

Integrating Character Education and Technology in Elementary Schools: A Qualitative Study of Curriculum Implementation

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ABSTRACT

Character education is a key component of Indonesia's Merdeka Curriculum, which emphasizes the integration of Pancasila values into daily learning. However, effectively connecting character habituation with digital technology in elementary education remains a challenge. This qualitative case study was conducted at SD Negeri Sekaran 01 in Semarang, involving 26 participants: one principal, a curriculum coordinator, four subject teachers, and 20 fourth-grade students. Data were gathered through observations, semi-structured interviews, and documentation, and analyzed using Miles and Huberman's interactive model. The study identified three main strategies for integrating character education with technology. First, routine habituation activities—including the 5S program (smile, greet, courtesy), morning prayers, literacy sessions, and singing national songs—reinforce discipline and nationalism. Second, project-based learning via the Pancasila Student Profile Projects cultivates collaboration, responsibility, and critical thinking. Third, ICT integration, starting in grade four, supports digital literacy, autonomy, and ethical technology use. Students responded positively to digital learning environments, finding them engaging and conducive to developing personal responsibility and curiosity. The integration of character education and ICT effectively supports the development of adaptive, religious, and disciplined learners aligned with 21st-century competencies. To sustain this hybrid model, teachers must design structured digital routines, curriculum developers should formally incorporate technology use, and policymakers need to ensure ongoing teacher training and ICT infrastructure.

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1. INTRODUCTION

Character education is a cornerstone of Indonesia's national education system, as emphasized by Presidential Regulation No. 87 of 2017. This regulation underscores the government's commitment to instilling Pancasila values—encompassing religiosity, nationalism, independence, mutual cooperation, and integrity—through education (Ina Magdalena et al., 2020). The Strengthening of Character Education (PPK) movement embodies this commitment, aiming to mold students into well-rounded individuals by

fostering ethical, artistic, intellectual, and physical development grounded in Pancasila, with collaborative efforts from schools, parents, and the community (Lestari & Mustika, 2021; Sulastri et al., 2022). PPK can be seen as a practical manifestation of the Nawacita principles' Mental Revolution Movement, designed to bolster national character (Khoeriyah, 2020; Rosyidin & Arifin, 2021). It permeates all school activities, empowering teachers to cultivate 21st-century skills in students, aligning with national aspirations (Daga, 2021).

Aligned with PPK's vision of nurturing Indonesia's "golden generation" by 2045, national education prioritizes character education across formal, non-formal, and informal learning pathways. This holistic approach, deeply rooted in Pancasila and acknowledging Indonesia's cultural diversity, emphasizes community involvement and the continuous development of teachers, learners, communities, and families (Kurniawati et al., 2022). This holistic character education recognizes that character values are not isolated traits but integral components of a complete individual. It strives to produce not only intellectually capable but also morally upright citizens, echoing the goals of Indonesian education to cultivate balanced individuals—intellectually, spiritually, and socially (Mulia, 2020). This aligns with the understanding of humans as "homo faber" with an innate drive for value development and a meaningful life (Aulia et al., 2023). Character education, at its core, guides students through a structured learning process toward self-discipline, critical thinking, mature personalities, and adaptable life skills (Rahmadani et al., 2021).

The ultimate aim of character education implementation is to develop well-rounded individuals imbued with Pancasila values, ready to contribute to the nation's future (Alaby, 2020; Arif et al., 2023). This integral character development is particularly crucial during elementary school, a formative period for establishing enduring character traits (Kurniawati et al., 2022; Marlinawati et al., 2022; Narimo, 2020). This understanding necessitates character education to evolve into a learning tradition focused on moral and personality development. This study's theoretical foundation lies in integral character education, which seeks to embed it within the curriculum. This involves integrating character values into subject matter, moving beyond a sole focus on academic knowledge to encompass the formation of a complete individual through the integration of general and religious knowledge (Khozin et al., 2021; Mais et al., 2021). Curriculum integration, in this context, aims to connect and unify various learning elements into a cohesive whole, where all subjects are interlinked.

Effective educational planning is paramount, with the curriculum playing a central role in meeting global educational demands (Eny Junyanti, 2024). The Merdeka Curriculum, with its emphasis on flexibility and in-depth learning (Agustina et al., 2024), provides a robust foundation for this planning. It prioritizes project-based learning and character development aligned with the Pancasila Student Profile (Raysa & Mustika, 2024). Crucially, the Merdeka Curriculum not only seeks to enhance theoretical competencies but also prioritizes skill and character development, aligning with national education objectives. PPK remains relevant within this framework, integrated with the Pancasila Student Profile, with character values woven into learning and assessment (Maryam Salima, 2024).

While previous research has demonstrated the effectiveness of classroom-based PPK in fostering well-rounded students (Kurniawati et al., 2022), challenges remain, including limited parental involvement, incomplete teacher understanding of the 2013 curriculum, and weakened parent-child connections. Other studies have highlighted the positive impact of integrating character values into all aspects of learning, including through character-oriented teaching modules and teacher training (Sulastri et al., 2022). Furthermore, research on PPK combined with the 5S program, as well as community-based PPK innovations, has shown promise in improving educational quality (Lestari & Mustika, 2021). However, the implementation of character education within the Merdeka Curriculum also faces hurdles, such as a lack of understanding of "independent learning," time constraints, limited learning time, minimal subject matter, lack of technological proficiency, and student engagement challenges (Agustina et al., 2024). These challenges underscore the need for continuous innovation in learning strategies to effectively strengthen the Pancasila Student Profile.

This study distinguishes itself from prior research by explicitly investigating the crucial link between character education and *both* curriculum *and* technology. While previous studies have explored character education implementation and curriculum development separately, this research examines their synergistic potential. Specifically, this study focuses on how schools are developing integral character education through curriculum integration and the role of information and communication technology in enhancing student character. It aims to understand the practical approaches schools are taking, hoping to provide valuable insights and a model for other schools seeking to cultivate well-rounded individuals equipped for the present and the future. This research addresses a gap in the literature by exploring the combined influence of curriculum integration and technology on character development, offering a unique contribution to the field.

2. METHODS

This study employed a qualitative case study approach to provide a comprehensive, accurate, and naturalistic account of how integral character education, integrated into the school curriculum, is implemented at SD Negeri Sekaran 01, Semarang City (Lase, 2019). Data were collected directly in the field through observation, interviews, documentation, and analysis of natural events, enabling an in-depth understanding of everyday phenomena. The research was conducted as part of the UNNES LANTIP program, which took place from August to November, with intensive observation carried out throughout the program. Two weeks before the end of the first semester, the data collected were analyzed and subsequently used to draw conclusions and prepare the research report.

The research subjects consisted of 26 participants, including one principal, one fourth-grade teacher serving as curriculum coordinator, four teachers from various subject areas, and 20 fourth-grade students. Participants were selected through purposive sampling based on specific criteria. The principal and the fourth-grade teacher were chosen due to their central roles in curriculum decision-making and the implementation of character education. The four teachers were selected on the basis of having at least two years of teaching experience and active involvement in character education initiatives at the school. The 20 students were randomly selected from the fourth grade, which was the target grade level for curriculum development in character education. Their inclusion was considered representative for capturing insights from the learner perspective.

Data were collected through semi-structured interviews, non-participant observation, and documentation. The interviews, conducted with the principal, teachers, and students, followed an interview guide designed to ensure consistency and focused on two main issues: how character education is integrated into the school curriculum and how the integration is enacted in classroom practice. Interview indicators covered strategies of habituation and reinforcement used by teachers, time allocation and scheduling, the use of technology in character education, and the foundations, aims, and challenges of implementation. Each interview lasted 30–60 minutes, was audio-recorded with participant consent, and subsequently transcribed for analysis. Non-participant observation was undertaken to examine the enactment of character education values during classroom learning and school activities, with field notes documenting student behavior, teacher strategies, and the school environment. Documentation included collecting relevant materials such as the curriculum, the School Implementation Plan, lesson plans, and photographs of project-based learning activities related to character education.

Data analysis employed the interactive model of (Matthew B. Miles et al., 2020), comprising four stages: data collection, data reduction, data display, and conclusion drawing. Interview transcripts, observation notes, and documents were reduced through coding, categorization, and the elimination of irrelevant data. The reduced data were then presented in structured descriptive narratives, supported by direct quotations to strengthen interpretation. Finally, conclusions were drawn by identifying patterns, meanings, and relationships among data categories and by comparing the findings

with relevant theories. The process was iterative, with the researcher moving back and forth between stages to ensure a comprehensive understanding of the phenomenon under study.

Ethical considerations were observed throughout the study. Informed consent was obtained from all participants, including parental consent for students. Confidentiality and anonymity were guaranteed through the use of pseudonyms and the removal of identifying information. Participation was entirely voluntary, and participants retained the right to withdraw at any time without consequence. The researcher also maintained a respectful and non-intrusive presence to ensure that teaching and learning activities were not disrupted.

3. FINDINGS AND DISCUSSION

Findings from observations, interviews, and documentation at SD Negeri Sekaran 01 indicate that character education is integrated into the Merdeka Curriculum through three primary strategies: (1) habituation as the foundation of character formation, (2) classroom learning and project-based participation, and (3) the integration of ICT as a transformative practice.

3.1 Habituation as the Foundation of Character Formation

Habituation activities are systematically implemented both inside and outside the classroom. These routines foster consistency in discipline, religiosity, social responsibility, and nationalism.

Table 1. Summary of Habituation Activities

Activity Type	Implementation Example	Frequency
5S (Smile, Greet, Politeness)	Teachers and students greet one another at the school gate	Daily
Morning Assembly (Asmaul Husna, Literacy, Talent Show)	Rotational activities led by each class	Weekly (Tuesday-Thursday)
Healthy & Clean Friday	Exercise and community service	Weekly (Friday)
Collective Prayer (before lessons, Dhuhur prayer)	Prayers led alternately by teachers and students	Daily
Singing National Songs	Performed after prayer sessions, guided by the class teacher	Daily
Teacher Motivation	Brief encouragement before lessons	Daily
Literacy Time	15-minute reading activity using the classroom library	Daily



Figure 1. Implementation of Habituation Activities (*Apel Pagi* and 5S Culture)

3.2 Classroom Learning and Project-Based Participation

Within classroom settings, teachers integrate character education into subject-based learning, particularly through Pancasila Education and the P5 (Profil Pelajar Pancasila) projects. Project-based learning (PBL) and Project-Based Learning (PJBL) approaches are employed to cultivate critical thinking, collaboration, and responsibility. Case studies, group discussions, and collaborative projects enable students to analyze real-life issues while developing teamwork and problem-solving abilities. Teachers further reinforce values by serving as role models (*digugu lan ditiru*), demonstrating that character formation is achieved not only through instruction but also through exemplary behavior.



Figure 2. Implementation of habituation activities in the classroom

3.3 ICT Integration as a Transformative Practice

ICT-based activities are introduced beginning in Grade 4 through weekly computer classes. Students acquire fundamental digital literacy and develop responsibility in technology use. Observations indicate that ICT integration supports discipline through scheduled assignments and fosters independence in learning. Student interviews further revealed that ICT-enhanced lessons were perceived as more engaging and relevant, enabling them to internalize values such as responsibility, cooperation, and curiosity. At the same time, students emphasized the importance of teacher supervision to ensure that technology remains a constructive and purposeful tool.



Figure 3. Technology learning using computers

3.4 Student Perspectives

Interviews with 20 students revealed positive perceptions of curriculum–technology integration. Students reported that: ICT made learning more engaging and relevant, activities promoted independence, curiosity, and responsibility, and supervision was considered essential to prevent misuse of technology.

This study identifies three central themes in the integration of character education with technology in elementary schools: (1) habituation as the foundation of character formation, (2) classroom learning

and project-based participation, and (3) the transformative role of Information and Communication Technology (ICT) in reinforcing character development.

First, habituation emerges as the primary mechanism for shaping students' religiosity, discipline, and social concern. Daily practices such as prayers, the singing of national songs, literacy activities, and the 5S culture demonstrate that routine activities provide a strong foundation for character formation. These findings are consistent with Lickona (2022), who underscores the role of positive habits in instilling enduring values, and Piaget (2016), who emphasizes that moral reasoning develops through structured social interactions during the primary school years.

Second, classroom instruction combined with P5 projects fosters participatory and student-centered character development. This resonates with the findings of Alfath (2020) and Permata & Mustadi (2020), who reported that systematic curriculum design nurtures religiosity and independence. The present study extends this perspective by showing that project-based learning (PBL and PJBL) also cultivates critical thinking, collaboration, and responsibility. Thus, curriculum design in this context broadens its influence beyond the cultivation of individual character traits to the development of collaborative and reflective competencies.

Third, ICT plays a transformative role in strengthening habituation-based character education. In contrast to prior studies that positioned technology merely as a supplementary tool Zamani et al. (2023); Dwanda Putra et al. (2023) the findings of this study demonstrate that ICT functions as both a learning medium and a cultural space where students practice discipline, empathy, and independence. For instance, scheduled digital assignments not only enhance academic engagement but also foster responsibility and time management. This aligns with Kholif Suhadha et al. (2023), who emphasized the role of digital access in supporting lifelong learning. The present study contributes further by showing that ICT use, when guided effectively, can also nurture ethical digital behavior and responsibility.

Comparison with earlier studies strengthens these conclusions. While Lestari & Mustika (2021) emphasized the importance of school culture, particularly the 5S program, the present research demonstrates that its effectiveness increases when integrated with digital platforms. Similarly, although Sulastris et al. (2022) highlighted the teacher's central role in character education, the findings here indicate a shift toward more participatory, student-centered practices enabled by digital experiences. This transition corresponds with Vygotsky (2019) constructivist perspective, which views learning as most effective when students actively engage in authentic, collaborative contexts.

Finally, this study provides practical implications for the implementation of P5 within the Merdeka Curriculum. In line with Agustina et al. (2024), who identified challenges in time allocation and student engagement, the integration of ICT offers a viable solution by providing flexible and interactive platforms. These platforms not only make P5 projects more manageable but also enhance their relevance for students in the digital era.

Overall, this study not only reinforces existing theoretical and empirical perspectives but also extends them by demonstrating that habituation, curriculum integration, and ICT collectively create a hybrid ecosystem of character education. This ecosystem ensures that character values are cultivated through both direct school routines and digital interactions, thereby making character education more adaptive, sustainable, and contextually relevant in the contemporary educational landscape.

The findings of this study have several practical implications. For teachers, the integration of habituation with ICT should be designed as structured routines supported by digital platforms, such as online assignments, collaborative projects, and digital literacy programs, to foster responsibility and critical thinking. For curriculum designers, the results highlight the need to formally embed character-technology integration within the Merdeka Curriculum, ensuring that ICT is not treated merely as a technical skill but as a medium for cultivating values. For policymakers and school leaders, it is recommended to provide continuous professional development for teachers in digital pedagogy, invest in accessible ICT infrastructure, and encourage family-school partnerships to monitor and guide

students' digital behavior. These measures would strengthen the hybrid ecosystem of character education and ensure its sustainability across diverse educational settings.

4. CONCLUSION

This study concludes that integrating school curricula with technology in fostering character values among grade 4 students demonstrates considerable potential. The findings indicate that such integration not only enhances students' academic knowledge but also strengthens character development, particularly in the areas of religiosity, discipline, and social concern. Technology-based learning further serves as a motivational driver, encouraging students to internalize and apply these values in their daily lives. The practical implication of these findings underscores the importance of optimizing technology use to support character formation, accompanied by policy reinforcement and active collaboration between schools and parents.

Nevertheless, this study is not without limitations. First, the uneven participation of students during the learning process may introduce potential bias in interpreting the overall effectiveness of the program. Second, the relatively small sample size and the single-school context limit the generalizability of the findings. Third, the absence of a comprehensive evaluation of the long-term effects of technology integration on character development constrains the robustness of the conclusions.

Future research should address these limitations by involving larger and more diverse school samples, employing mixed-method approaches to reduce bias, and conducting longitudinal studies to capture the sustained influence of technology on students' character formation. Furthermore, subsequent studies could investigate more inclusive and participatory learning models to ensure that all students benefit optimally from curriculum–technology integration.

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