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EFFECTIVENESS OF A DIGITAL SCHOOL PROGRAM IN STRENGTHENING STUDENTS' CHARACTER AND COMPETENCE: A CASE STUDY AT MUHAMMADIYAH 5 RANDUBLATUNG JUNIOR HIGH SCHOOL

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ABSTRACT
The rapid advancement of digital technology has encouraged schools to adopt innovative programs aimed not only at improving academic achievement but also at fostering students' character and competencies. This study examines the implementation of a Special Digital Program at Muhammadiyah 5 Randublatung Junior High School in strengthening students' character and twenty-first-century competencies. A qualitative case study approach was employed to obtain an in-depth understanding of program outcomes within their natural context. Data were collected through classroom observations, semi-structured interviews with school leaders and teachers, and analysis of institutional documents. The findings indicate that the program tends to support the development of positive character traits, including discipline, responsibility, ethical awareness, and collaborative attitudes, particularly in digital learning environments. In addition, the data suggest meaningful improvement in students' competencies, such as digital literacy, critical thinking, creativity, communication, and problem-solving skills. These outcomes appear to be influenced by leadership commitment, teachers' capacity to integrate technology into instruction, and an adaptive school culture. Overall, the program can be understood as an integrative educational strategy that connects character development and competency enhancement, highlighting the potential of school-based digital initiatives to support holistic student development.

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INTRODUCTIONS

The rapid advancement of information and communication technology has significantly reshaped contemporary educational practices, requiring schools to move beyond traditional knowledge transmission toward the holistic development of students' character and competencies. Education in the digital era must prepare learners not only with academic knowledge but also with essential twenty-first-century skills, including critical thinking, creativity, collaboration, communication, and digital literacy (Griffin et al., 2012). In Islamic educational contexts, this transformation becomes more complex, as schools are expected to integrate technological advancement with the preservation and strengthening of religious identity, ethical awareness, and spiritual values (Hidayati et al., 2020). Therefore, educational institutions are increasingly challenged to design innovative programs that simultaneously promote digital competence and character development.

From a theoretical perspective, digital literacy encompasses not only technical skills but also the ability to evaluate information critically, communicate responsibly, and demonstrate ethical behavior in digital environments (Halimi & Seridi-Bouchelaghem, 2021). Empirical studies indicate that enhancing digital competence significantly improves students' readiness for technology-driven learning (Mejías-Acosta et al., 2024), while integrating character values into digital learning promotes responsibility and moral awareness (Hartanto & Agustina, 2023; Rindrayani, 2020). In parallel, program effectiveness in education is closely linked to systematic management processes, including planning, organizing, implementation, and evaluation (Putri et al., 2024), as well as contextual factors such as institutional culture and social conditions (Atikah et al., 2024; Ridhayana & Putra, 2024). Classical management theories further emphasize that program success depends not only on procedural execution but also on measurable outcomes (Terry, 1977; Fayol, 1916; Koontz & O'Donnell, 1991).

In addition, the development of students' character and competence constitutes a central objective of education. Character is understood as a multidimensional construct encompassing moral cognition, emotional commitment, and ethical behavior (Latifah, 2014; Nasir et al., 2021; Suarningsih et al., 2024), shaped through institutional culture and social interaction (Sa'diah et al., 2023; Simbolon, 2024). Meanwhile, competence refers to the integrated ability to apply knowledge, skills, and attitudes effectively in specific contexts (Baartman & Ruijs, 2021; Gervais, 2014), including cognitive, affective, and psychomotor dimensions (Purnama, 2017) and psychological attributes such as motivation and self-confidence (Holmes et al., 2021; Vitello et al., 2021). Contemporary competence frameworks also emphasize digital literacy and twenty-first-century skills such as adaptability, problem-solving, and metacognition (Saputra & Tunnafia, 2023; Halimi & Seridi-Bouchelaghem, 2021; Afkhaminia et al., 2018; Srisakda et al., 2016; Griffin et al., 2012; Wang, 2025).

Despite the growing body of research on digital literacy and character education, most previous studies tend to examine these dimensions separately or focus on general educational contexts. Limited attention has been given to evaluating the effectiveness of integrated digital school programs that simultaneously strengthen students' character and competencies, particularly within Islamic junior secondary school settings in local contexts. This gap becomes more evident in rural or semi-urban areas such as Blora Regency, where institutional capacity, teacher readiness, and contextual challenges may influence program implementation and outcomes (Putri et al., 2024; Fahmi & Hamzah, 2025; Barus et al., 2022). Therefore, a comprehensive evaluation of such programs is necessary to understand their actual impact and sustainability.

In response to these challenges, SMP Muhammadiyah 5 Randublatung in Blora Regency has implemented the Special Digital Program as an innovative initiative aimed at enhancing students' digital competence while strengthening character values such as discipline, responsibility, integrity, and ethical behavior in digital environments (Kintoko & Mulianingsih, 2023). Preliminary observations indicate that the program has achieved approximately 75% of its annual targets and contributed to improvements in students' digital skills, discipline, and creativity. However, variations in implementation consistency, teacher participation, and evaluation practices suggest the need for a more systematic assessment of its effectiveness.

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The novelty of this study lies in its focus on evaluating the effectiveness of a digital school program that integrates character and competence development within an Islamic junior secondary school context in Blora. Unlike previous studies that emphasize either digital literacy or character education separately, this research examines their integration within a structured school program using a management-based perspective. Accordingly, this study aims to analyze the effectiveness of the Special Digital Program in strengthening students' character and competencies at SMP Muhammadiyah 5 Randublatung Junior High School. The findings are expected to contribute to the development of integrated digital character education models and provide practical insights for schools implementing technology-based educational innovations.

METHOD

Research Approach and Type

This study adopted a qualitative approach employing a descriptive case study design to evaluate the effectiveness of the Special Digital Program in strengthening students' character and competencies at Muhammadiyah 5 Randublatung Junior High School. A qualitative approach was deemed appropriate because the research sought to obtain an in-depth understanding of how the program contributes to observable outcomes in students' behavioral and competency development within a natural educational setting. Qualitative inquiry enables researchers to interpret participants' experiences, perceptions, and social realities without manipulating variables (Creswell & Creswell, 2018). Through this approach, the effectiveness of the program was examined holistically by considering contextual conditions, institutional dynamics, and participants' responses.

A descriptive qualitative design was employed to portray empirical conditions systematically based on actual field data (Sugiyono, 2019). This design corresponds to naturalistic research, which views social phenomena as complex, evolving, and context-bound (Creswell & Poth, 2018). The approach is particularly relevant for evaluating educational innovations and digital learning initiatives that involve multifaceted interactions among technological, pedagogical, and organizational factors (Baartman & Ruijs, 2021; Halimi & Seridi-Bouchelaghem, 2021). To ensure methodological rigor, the study followed established qualitative research standards emphasizing transparency, reflexivity, and systematic analytic procedures (Nowell et al., 2017; O'Brien et al., 2020).

Research Setting

The research was conducted at Muhammadiyah 5 Randublatung Junior High School in Blora Regency, Central Java, Indonesia. The school was selected purposively due to its implementation of three flagship programs Tahfidz, Digital, and English which reflect its commitment to integrating religious values with technological advancement. The Special Digital Program was chosen as the focal case because it explicitly aims to develop students' digital competencies alongside character formation. Data collection took place over a two-month period (September–October 2025), encompassing preliminary observations, intensive field engagement, iterative data analysis, and report preparation to ensure contextual depth and analytic validity.

Research Design and Procedures

The study followed a descriptive qualitative case study procedure consisting of four sequential stages. First, the pre-field stage involved proposal development, obtaining research permits, and preparing data collection instruments. Second, the data collection stage included classroom observations, semi-structured interviews, and document analysis to capture evidence of program effectiveness. Third, the data analysis stage applied the interactive model proposed by Miles et al. (2014), encompassing data reduction, data display, and conclusion drawing with ongoing verification. This model allows analytic processes to occur concurrently with data collection, enabling progressive refinement of interpretations. Thematic analysis principles were also employed to identify patterns related to character development and competency improvement while maintaining trustworthiness criteria (Nowell et al., 2017). Finally, the reporting stage involved synthesizing findings into a structured academic manuscript.

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Research Participants

Participants were selected through purposive sampling, focusing on individuals directly involved in or affected by the Special Digital Program (Creswell & Poth, 2018). The participant group included the principal, vice principal for curriculum, vice principal for facilities and infrastructure, teachers responsible for the Digital Program, and students participating in the program. This multi-stakeholder composition enabled the researcher to obtain comprehensive insights from strategic, managerial, pedagogical, and experiential perspectives. Such diversity enhanced data triangulation and allowed evaluation of program effectiveness across organizational levels.

Instruments and Data Collection Techniques

In qualitative research, the researcher serves as the primary instrument responsible for planning, collecting, interpreting, and validating the data (Sugiyono, 2019). Supporting techniques consisted of non-participant observations to examine digital learning practices and character integration, in-depth interviews to explore perceptions of program outcomes and challenges, and document analysis of curricular materials, program plans, evaluation reports, and institutional records. The integration of these techniques facilitated methodological triangulation, thereby strengthening data credibility through cross-validation among multiple sources (Creswell & Poth, 2018).

Data Analysis Techniques

Data analysis utilized the interactive framework of Miles et al. (2014), involving three interrelated components: data reduction, data display, and conclusion drawing with verification. Data reduction included coding, categorizing, and focusing on information relevant to program effectiveness. Data display was presented in the form of narrative descriptions and analytic matrices to support interpretive clarity. Conclusions were developed iteratively and continuously validated through comparison across data sources. This process aligns with contemporary thematic analysis practices that emphasize systematic coding and interpretive depth in qualitative educational research (Nowell et al., 2017; O'Brien et al., 2020).

Operationally, the analysis process was conducted through several stages. First, **initial coding** was performed by identifying meaningful units of data from interview transcripts, observation notes, and documents, followed by assigning codes that represent key ideas related to students' character and competence development. Second, the codes were grouped into broader **categories** based on conceptual similarities, such as digital literacy practices, character values integration, and program implementation strategies. Third, these categories were further synthesized into overarching themes that reflect patterns of program effectiveness, including behavioral change, competency improvement, and institutional support mechanisms. Finally, verification of findings was conducted through data triangulation, cross-source comparison, and iterative reflection to ensure the consistency, credibility, and validity of interpretations.

Through these systematic stages, the analysis not only followed the interactive model of Miles et al. (2014) but also ensured transparency and rigor in identifying meaningful patterns within the data, thereby strengthening the trustworthiness of the research findings

Trustworthiness

To ensure methodological rigor, the study adhered to four criteria of trustworthiness: credibility, transferability, dependability, and confirmability (Creswell & Poth, 2018; Moleong, 2019). Credibility was achieved through source triangulation, member checking, and prolonged engagement in the research setting. Transferability was supported by providing rich contextual descriptions that allow readers to assess applicability to other settings (Nowell et al., 2017). Dependability was maintained through an audit trail documenting research procedures and decision-making processes (Shenton, 2004). Confirmability was ensured by presenting documentary evidence and verbatim excerpts to minimize researcher bias and enhance objectivity. These procedures collectively meet the standards of qualitative rigor required for scholarly publication.

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RESULT AND DISCUSSION

Result

This study was conducted in one Grade VIII class comprising 28 students (14 males and 14 females) at Muhammadiyah 5 Randublatung Junior High School. The class was purposively selected because its students had participated continuously in the Special Digital Program for one academic year, thereby providing sufficient exposure to assess program effectiveness. Preliminary observations indicated heterogeneous academic achievement and varying levels of prior digital literacy. Some students possessed basic familiarity with productivity applications, while others had minimal experience with structured digital learning. Such diversity offered an appropriate context for evaluating how the program influenced students' character formation and competency development.

Data collection was carried out over a three-month period through classroom observations, semi-structured interviews, and document analysis. Observations focused on learning activities, student engagement, and behavioral patterns during digital-based instruction. Interviews were conducted with the principal and three teachers responsible for the program, each lasting approximately 45–60 minutes and recorded with consent. Documentation, including lesson plans, project outputs, modules, and institutional policies, was analyzed to support data triangulation.

Overall findings indicate that the Special Digital Program operates as an integrated institutional initiative embedded within both curricular and extracurricular activities. The program is structured through coordinated planning, systematic implementation, and periodic evaluation within the school's management framework. A digital-based curriculum was developed to combine technological literacy with character education objectives, supported by regular coordination among school leaders and teachers to ensure alignment with institutional goals.

Effectiveness in Strengthening Students' Character

Evidence from observations, interviews, and documentation demonstrates that the program contributes positively to students' character development. Behavioral changes were particularly evident in discipline, responsibility, collaboration, and ethical awareness in digital contexts. Students showed increased punctuality in submitting assignments and demonstrated greater caution when accessing online information, including proper citation practices. Teachers reported that prior to program implementation, several students exhibited inconsistent academic discipline; following sustained participation, students displayed stronger responsibility for completing tasks.

One teacher explained: *"Before the program, some students were often late in submitting assignments, but now they are more disciplined and take responsibility for their tasks, especially when working on digital projects."* Students also confirmed these changes. One student stated: *"Now I try to finish assignments on time because everything is monitored digitally, and I feel more responsible for my work."*

Collaborative behavior also improved during technology-based group projects. Students were observed distributing tasks equitably, engaging in constructive discussion, and assisting peers facing technical difficulties. Instances of plagiarism decreased as originality requirements were consistently emphasized. Students became more aware of the ethical implications of digital misuse, indicating the internalization of values related to integrity and accountability.

A teacher highlighted this shift: *"Students are now more careful when taking information from the internet. They understand that copying without mentioning sources is not acceptable."* These findings suggest that the program functions as an effective medium for cultivating character traits relevant to participation in contemporary digital society.

Effectiveness in Enhancing Students' Competencies

The Special Digital Program also contributed significantly to the development of students' academic and technological competencies. Observational data revealed improvements in digital literacy, information processing skills, and the ability to communicate ideas through multimedia presentations. Students demonstrated competence in locating relevant digital sources, evaluating the credibility of information, and synthesizing findings into structured outputs.

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A student expressed this improvement: *"I learned how to search for reliable information and create presentations using digital tools, which I couldn't do before."*

Documentation of student projects indicated notable enhancement in both the technical quality and conceptual depth of digital work. Teachers reported increased student confidence during presentations and discussions. One teacher noted: *"Students are now more confident presenting their work using digital media, and they can explain their ideas more clearly."*

Problem-solving abilities emerged as students independently addressed technical challenges or collaborated to resolve them. Interview findings further suggested that digital-based learning increased students' motivation, as activities were perceived as engaging and closely connected to real-world applications.

Another student stated: *"Learning with digital tools is more interesting, and it makes me more motivated because it feels relevant to real life."* Consequently, the program strengthened not only technical proficiency but also essential twenty-first-century competencies, including critical thinking, collaboration, creativity, and digital communication.

Supporting and Inhibiting Factors Affecting Program Effectiveness

Analysis of contextual conditions identified several factors influencing program effectiveness. Key enabling factors included strong leadership commitment from the principal, adequate technological infrastructure, and teachers' willingness to integrate digital media into instruction. Students' enthusiasm and adaptability also played a significant role in achieving positive outcomes.

Conversely, several challenges were observed. Differences in students' initial technological skills occasionally slowed instructional progress, requiring additional guidance for less experienced learners. Intermittent internet connectivity constraints also affected the continuity of online activities. Some teachers acknowledged the need for further professional development to design more innovative and interactive digital learning experiences.

One teacher stated: *"We still need training to develop more interactive digital learning methods, especially to engage all students equally."*

Despite these obstacles, effective coordination among school leadership and teaching staff enabled the program to function sustainably. Triangulation of data sources—observations, interviews, and documentation—demonstrated consistent evidence regarding program outcomes. The Special Digital Program is not merely implemented administratively but substantively integrated into daily instructional practices. Students' character is reinforced through habituation to digital ethics and academic responsibility, while competencies are developed through experiential project-based learning. Leadership support and infrastructural readiness serve as primary drivers of effectiveness, although ongoing capacity building and infrastructure improvement remain essential for long-term sustainability.

Discussion

Effectiveness of the Special Digital Program in Strengthening Students' Character

The findings indicate that the Special Digital Program implemented at Muhammadiyah 5 Randublatung Junior High School shows positive tendencies not only in enhancing students' technological literacy but also in fostering character development. The program integrates religious values, discipline, responsibility, and ethical behavior in digital environments as core components of its learning activities. This integration reflects the fundamental principles of character education, which emphasize the internalization of moral values through consistent practice rather than isolated instruction (Lickona, 2012). Within digital contexts, character formation is closely associated with digital citizenship, referring to individuals' capacity to use technology responsibly, ethically, and constructively (Ribble, 2015).

Empirical evidence suggests that structured digital learning environments can promote responsibility, social awareness, and ethical sensitivity among students (Choi et al., 2020). Similarly, the incorporation of moral values into digital learning has been shown to strengthen empathy and self-regulation (Hidayat & Khotimah, 2022). In the present

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study, students exhibited observable positive changes in discipline, accountability, and awareness of ethical digital practices. Character development appeared to occur through sustained habituation, guided supervision, and reflective engagement with digital tools. Consequently, the program can be understood not merely as a technological initiative but as a pedagogical mechanism for value-based education, with the data suggesting meaningful contributions to shaping students' moral dispositions.

Effectiveness in Developing Students' Competencies

The findings further suggest that the Special Digital Program contributes to the development of students' competencies relevant to the demands of the twenty-first century, including digital literacy, critical thinking, collaboration, and creativity. The program emphasizes the creation of digital content addressing themes such as nationalism and the promotion of local products, thereby linking technological skills with civic awareness. Unlike externally adopted programs, this initiative was internally developed through collaborative curriculum planning involving school leadership and teachers, ensuring contextual relevance to students' needs and institutional values.

Observational findings indicate improvements in students' ability to access information, evaluate sources, and produce original digital outputs. Tasks such as designing digital posters, producing short videos, and developing interactive presentations required students to apply both technical and analytical skills. These activities also encouraged students to engage critically with societal issues, particularly those related to national identity and economic independence. From a theoretical standpoint, digital competence constitutes a key dimension of contemporary education, supporting employability and lifelong learning (Voogt & Roblin, 2012). Research further indicates that technology integration enhances student engagement and learning outcomes when supported by appropriate pedagogical strategies (Bond et al., 2020). Project-based digital learning approaches, in particular, have been shown to improve problem-solving abilities and self-directed learning (Rizvi et al., 2021).

The use of digital platforms in this study fostered active participation and collaborative learning. Students demonstrated increased confidence in presenting ideas and working in teams to complete complex tasks. These findings suggest that the program contributes to the development of both academic and transversal competencies, indicating that digital innovation in education can support cognitive, technical, and social skill development.

Contextual Factors Influencing Program Effectiveness

The findings indicate that the outcomes of the program are influenced by several enabling and constraining factors. Strong leadership support, teacher commitment, and adequate technological infrastructure emerged as important determinants supporting program implementation. Visionary leadership plays a central role in facilitating educational innovation and sustaining program implementation (Fullan, 2014). Additionally, an adaptive organizational culture and managerial support accelerate the adoption of digital practices within schools (Karakose et al., 2022).

However, certain challenges were identified, including disparities in teachers' digital skills, limitations in infrastructure, and varying levels of readiness for technological change. These obstacles are consistent with global findings indicating that digital inequality and teacher preparedness remain significant barriers to technology-based education (Trust & Whalen, 2020). Despite these challenges, ongoing professional development and institutional coordination appear to help mitigate their impact, allowing the program to function relatively sustainably within the school context.

An Integrative Perspective on Program Effectiveness

Synthesizing the findings, the Special Digital Program can be conceptualized as an integrative model encompassing three interrelated dimensions: character formation grounded in moral values, development of twenty-first-century competencies, and institutional support through structured management. This conceptualization aligns with the Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes the integration of technological, pedagogical, and content expertise in digital learning (Mishra & Koehler, 2006). Empirical studies confirm that robust TPACK integration enhances the quality of technology-mediated instruction (Schmid et al., 2021).

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Overall, the results suggest that the program represents more than a technical intervention; it reflects a comprehensive educational strategy that simultaneously supports character education and competency development. The outcomes appear to be influenced by the synergy between value orientation, pedagogical innovation, and institutional support. These findings reinforce the view that digital transformation in education is fundamentally a cultural and pedagogical process requiring sustained alignment among leadership, curriculum, and school practices.

CONCLUSION

The findings of this study indicate that the Special Digital Program at Muhammadiyah 5 Randublatung Junior High School shows positive tendencies in strengthening students' character while simultaneously supporting the development of their competencies. The program appears to contribute to the formation of responsible behavior, ethical awareness, discipline, and reflective attitudes toward technology use, suggesting that digital-based educational initiatives can function as vehicles for value internalization rather than merely as instructional tools. In addition, the data suggest meaningful improvements in students' competencies, particularly in digital literacy, critical thinking, collaboration, creativity, and communication skills, which are essential for participation in contemporary knowledge societies.

The outcomes of the program are influenced by several interrelated factors, including leadership commitment, teachers' capacity to integrate digital technology into learning, and an institutional culture that is receptive to innovation. These elements collectively create a supportive environment for sustained program implementation and student development. From a conceptual standpoint, this study highlights that digital school programs may operate as integrative educational systems that connect pedagogical practices, organizational support, and character education. The findings suggest that digital transformation in schools should be oriented not only toward technological adoption but also toward holistic student development encompassing moral, social, and cognitive dimensions.

This research contributes to the discourse on educational digital innovation by providing empirical insights into how a digital program may support both character formation and competency development within a specific institutional context. Future studies are recommended to examine similar programs across different educational settings to further validate and extend these findings.

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