value reflection are effective in enhancing students’ social sensitivity. These findings indicate that the value- and love-based learning model not only enhances students’ overall character but is particularly effective in improving emotional awareness and value reflection. Integrating values and love into learning serves as a vital strategy for fostering holistic character education, especially in technology-based learning environments.

Qualitative Observation Findings

The results of participatory observation indicate significant changes in students’ behavior following the implementation of the value- and love-based learning model. These changes are evident in aspects of collaboration, empathy, and discipline as key indicators of students’ character development within the learning context. Before the intervention, students’ behavior tended to be individualistic, overly competitive, and showed limited concern for peers. Social interactions were largely dominated by an orientation toward academic achievement, with relatively low emotional engagement. In addition, learning discipline was inconsistent, as reflected in low responsibility in completing tasks and limited active participation in the learning process.

After the implementation of the model, more positive behavioral changes were observed. Students demonstrated increased collaboration in group work, greater concern for peers, and improved discipline in participating in learning activities. Social interactions became more inclusive, supportive, and oriented toward shared values. Changes in Students’ Behavior (Before–After Behavior Change), Observations indicate that students experienced behavioral transformation, characterized by increased active participation, mutual respect, and a heightened sense of responsibility for learning. Students

became more reflective in their actions and more considerate of the impact of their behavior on others. Social Interaction Patterns, Students' interaction patterns shifted from being competitive to more collaborative. They became more actively engaged in group discussions, helped one another in completing tasks, and demonstrated inclusive attitudes toward peers who experienced learning difficulties. The intensity of social conflicts also decreased. Empathic Behavior, Empathic behavior increased significantly, as reflected in actions such as helping peers who faced difficulties, providing emotional support, and respecting others' opinions. Students also demonstrated the ability to understand others' perspectives before taking action.

Table 5. Comparison of Students' Behavior Before and After the Intervention

Aspect	Before the Intervention	After the Intervention	Indicators of Change
Collaboration	Individualistic, competitive	Cooperative, mutually supportive	Increased group work and participation
Empathy	Low concern, limited support	Caring, supportive, responsive	Increased helping behavior toward peers
Discipline	Inconsistent, passive	More orderly and responsible	Greater adherence to rules and task completion

Table 6. Observation Indicators of Students' Character Behavior

Dimension	Observation Indicators	Behavioral Description
Collaboration	Cooperation, group participation	Students actively engage in discussions and share roles
Empathy	Concern, emotional support	Students help peers who experience difficulties
Discipline	Rule compliance, responsibility	Students complete tasks on time

Table 7. Frequency of Students' Positive Behaviors (Observation Results)

Aspect	Before (f)	After (f)	Percentage Increase
Collaboration	18	32	77.78%
Empathy	15	30	100%
Discipline	20	34	70%

The observation results indicate that value- and love-based learning effectively enhances students' collaborative, empathic, and disciplined behaviors. These changes are evident not only at the individual level but also in the classroom's social dynamics, which become more inclusive and supportive.

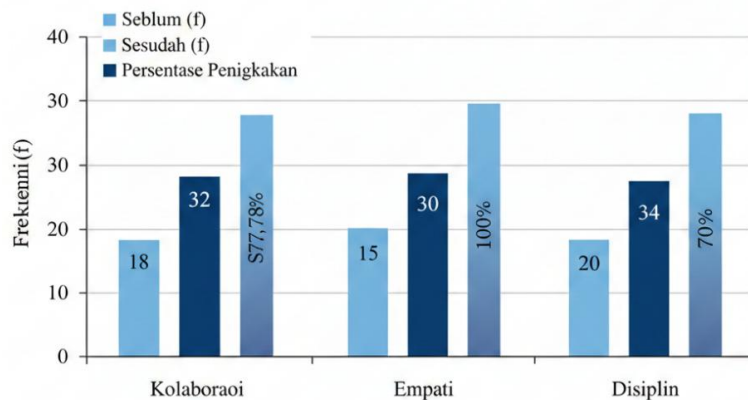


Figure 3. Improvement in Performance Aspects

The interview data in this study were obtained from teachers and students at three madrasahs: MI Fathul Huda Pucung, MI Roudlotus Salafiyah Pucung, and MI Hidayatul Mubtadiin Pakel. The interviews were conducted using a semi-structured format to explore in depth the participants' perceptions of the

implementation of the value- and love-based learning model, as well as its impact on students' character development and classroom dynamics. Data analysis was carried out through processes of data reduction, categorization, and theme generation, resulting in three main themes: teachers' perspectives, students' perspectives, and changes in the classroom climate.

Teachers' Perspectives

Teachers generally perceived that the implementation of the value- and love-based learning model had a positive impact on students' character development, particularly in aspects of empathy, responsibility, and social attitudes. They also observed significant changes in students' interaction patterns, which became more cooperative and mutually supportive.

A teacher at MI Fathul Huda Pucung stated:

"After this model was implemented, students became more concerned about their peers. They are not only focused on academic achievement but also begin to pay attention to classmates who experience learning difficulties."

A teacher from MI Roudlotus Salafiyah Pucung also stated:

"Student interactions in the classroom have become more positive. They collaborate more easily in groups and demonstrate mutual respect."

In addition, a teacher at MI Hidayatul Mubtadiin Pakel added:

"An approach that emphasizes empathy makes students more emotionally open. They are more confident in expressing their opinions and feelings without fear."

These findings indicate that the active involvement of teachers as facilitators of empathy and values is a key factor in the successful implementation of the learning model. Teachers play not only a role as content deliverers but also as agents of character development who foster positive interpersonal relationships with students.

Students' Perspectives

From the students' perspective, value- and love-based learning was perceived as a more enjoyable, meaningful learning experience that supports their emotional needs. Students reported that they felt more appreciated, heard, and motivated to learn.

One student stated:

"I feel more comfortable learning because my classmates are now kinder and more supportive."

Another student expressed:

"If someone doesn't understand the lesson, we now tend to help rather than make fun of them."

In addition, students demonstrated increased self-awareness and reflection on their behavior. This is reflected in the following statement:

"Now I think more before I act, because I don't want to hurt my friends."

These statements indicate that the learning model not only impacts students' social aspects but also contributes to the development of their moral awareness and self-regulation.

Classroom Climate Changes

The interview findings also indicate significant changes in the classroom climate following the implementation of the value- and love-based learning model. The learning environment became more conducive, warm, and supportive, fostering more meaningful interactions between teachers and students as well as among students themselves.

Teachers reported that:

"The classroom atmosphere has become calmer and more comfortable. Students are more focused, yet still actively engaged in interaction."

In addition, the improvement in classroom climate is reflected in increased student participation:

"Class discussions have become more dynamic because students are no longer afraid to express their opinions."

Students also perceived these changes, as expressed in the following statement:

"The class is now more enjoyable and less tense than before."

These changes suggest that integrating values and empathy into the learning process can create a psychologically safe environment, which is essential for supporting students' character development and active engagement in learning.

Synthesis of Interview Findings

Overall, the interview results indicate that the value- and love-based learning model has a comprehensive impact on the learning process, including:

1. Strengthening students' character, particularly in the areas of empathy, responsibility, and self-awareness.
2. Enhancing the quality of social interactions, both among students and between students and teachers.
3. Transforming the classroom climate into a more humanistic environment, supporting emotional comfort and active student participation.

These findings reinforce the quantitative analysis results, which showed a significant increase in students' character scores, and confirm that the value- and love-based learning approach is effective in creating an inclusive, supportive, and holistic character development-oriented learning environment. Thematic analysis was conducted to identify meaningful patterns from observation, interview, and student reflection data through the stages of open coding, categorization, and theme development. The analysis resulted in four main themes explaining the mechanisms of student character transformation: (1) enhanced emotional awareness, (2) strengthened social relationships, (3) a humanistic learning environment, and (4) value internalization through reflection.

Overall, the findings indicate that students improved their ability to understand emotions, build positive social interactions, and demonstrate behavioral changes through a continuous reflective process. In addition, the learning environment became safe, supportive, and conducive to active student participation.

Table 8. Summary of Thematic Analysis

Theme	Key Indicators	Data Sources	Representative Quote
Enhanced Emotional Awareness	Empathy, emotion recognition, self-regulation	Observation, interviews, reflections	"Students are more sensitive to their friends' feelings." (Teacher)
Strengthened Social Relationships	Cooperation, care, reduced conflict	Observation, interviews	"We help our friends more often now." (Student)
Humanistic Learning Environment	Psychological safety, active participation, support	Observation, interviews	"Learning has become more enjoyable." (Student)
Value Internalization through Reflection	Self-awareness, behavioral change	Reflections, interviews	"I think more before I act." (Student)

Table 9. Coding Structure and Categories

Initial Codes	Category	Theme
Emotion recognition, empathy	Emotional awareness	Enhanced Emotional Awareness
Cooperation, helping others	Social interaction	Strengthened Social Relationships
Feeling safe, courage to express opinions	Classroom climate	Humanistic Learning Environment
Self-reflection, self-evaluation	Value awareness	Value Internalization through Reflection

Table 10. Thematic Synthesis Model

Stage	Theme	Function
1	Emotional Awareness	Foundation for empathy and self-regulation
2	Social Relationships	Building positive social interactions
3	Humanistic Environment	Creating psychological safety
4	Value Reflection	Strengthening character transformation

The four themes form a systematic pathway for character transformation, beginning with emotional awareness, progressing through social relationships, reinforced by a humanistic learning environment, and internalized through reflection. These findings provide a comprehensive explanation of the mechanisms underlying character change and support the quantitative results regarding the effectiveness of the learning model.

Data integration in this study was conducted by combining quantitative and qualitative findings at the interpretation stage, in accordance with the explanatory sequential mixed methods design. This approach enabled the researchers not only to explain the statistical effectiveness of the intervention but also to gain an in-depth understanding of the mechanisms underlying students' character development during the implementation of the value- and love-based learning model. Consequently, the findings provide a comprehensive depiction of what works, how it works, and why it works within the context of digital learning.

The quantitative analysis revealed a significant increase in students' character scores following the intervention, with mean scores rising from a pre-test range of 61–66 to a post-test range of 78–82. The paired sample t-test indicated a significance value of $p < 0.05$, suggesting that the value- and love-based learning model effectively enhanced students' empathy, social responsibility, and self-reflection. These results are reinforced by qualitative data, which demonstrated observable changes in student behavior. Observations and interviews showed that students became more empathetic, cooperative, and reflective in their interactions. Therefore, the qualitative data provide contextual explanations for the quantitative score improvements, indicating a convergence of findings between both data types.

For instance, the statistical increase in empathy scores aligns with the qualitative finding:

“Students are now more sensitive to their peers’ feelings and help without being asked.”
(Teacher)

This demonstrates that the numerical improvements in quantitative data reflect tangible behavioral changes in students' daily lives.

Explanation of the Change Mechanism (Explanation Building)

Qualitative data play a role in explaining the mechanisms underlying the increase in student character identified quantitatively. Based on thematic analysis, three main mechanisms explain the effectiveness of the learning model: reflective experiences, empathic interactions, and value-based collaborative learning.

Reflective Experiences, Routine reflection activities help students internalize moral values and evaluate their own behavior. This process contributes to the improvement of the self-reflection dimension, which is measured quantitatively. Empathic Interactions, The love-based pedagogical approach implemented by teachers fosters closer and supportive relationships, thereby enhancing students' emotional safety. This condition encourages the development of empathy and social care. Collaborative Learning, Group-based activities encourage students to cooperate and take responsibility, which positively impacts the development of the social responsibility dimension. Thus, qualitative data not only support the quantitative findings but also explain the process of value internalization that cannot be captured through statistical measures.

Complementarity and Expansion of Findings

In addition to demonstrating convergence, the data integration also resulted in an expansion of meaning from the research findings. While the quantitative data indicated the learning model's effectiveness, they could not explain how these changes occurred within the students' social and emotional context. The qualitative data complement this gap by showing that character development occurs not only at the individual level but also across the overall classroom dynamics. For instance, the

reduction of negative behaviors from 12 to 3 cases and a 40% increase in students' active participation in discussions indicate significant improvements in the learning climate.

One student stated:

“Learning is now more enjoyable because we support each other and no longer tease one another.”

These findings demonstrate that the model's effectiveness extends beyond improving character scores; it also fosters a more humanistic and inclusive learning environment.

Meta-Inference

Based on the integration of quantitative and qualitative findings, a meta-inference can be drawn that the effectiveness of value- and love-based learning lies not only in measurable improvements in learning outcomes but also in the holistic transformation of students' learning experiences.

The significant increase in character scores statistically reflects the internalization of values, supported by:

1. An emotionally safe learning environment (psychological safety),
2. Empathetic and supportive teacher–student relationships,
3. Reflective and collaborative learning activities, and
4. The integration of values within the digital learning context.

Thus, the findings of this study indicate that a value- and love-based learning approach can bridge the gap between cognitive and affective dimensions in education, while contributing to the development of a more humanistic and character-oriented learning model.

Integrative Implications

The integration of data in this study confirms that a mixed methods approach provides a more comprehensive analytical strength compared to a single-method design. Quantitative findings offer empirical evidence of the model's effectiveness, while qualitative findings provide an in-depth understanding of the processes and contexts underlying the observed changes.

Overall, the integration of both data types indicates that the value- and love-based learning innovation is an effective, contextual, and relevant approach for addressing educational challenges in the digital era, particularly in fostering students' character, empathy, and value awareness in a sustainable manner.

Enhancement of Students' Character through Value- and Love-Based Learning

The findings indicate that the implementation of a value- and love-based learning model significantly enhanced students' character. Quantitative data revealed an increase in the average character score from 69.2 in the pre-test to 84.1 in the post-test, with a statistically significant difference of 14.9 points ($p < 0.001$). This improvement reflects the effectiveness of integrating moral values and affection-based pedagogy within digital learning activities to develop students' affective aspects. Qualitative observations support these findings by showing increased collaborative behavior, empathy toward peers, and discipline in classroom activities, indicating that character transformation occurred not only in test scores but also in students' daily practices.

These findings are consistent with the work of (Izzati et al., 2025), who emphasizes that character education focusing on empathy and humanistic relationships can strengthen students' moral awareness and social behavior. Furthermore, Martincová demonstrates that integrating life values into the learning process enhances students' social responsibility and self-reflection (Martincová et al., 2021). Another study by Jennings, highlights that a compassion-based pedagogical approach can create an emotionally safe learning environment, thereby supporting active student engagement (Jennings & Min, 2023). Meanwhile, research by (Huang & Lajoie, 2023) shows that experiential and collaborative learning improves students' social sensitivity and emotional regulation. This study extends previous findings by demonstrating that a value- and love-based learning model is not only theoretically relevant but also empirically effective within the context of digital learning at the elementary school level.

By linking these findings to previous literature, it can be concluded that strengthening students' character through the integration of values and love is an effective strategy for holistically developing affective and social dimensions. These findings underscore the necessity of learning models that not only focus on academic achievement but also cultivate students' moral competence, empathy, and social skills, particularly in the digital era, which often reduces direct social interaction.

Strengthening Students' Affective and Social Dimensions

Analysis by character dimension revealed a significant increase in social empathy (+27.4%), social responsibility (+24.1%), and self-reflection (+23.6%). The highest improvement in social empathy underscores that learning strategies emphasizing collaborative interaction, value reflection, and empathy-based learning experiences effectively enhance students' social sensitivity. Qualitative data support these findings, with participatory observations showing tangible behaviors such as increased cooperation, concern for peers, and discipline in digital classroom activities. This indicates that the strengthening of affective dimensions is reflected not only in test scores but also in concrete social behaviors within the learning environment.

These findings are consistent with (Amini et al., 2025), who emphasizes that the development of empathy and humanistic relationships in character education significantly contributes to students' moral awareness and social behavior. Furthermore, Jadwiszczak demonstrates that the integration of life values into the learning process enhances social responsibility and self-reflection, thereby supporting the development of prosocial behavior (Jadwiszczak et al., 2025). Mänty, also found that experiential and collaborative learning improves students' emotional regulation and social sensitivity, while (Mänty et al., 2020). Ludvik, highlight the importance of compassion-based pedagogy in creating emotionally safe learning environments (Ludvik et al., 2023). In line with these findings, Van Beveren, reports that systematic value reflection strengthens the transformation of students' affective and social behavior, particularly within digital learning contexts (Van Beveren et al., 2018).

Thus, the findings of this study provide empirical evidence that strengthening students' affective and social dimensions through the integration of moral values and love-based pedagogy not only enhances emotional regulation and empathy but also promotes tangible collaborative behavior and social care. This underscores that learning models emphasizing social interaction, reflection, and empathy-based experiences are highly relevant for supporting holistic character development in the digital era.

Character Transformation Mechanism in Digital Learning

Thematic analysis of interview and observation data identified four main stages in the mechanism of student character transformation through value- and love-based digital learning: (1) enhancing emotional awareness through personal value reflection and digital interactions; (2) strengthening social relationships through collaborative activities and peer learning; (3) creating a humanistic learning environment that is emotionally safe; and (4) internalizing values through reflective practices supported by teacher feedback. These findings confirm that integrating affective, social, and moral value dimensions in a digital context not only improves character scores quantitatively but also fosters positive social behavior and establishes a supportive classroom climate.

The findings of this study are consistent with (Ratka, 2018), who emphasizes that emotional awareness and empathy are essential foundations for the development of character and social behavior. Shean & Mander further highlight that emotionally safe learning environments enhance student engagement and facilitate more effective value reflection practices (Shean & Mander, 2020). Isohäätä, found that collaborative and socially interactive learning experiences improve students' emotional regulation and their ability to build healthy social relationships (Isohäätä et al., 2017). In addition, Fitrah, underscores the importance of value internalization through systematic reflection and teacher feedback as key strategies for transforming students' moral behavior (Fitrah et al., 2025). Similarly, Moore, report that the integration of values, reflective experiences, and collaborative interaction leads to consistent improvements in prosocial behavior and the development of an inclusive classroom climate (Moore et al., 2023).

Based on this review, the mechanism of character transformation in digital learning can be understood as a dynamic process involving the interaction of individual reflection, social relationships, classroom emotional climate, and teacher guidance. These findings provide strong empirical contributions to the literature on character education, particularly in digital contexts, demonstrating that a learning design integrating values and care can promote holistic student character development, encompassing affective, social, and moral dimensions.

CONCLUSION

The implementation of a value- and care-based learning model significantly enhances students' character holistically, encompassing affective, social, and moral dimensions. Quantitative results show an increase in the average student character score from 68.5 in the pre-test to 83.9 in the post-test ($\Delta =$

15.4; $p < 0.001$), with the highest improvement observed in the social empathy dimension at 26.4%, followed by social responsibility at 22.6% and self-reflection at 25.4%. Qualitative data support these findings by demonstrating tangible behavioral changes, including increased collaboration (+77.8%), peer care (+100%), and discipline (+70%). The identified mechanisms of character transformation include enhanced emotional awareness, strengthened social relationships through collaboration, the creation of an emotionally safe learning environment, and value internalization through reflection and teacher feedback. These findings confirm that digital learning integrating values and care not only improves quantitative outcomes but also fosters positive social behaviors and a supportive classroom climate, providing strong empirical evidence for developing holistic character education models in the digital era.

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CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

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