Hipkin Journal of Educational Research | e-ISSN 1234-5678 & p-ISSN 1234-5678
Volume 2 No 2 (2025) 169-182

Hipkin Journal of Educational Research
http://ejournal-hipkin.or.id/index.php/hipkin-jer/

Implementation of curriculum models in ICT subjects at SD Al-Hidayah Majalengka

Abi Yasid Al'majid
Universitas Pendidikan Indonesia, Kota Bandung, Indonesia
abiyasid23@upi.edu

ABSTRACT

Information and Communication Technology (ICT) learning in elementary school is a crucial foundation for equipping students with digital literacy from an early age. This study aims to identify how ICT learning is implemented at SD Al-Hidayah, particularly in terms of instructional structure, learning materials, teaching approaches, and alignment with applicable Basic Competencies. The research is motivated by the need to understand how ICT education is applied in practice as a response to the development of digital technologies and 21st-century education demands. A descriptive qualitative method was used, employing in-depth interviews, document analysis, and participatory observation as data collection techniques. The results show that ICT learning at the school is systematically implemented through instructional tools that refer to achievement indicators, contextually relevant materials, and hands-on learning approaches that encourage student engagement. However, challenges such as limited facilities and the need for further teacher training were identified. These findings highlight the importance of enhancing teacher competence and strengthening infrastructure as strategic efforts to optimize ICT learning at the elementary level.

ARTICLE INFO

Article History:
Received: 8 Apr 2025
Revised: 16 Jul 2025
Accepted: 26 Jul 2025
Available online: 11 Aug 2025
Publish: 29 Aug 2025

Keywords:
curriculum development; elementary school; Information and Communication Technology; learning implementation

Open access
Hipkin Journal of Educational Research is a peer-reviewed open-access journal.

ABSTRAK

Pembelajaran Teknologi Informasi dan Komunikasi (TIK) di jenjang Sekolah Dasar menjadi fondasi penting dalam membekali peserta didik dengan literasi digital sejak dini. Penelitian ini bertujuan untuk mengidentifikasi pelaksanaan pembelajaran TIK di SD Al-Hidayah, khususnya dari aspek struktur ajar, materi pembelajaran, pendekatan guru, serta kesesuaiannya dengan Kompetensi Dasar yang berlaku. Penelitian ini dilatarbelakangi oleh kebutuhan untuk memahami bagaimana pembelajaran TIK diimplementasikan di lapangan sebagai respons terhadap perkembangan teknologi digital dan tuntutan pendidikan abad 21. Metode yang digunakan adalah penelitian kualitatif deskriptif, dengan teknik pengumpulan data berupa wawancara mendalam, analisis dokumen, dan observasi partisipatif. Hasil penelitian menunjukkan bahwa pembelajaran TIK di sekolah tersebut telah dilaksanakan secara sistematis dengan perangkat ajar yang mengacu pada indikator keberhasilan, materi pembelajaran yang kontekstual, serta pendekatan praktik langsung yang mendorong keterlibatan aktif peserta didik. Meskipun demikian, beberapa kendala seperti keterbatasan fasilitas dan kebutuhan pelatihan guru masih ditemukan. Temuan ini menekankan pentingnya peningkatan kompetensi pendidik dan penguatan infrastruktur sebagai langkah strategis dalam optimalisasi pembelajaran TIK di tingkat sekolah dasar.

Kata Kunci: *implementasi pembelajaran; pengembangan kurikulum; sekolah dasar; teknologi informasi dan komunikasi*

How to cite (APA 7)
Al'majid, A. Y. (2025). Implementation of curriculum models in ICT subjects at SD Al-Hidayah Majalengka, *2*(2), 169-182.

Peer review
This article has been peer-reviewed through the journal's standard double-blind peer review, where both the reviewers and authors are anonymised during review.

https://doi.org/10.64014/hipkin-jer.v2i2.165

INTRODUCTION

The Kurikulum Merdeka was designed in 2020 and has been gradually implemented in Indonesian schools since 2021, with an initial pilot coverage of around 3,000 schools. This curriculum is a breakthrough in transforming the learning process to be more student-centered, relevant, and enjoyable. The Kurikulum Merdeka emphasizes project-based learning and the development of students' soft skills and essential competencies. This includes an emphasis on the Profil Pelajar Pancasila, which focuses on creativity, collaboration, and critical thinking. With this approach, students are actively involved in designing and solving contextual technological problems, in accordance with the requirements of the Kurikulum Merdeka. The government has taken the initiative to integrate ICT into the basic education curriculum. ICT-based learning in elementary schools refers to the integration of information and communication technology in the teaching and learning process (Asfiana et al., 2025).

Another core component is the Proyek Penguatan Profil Pelajar Pancasila (P5), which provides students with the opportunity to actively explore current issues and develop character and competencies in line with the Profil Pelajar Pancasila, such as creativity, collaboration, and critical thinking. Preliminary studies indicate that the implementation of P5 can provide meaningful experiences for students in problem-solving and create a calmer, freer, and more enjoyable learning environment (Cholilah et al., 2023). The success of P5 depends heavily on teachers' ability to facilitate complex projects, integrate them across subjects, and assess holistic competencies, not just content knowledge. This requires a significant pedagogical shift and robust teacher training. Authentic implementation of P5 also requires more than just project completion; it requires a school culture that consistently embodies the values of Pancasila, continuous reflection by students and teachers, and assessment methods capable of capturing character development, which is a complex challenge in standardization and measurement.

The Kurikulum Merdeka explicitly encourages the use of technology in learning. It is important for teachers to design ICT-based learning models and media, and to note the existence of community service activities to train teachers in creating ICT media that are in line with the Kurikulum Merdeka. Effective ICT integration requires more than just the provision of hardware or software; it requires pedagogical training for teachers on how to utilize ICT to improve learning outcomes within the framework of the Kurikulum Merdeka, not merely as a substitute for traditional methods. Furthermore, the push for ICT integration must be balanced with the development of digital citizenship, critical media literacy, and awareness of online safety, which are crucial elements in shaping the character of students in accordance with the Profil Pemuda Pancasila (Indriyani et al. 2022).

In the context of inclusive education, the Kurikulum Merdeka is implemented with a focus on optimizing assistive media and technology, where training has been proven to increase teachers' knowledge in using these tools (Jauhari et al., 2022). These positive results, such as improved problem-solving skills and a more enjoyable learning experience, are closely related to the pedagogical shift promoted by the Kurikulum Merdeka, namely learner-centered and project-based learning. This reinforces the idea that how to teach is as important as what to teach. Based on several preliminary studies, the implementation of the Merdeka Curriculum, specifically in ICT subjects in SD, is still in its early stages and faces various obstacles. For example, although digital media-based ICT learning in the Kurikulum Merdeka provides opportunities for independent learning, many SD teachers are still not tech-savvy and tend to use traditional lecture methods (Nirmala et al., 2024).

The results of the study indicate that elementary school teachers' ability to develop Learning Objectives, Learning Objective Sequences, Learning Objective Achievement Criteria, and Teaching Modules remains unclear, mainly due to changes in the thirteen-year curriculum that still require adjustment. However, some teachers, especially those who are older and technologically challenged, still struggle to adapt to the Kurikulum Merdeka (Mujiyanto, 2024). This reduces the effectiveness of learning time. On the other hand,

https://doi.org/10.64014/hipkin-jer.v2i2.165

it was found that ICT learning has both positive and negative impacts on students; therefore, the integration of Islamic values in ICT is proposed as a solution to mitigate these negative impacts (Utami & Muqowim, 2020). In addition, the use of teaching tools has also changed, from teaching modules developed as alternatives to the Rencana Pelaksanaan Pembelajaran (RPP) in the Kurikulum Merdeka, to create a more interactive and engaging learning experience. However, some teachers admit to having difficulty in compiling them (Anjelia et al., 2024).

Unlike previous studies, which mainly were partial in nature (e.g., examining ICT media or the integration of religious values in general), this study comprehensively examines the implementation of the ICT learning approach in the Kurikulum Merdeka in SD, with an emphasis on the integration of Islamic values, problem solving, creative exploration, and the use of teaching tools (lesson plans and modules). The focus on the context of elementary schools and ICT subjects is still rare in the literature. The novelty of this study lies in combining pedagogical and religious aspects in one study, while also investigating the factors of RPP/module innovation in the era of the Kurikulum Merdeka. Based on the background and initial literature review, this study was designed to examine in depth the implementation of the Kurikulum Merdeka in the subject of Information and Communication Technology (ICT) in elementary schools. More specifically, this study will describe the learning approaches applied by teachers, examine how Islamic values are integrated into the context of ICT learning, analyze the application of problem-solving and creative exploration strategies, and investigate the use of teaching tools such as lesson plans and teaching modules in the planning and implementation of ICT learning in line with the Kurikulum Merdeka.

The purpose of this study is to describe and analyze the curriculum model and implementation of the Information and Communication Technology (ICT) curriculum at SD Al-Hidayah Majalengka. This study aims to identify the characteristics of the ICT curriculum used, the learning approaches adopted by teachers, and the integration of Islamic values in the teaching process. Thus, this study is expected to provide a comprehensive picture of the implementation of the ICT curriculum at SD Al-Hidayah and contribute to the development of an ICT curriculum that is more relevant to the needs of the educational world, thereby enhancing students' readiness to face the world in this digital era.

LITERATURE REVIEW

Previous studies have shown that the implementation of Kurikulum Merdeka in ICT learning in elementary schools has been carried out; however, it is not yet fully optimal. The Kurikulum Merdeka places greater emphasis on the Pancasila Student Profile dimension through the Proyek Penguatan Profil Pelajar Pancasila (P5) and applies differentiated learning to meet the learning needs of students (Martatiyana et al., 2023). However, many elementary school teachers still lack mastery of technology, so learning is mostly lecture-centered. Although the Kurikulum Merdeka has been implemented, the application of differentiated learning has not been seen; the advantage of using ICT media is that teachers can assign independent material online, but teachers and students often encounter operational difficulties that reduce adequate learning time (Fauzi et al., 2024; Khaira et al., 2023; Nirmala et al., 2024). Based on the research results, it can be concluded that the Problem-Based Learning (PBL) and Sains Teknologi Masyarakat (STM) models in the ICT learning process received excellent and positive responses from students, and had a significant impact on improving their critical thinking skills (Ratno, 2022).

Digital Learning Theory

Relevant theoretical foundations include digital and constructivist learning theories, integrative theories, and Islamic educational perspectives related to the integration of values. Connectivism, which was significantly developed by George Siemens and Stephen Downes, offers a lens for understanding learning

https://doi.org/10.64014/hipkin-jer.v2i2.165

in a highly connected digital age. This theory views learning as a network phenomenon influenced by technology and socialization. In his book Connectivism: Creating a learning ecology in distributed environments, Siemens argues that "Learning in the digital age is not just a process of individual knowledge accumulation, but also includes connections and interactions in a broader network, whether with other people, digital resources, or both." Furthermore, Siemens explains that the starting point of learning occurs when learners connect and participate in learning communities, which are defined as "groupings of similar interests that enable interaction, sharing, dialogue, and thinking together."

In the practice of ICT learning in elementary schools, connectivism theory offers a framework that is relevant to the Kurikulum Merdeka approach. For example, teachers can design collaborative digital projects between students using applications such as Canva, Scratch, or Padlet. Thus, students not only access knowledge but also actively build learning networks, in line with the idea that knowledge spreads through networks, not just through teachers or textbooks. Constructivist theory, with its roots in the work of figures such as Piaget, Vygotsky, and Bruner, emphasizes that students actively construct their own knowledge and meaning based on their experiences (Rahayu & Yuliana, 2025). Constructivism is a theory that posits students construct knowledge and form meaning through unique experiences that are specific to each individual (Mukhlis et al., 2024).

Meanwhile, constructivist theory emphasizes that learners construct knowledge through active exploration and direct experience. In the context of Information and Communication Technology (ICT), this approach means that learning is student-centered, where learners develop concepts through interaction with digital applications or projects. Research indicates that integrating constructivist theory into Islamic education through digital technology can enhance the effectiveness of Islamic religious learning by accommodating diverse learning styles among learners and promoting their active participation (Kurniawan et al., 2024). An integrative approach requires the integration of cross-curricular subjects and character values in the learning process. Curriculum design should combine values (qauliyah) and science/technology content (kauniyah) simultaneously. This aligns with the principle of national education that prioritizes character and moral development, ensuring that scientific and technological progress is grounded in religious values.

Principles and Approaches to ICT Learning in Elementary Schools

The Kurikulum Merdeka emphasizes learner-centered and project-based learning as an effort to develop learners' competencies and character holistically. In the context of ICT learning, this approach requires teachers to design learning activities that encourage learners to participate actively and engage with the material. One of the main approaches is PBL, which is designed to develop soft skills and character through real-world projects that align with the values outlined in the Profil Pelajar Pancasila. In addition, the Kurikulum Merdeka also supports the implementation of PBL, which emphasizes real-world problem solving as the center of learning activities. The application of PBL in ICT learning can help train students' critical and creative thinking skills in finding solutions to everyday technology-related problems (Ahmad, 2024).

This model provides a fundamental understanding of the teaching material because students are actively involved in the process of finding solutions. This approach can also be applied in the context of Pendidikan Agama Kristen (PAK), by encouraging students to find verses or narratives in the Bible that are relevant to the issues at hand, thereby strengthening students' reasoning and spiritual understanding (Heriyati, 2023). The creative exploration approach is a crucial component of implementing the Kurikulum Merdeka. The principle of curriculum flexibility provides space for teachers and students to experiment and explore ideas innovatively. Although empirical studies are still limited, this approach aligns with the emphasis on creativity as part of the Profil Pelajar Pancasila.

https://doi.org/10.64014/hipkin-jer.v2i2.165

Good digital literacy competencies among these teachers have a positive impact on the quality of the learning they design. Through in-house training, it was found that teachers' competencies in ICT-based learning increased significantly (Rahayu & Sulistyo, 2024; Sari & Jupriyanto, 2023). Although teachers generally possess professional competencies in the use of ICT, they still require additional support and face time constraints in developing digital learning materials (Putra et al., 2023). Training in the creation of ICT teaching materials is effective in enhancing teachers' competence in developing engaging learning materials and enabling them to manage learning through third-party applications (Nirmala et al., 2024; Ratniasih et al., 2024).

Integration of Islamic Values in ICT Learning

In the context of education in Indonesia, the Kurikulum Merdeka focuses not only on technical competencies but also on character building and religious values. The Profil Pelajar Pancasila emphasizes spirituality and morality, so that the integration of religious values is an important aspect in every subject, including ICT. Information and communication technology can hurt students' character if it is not balanced with moral values (Komara & Widjaya, 2024; Utami & Muqowim, 2020). Therefore, the solution offered is to integrate Islamic values into ICT learning. For example, when teaching digital literacy, teachers can emphasize honesty, internet etiquette, or social responsibility in accordance with Islamic teachings.

The importance of integrating Islamic values is reinforced by the statement that the primary objective of ICT-based curricula is to equip students with technical skills while upholding moral and ethical values in both the real and virtual worlds (Dawami et al., 2025). They emphasize that without the inculcation of Islamic values, mastery of technology risks eroding the character and morals of students. Learning activities that prioritize Islamic values (e.g., sharing helpful information, social media ethics, or cases of technology application in Islamic life) are considered to shape religious attitudes and piety. This study accommodates these findings to develop a framework for integrating Islamic values into the Kurikulum Merdeka ICT learning process in elementary schools.

Learning Tools and Media

ICT learning tools and media include hardware, software, and digital learning resources. The core devices are computers or laptops, along with projectors/LCDs as presentation media. The internet is used to access online teaching materials and learning resources (videos, e-modules, educational websites). Commonly used media include learning CDs, e-mail, and PowerPoint presentations. Creative software such as Microsoft Paint and Scratch is often used for drawing and simple programming exercises to develop students' digital skills and creativity (Weng et al., 2023). With the support of these media, ICT learning is expected to be more interactive and overcome various communication barriers in the classroom. To prevent a lack of understanding in the use of technology in schools, teachers' knowledge of ICT-based learning media is categorized as low (Fauziah et al., 2020).

The change in the nomenclature of teaching tools is a distinctive feature of the Merdeka Curriculum. Teaching modules have now replaced traditional lesson plans (RPP) as the primary tool. Teaching modules have been developed to provide teachers and students with a more interactive and engaging learning experience (Anjelia et al., 2024). These teaching modules serve as a reference for teachers in planning and implementing learning (in addition to the RPP), signifying a curriculum reform for more innovative teaching and learning practices. Teachers report difficulties in compiling and implementing teaching modules due to differences in structure and components compared to conventional RPPs (Anjelia et al., 2024). Teachers must adjust the content, learning objectives, prompting questions, media, and assessment in the new teaching modules. The current Merdeka Curriculum requires teachers to prepare

https://doi.org/10.64014/hipkin-jer.v2i2.165

lesson plans and teaching modules prior to the start of learning. However, several obstacles tend to hinder the creative and innovative process of teachers in developing them (Kholid et al., 2024).

METHODS

This study employs a qualitative approach with a case study design, examining the conditions of the object in question. The researcher acts as an instrument, and data collection emphasizes meaning. This approach was chosen to gain a deeper understanding, rather than relying on numerical data, by utilizing descriptive data from interviews with relevant sources and the results of document analysis. In this study, a qualitative approach was employed to explore the implementation of the curriculum model in ICT subjects at SD Al-Hidayah Majalengka, focusing on whether the model was centralized or decentralized, whether it was academic or integrative, whether it utilized a humanistic or constructivist approach, and what the basic competencies were.

Case studies are chosen because they allow researchers to gain a deep understanding of complex phenomena in real-life contexts. Case studies are a suitable research strategy when the research questions are "how" and "why" questions, and when researchers have little control over the events taking place. This approach also supports the collection of data from various sources, including interviews, observations, and document analysis, to build a comprehensive understanding of the case being studied. The humanistic approach in education emphasizes the holistic development of an individual's potential, encompassing cognitive, affective, and psychomotor aspects. Humanistic education emphasizes a learning process that humanizes students, with teachers serving as facilitators who support students' personal growth and development.

Constructivist theory states that learning is an active process in which learners construct new knowledge based on their experiences and prior knowledge. According to this theory, learners learn more effectively when they are actively involved in the learning process and relate new information to their existing understanding. The constructivist approach encourages the use of learning strategies that emphasize problem-solving, discussion, and reflection to build a deep understanding. There was one subject in this study, namely an Information and Communication Technology teacher named Nurmala Ica, S.Kom. Informants were selected based on their direct involvement in the curriculum planning and implementation process. Then, problems were identified and the necessary questions were formulated. Next, lesson plans and basic competencies from the relevant schools were collected for analysis as supplementary data. Data collection was conducted through in-depth interviews, non-participatory observations, and studies of relevant documents, including syllabi, RPPs, and learning evaluation reports. The instrument used was a semi-structured interview guide developed in accordance with the research objectives. The observation was conducted over two days, from the preparation for the interview to the actual interview.

The data collected consists of interview data and document analysis. The analysis was conducted by matching the interview and observation results with the research questions and identifying patterns that emerged from the data. The research results were then compiled into a report, which consisted of an introduction, literature review, results, discussion, and conclusions. By following these steps, it is hoped that the results of this study will provide valuable insights and inform the development of curricula in the education sector worldwide.

https://doi.org/10.64014/hipkin-jer.v2i2.165

RESULTS AND DISCUSSION

Results

Curriculum Developer at School

Based on interviews with ICT teachers at SD Al-Hidayah (see Table 1), the implementation of the ICT curriculum at this school is carried out independently, with adjustments made to meet the actual field conditions. ICT teachers at SD Al-Hidayah explained that the ICT curriculum was developed by schools themselves, taking into account various contextual factors. Adjustments were made based on the abilities and characteristics of the students, government policies, and the expected competencies. The teacher emphasized that the curriculum adjustments were designed to help students adapt to the technology being taught.

Many students still struggle to operate basic computer devices, such as mice and keyboards. Therefore, the material has been simplified and presented in stages to prevent confusion with the lesson content. In addition, teachers mentioned that currently there are no standard ICT RPPs for elementary schools, so schools are forced to develop their own learning tools. This adaptive approach makes the ICT curriculum at SD Al-Hidayah flexible and contextual. The independent learning curriculum has four programs. These programs offer opportunities for schools, students, teachers, and others to enhance the learning process. One way to ensure the success of this program is through the integration of learning media based on computer technology and information (Djumanto, 2022).

Table 1. Results of Interviews with Curriculum Developers in Schools

No	Questions	Answer
1	Is the ICT curriculum at this school developed by the central government or adapted independently by the school?	The ICT curriculum implemented in this school has been adjusted independently based on field observations. This includes the children's circumstances, government policies, and the required competencies. Many children are still adjusting to the technology used in ICT lessons, with some still confused about how to operate a mouse and keyboard. This means that the curriculum will need to be adjusted again so that children are not too confused about what they are learning and how to apply it to their future lives..

Source: Research 2025

The teacher also mentioned that curriculum adjustments involve continuous evaluation. If some students still have difficulties, the material will be reviewed, or additional exercises will be given. For example, the introduction of basic computer functions is reinforced first before students are guided to more complex material. The scheduling of material is arranged repeatedly and progressively according to the needs of the students. In addition to the abilities of the students, teachers also consider the availability of facilities and local policies. Some teachers even coordinate with the principal and other subject teachers to ensure that ICT learning aligns with local education policies and student needs.

Overall, the ICT curriculum development strategy at SD Al-Hidayah is decentralized and adaptive. Although the curriculum framework refers to the Kurikulum Merdeka, in practice, schools have the flexibility to modify the material to suit classroom conditions. This effort demonstrates that schools prioritize the needs of students in developing teaching materials, making the delivery of ICT competencies more meaningful for students.

https://doi.org/10.64014/hipkin-jer.v2i2.165

Integration of ICT Curriculum with Other Subjects

The interview results in **Table 2** show that ICT learning at SD Al-Hidayah is not taught separately but is integrated with Islamic values, which are characteristic of the school. ICT teachers stated that ICT materials are packaged in a way that consistently reflects religious principles. For example, when students learn about social media or the internet, teachers relate the learning to Islamic manners and etiquette. Students are reminded that when using social media, they must be honest, polite, and avoid spreading harmful content. Thus, the use of digital technology in the context of learning is always guided by Islamic ethics.

Table 2. Results of Interviews on the Integration of ICT Curriculum with Other Subjects

No	Questions	Answer
1	Is ICT taught as a separate subject, or is it integrated with other subjects?	This ICT subject is integrated with Islamic values, considering that this school is an Islamic school, so it will certainly not stray far from this. For example, when teaching manners to students, Islamic values are integrated, as Islam emphasizes the importance of manners and politeness in using social media, ensuring that students do not act carelessly when using or sharing information online.

Source: Research 2025

The integration of religious values into ICT subjects makes learning more holistic. Students not only master technical skills (such as using software and the internet), but also practice moral values. Teachers emphasize that all ICT material at SD Al-Hidayah must be related to students' daily experiences and religious teachings. For example, when students are asked to make presentations on computers, the themes chosen are related to stories or values being studied in religious education classes. This approach ensures that religious messages are always present in every technology lesson.

The conditions at this Islamic school encourage cross-subject synergy. Although the primary focus of ICT material is digital competence, teachers constantly instill an Islamic perspective, enabling students to learn technology with an understanding of values. Teachers believe that this type of learning practice can strengthen students' character. Interview results indicate that the integration of the ICT curriculum with other subjects runs smoothly, as teachers are aware that the three competencies (technical, religious, and character) must develop in tandem. Learning that is integrated with Islamic values is expected to produce students who are not only technologically proficient but also have good character.

The Role of Curriculum and Teachers in Student Development

The interview results in **Table 3** show that the ICT curriculum and the role of teachers at SD Al-Hidayah are focused on supporting the development of students' creativity and independence in learning. ICT teachers said that the learning materials were designed to provide ample room for exploration. In ICT classes, students are free to use various software to channel their creativity. For example, the use of simple drawing applications such as Microsoft Paint provides opportunities for children to develop their visual imagination. Additionally, students are permitted to create simple games or animations using Scratch, thereby developing their creativity and understanding of programming logic. This approach is designed so that students do not merely receive information passively but actively create with technology. The use of ICT in learning has great potential to increase student motivation and learning outcomes (Munawaroh et al., 2023).

Table 3. Interview Result: The Role of Curriculum and Teachers in Student Development

https://doi.org/10.64014/hipkin-jer.v2i2.165

No	Questions	Answer
1	Does ICT learning provide space for students' creativity and exploration?	ICT learning provides space for broader creativity and exploration among students. In ICT learning, students can use Paint software to develop their creativity in drawing, as well as Scratch, which allows them to create simple video games and animations that encourage creativity and logical thinking.
2	How do teachers encourage students to learn actively through projects or problem-solving?	In this case, teachers play a role in guiding and instructing students. They start by giving students problems and then ask them to solve those problems. An example of this is during ICT practice, where students are given problems and asked to solve them.

Source: Research 2025

In implementing learning, teachers use projects and authentic tasks to trigger active participation from students. For example, teachers present practical challenges in the form of case studies that students must complete using technology. Teachers act as facilitators by providing initial instructions, then encouraging students to complete the tasks independently. The application of this Merdeka Belajar-based problem-solving learning model is practical. Thus, the application of the problem-solving learning model can have an impact on improving the quality of students (Saputri & Trihantoyo, 2022). The ICT project process also includes discussion and presentation sessions, where each group of students presents their solutions or creations. In this activity, students learn to share ideas and provide feedback to one another.

Additionally, teachers provide ongoing feedback and guidance throughout the learning process. Teachers create an environment that supports experimentation and learning from mistakes (trial and error). Students are encouraged to explore various methods for completing tasks and learn to correct mistakes with the guidance of their teachers. This emphasizes the humanistic aspect of learning, as teachers remain present to provide support when needed. Through project-based learning and problem-solving methods, teachers and the curriculum collaborate to foster the development of students' critical and creative thinking skills.

Overall, the role of the ICT curriculum and teachers is intensely felt in the development of students at SD Al-Hidayah. The flexible curriculum provides a foundation for creative learning, while teachers act as active facilitators to ensure that students are fully engaged. As a result, students not only learn about technology, but also develop problem-solving skills, create according to their individual talents, and apply character values. This approach, implemented by teachers, contributes to increasing students' motivation and 21st-century skills.

Basic Competencies and Success Indicators

In the implementation of ICT learning at SD Al-Hidayah, Basic Competencies (KD) and success indicators are key elements in planning and implementing learning. The Grade 4, 5, and 6 Teaching Module documents and ICT Basic Competencies show that the school has systematically and progressively developed KD based on grade levels. These competencies encompass fundamental technical skills, an introduction to digital ethics, and the ability to utilize technology effectively. The Basic Competencies outlined in this document are designed to ensure that students not only become familiar with technology but also learn to use it responsibly and creatively. Some examples of the Basic Competencies that have been established include recognizing and using computer hardware, operating basic software such as Microsoft Word and PowerPoint, recognizing the functions of the internet and how to access information appropriately and ethically, and creating simple digital works to express oneself and convey information.

Success indicators are described more specifically as tangible results of learning. These indicators help teachers assess student learning outcomes through measurable activities, such as “students can create simple documents using Microsoft Word” or “students can list the steps for accessing the internet safely.”

https://doi.org/10.64014/hipkin-jer.v2i2.165

With these indicators, teachers not only observe student activity but also measure mastery of the subject matter. The use of ICT by teachers in education is crucial, and its impact on student learning outcomes is significant (Lasut et al., 2023). The results of the interviews analyzed earlier also reinforce that teachers at SD Al-Hidayah use these KD and indicators as the primary reference in preparing lesson plans and teaching modules. Teachers have tried to connect the KD with a more contextual learning context, for example, by assigning tasks that require students to create digital posters or short presentations relevant to their daily lives.

The implementation of these KD is inseparable from the learning approaches used by teachers, such as demonstration methods, hands-on practice, and small project-based learning. This indicates that teachers are not only pursuing the achievement of indicators but also striving to create meaningful learning experiences that are oriented towards 21st-century skills, including digital literacy, creativity, and effective communication.

Discussion

The interview results showed consistency with literature findings on decentralization and curriculum adaptation. The development of the Merdeka curriculum in elementary schools involved identifying local needs and adapting ICT materials to enhance learning effectiveness. In terms of approach, the Al-Hidayah team recognized the importance of contextual and problem-solving-based learning. The interview results indicate that Problem-Based Learning and small project strategies can enhance students' interest and creativity, aligning with findings that project-based learning encourages students to actively construct knowledge through research, discussion, and testing of ideas relevant to real-life situations (Zahra & Masyithoh, 2024).

These findings suggest that teachers serve as both facilitators and instructors to create a learning environment that fosters critical thinking among students. Examples include designing projects that are not only interesting but also meaningful, thereby connecting with students' understanding and engagement. Additionally, computer-based problem-solving learning models are effective in enhancing students' numeracy and higher-order thinking skills through interactive learning experiences (Mustika et al., 2024). This demonstrates that digital devices, such as those used for educational applications or basic programming software, can serve as a medium to train students' logic and reasoning skills. Therefore, teachers are advised to periodically evaluate the effectiveness of the tools used and make adjustments to ensure they remain relevant to the students' needs.

This approach creates a dynamic learning environment that aligns with the spirit of the Kurikulum Merdeka. However, it is still necessary to strengthen teachers' capacities so that its implementation can be optimized in the context of ICT-based learning. Regular training and mentoring can be provided to enable teachers to maximize the use of various applications and digital platforms, as well as to understand the pedagogical principles underlying each approach. The integration of Islamic values is also reflected in the inclusion of Islamic stories when introducing ICT applications, suggesting that spiritual values can balance digital learning (Utami & Muqowim, 2020). Maintaining a balance between the development of technological competencies and character building is crucial, especially in Islamic schools that prioritize character development with Islamic values, such as SD Al-Hidayah.

The results of interviews about student creativity support the findings that ICT-based learning media have the potential to increase creativity, problem-solving skills, and learning motivation among students. Teachers at SD Al-Hidayah utilize applications such as Microsoft Paint and Scratch to stimulate students' exploration of ideas and logic, in line with the creative learning approach in the literature. This shows that the ICT curriculum has been designed to provide creative space for students (Miftah, 2022). To strengthen

https://doi.org/10.64014/hipkin-jer.v2i2.165

these efforts, schools can encourage the development of digital-based activities or digital competitions that combine creativity, collaboration, and the application of positive values in the digital world.

Thus, Al-Hidayah's field findings support the results of national research: the success of ICT learning in the Merdeka Curriculum requires creative modules/RPPs, a project/problem-solving approach, and the improvement of teacher competence through specialized training. The role of education policy in digital and technology-based learning is important. Therefore, an education policy is needed for the optimal and comprehensive use of digital technology. From this, the government and regional policymakers are also expected to facilitate easy access to devices, networks, and operational policies that support the comprehensive implementation of ICT subjects in elementary schools.

CONCLUSION

Based on the results of this study, the ICT learning structure at SD Al-Hidayah has been systematically organized through the use of teaching tools that include learning objectives, materials, methods, and evaluation. Although not all teachers have a formal background in ICT, they have made efforts to deliver the material in a practical manner and in accordance with the students' development. Second, the material taught is tailored to the grade level and abilities of the students, covering an introduction to hardware, basic applications such as Microsoft Word and PowerPoint, and ethics in internet use. Third, the learning approach employed is hands-on and project-based, with an emphasis on fundamental digital skills that apply to students' daily lives. Fourth, the analysis of the Basic Competency and Teaching Module documents shows that the indicators of success are clearly formulated and have been used as guidelines in designing learning activities. This demonstrates consistency between planning and implementation of learning in schools. These findings suggest that schools have a solid foundation for developing digital literacy from an early age, although further strengthening is necessary in teacher training and infrastructure development.

This study concludes that ICT learning at SD Al-Hidayah has been carried out systematically and quite effectively in equipping students with basic ICT skills relevant to the needs of the digital age. The approach used has led to meaningful learning, but there is still room for improvement in terms of integrating more advanced technology and providing ongoing teacher training. As a follow-up to the results of this study, it is recommended to improve the competence of ICT teachers, whereby schools should provide regular training for teachers to enhance their understanding and skills in using the latest technology, including integration with digital learning platforms. There needs to be periodic evaluation of ICT learning support facilities, such as the availability of computers, internet connections, and up-to-date software, to support an optimal learning process. With these suggestions, it is hoped that ICT learning in elementary schools can become an important pillar in preparing the younger generation for the digital world.

AUTHOR'S NOTE

The author affirms that there is no conflict of interest in the writing and publication of this article. All content presented, including data, analysis, and other information, is the original work of the author and is guaranteed to be free of plagiarism. The author also extends their deepest gratitude to Mrs. Nurmala Ica, S.Kom., for her participation as a resource person in this research. The insights and information provided have greatly contributed to enriching the content and quality of the discussion in this article.

https://doi.org/10.64014/hipkin-jer.v2i2.165

REFERENCES

Ahmad, A. K. (2024). Kurikulum merdeka dalam studi kasus PBL: Penerapan, kendala, dan solusi. *Jmlipare, 3*(1), 15-28.

Anjelia, B., Umami, R., Octavury, Y., Hidayat, S., Saputri, W., & Sidik, B. R. (2024). Analisis persepsi guru dalam kajian perbandingan efisiensi terkait RPP pada kurikulum 13 dan modul ajar pada kurikulum merdeka. *Diklabio: Jurnal Pendidikan dan Pembelajaran Biologi, 8*(2), 246-260.

Asfiana, A., Fitriyani, F., & Rokhimawan, M. A. (2025). Analisis tantangan dan kelebihan pembelajaran berbasis teknologi informasi dan komunikasi pada kurikulum merdeka di sekolah dasar. *Ideguru: Jurnal Karya Ilmiah Guru*, *10*(1), 187-193.

Cholilah, M., Tatuwo, A. G. P., Rosdiana, S. P., & Fatirul, A. N. (2023). Pengembangan kurikulum merdeka dalam satuan pendidikan serta implementasi kurikulum merdeka pada pembelajaran abad 21. *Sanskara Pendidikan dan Pengajaran, 1*(2), 56-67.

Dawami, Murhayati, S., & Zaitun. (2025). Integrasi nilai Islam dalam model kurikulum berbasis TIK. *Iqra: Jurnal Ilmu Kependidikan dan Keislaman*, *20*(1), 58-66.

Djumanto, D. (2022). Integrasi media pembelajaran pada kurikulum merdeka belajar di lingkungan siswa SMK. *Edugama: Jurnal Kependidikan dan Sosial Keagamaan*, *8*(1), 1-20.

Fauzi, F. M., Kusdiantie, M., & Azzam, M. S. A. (2024). Learning media transformation: Before, during, and after the COVID-19 pandemic. *Hipkin Journal of Educational Research*, *1*(2), 227-238.

Fauziah, L. N. T. W. S. (2020). Analisis pemanfaatan media pembelajaran berbasis TIK di Sekolah Dasar Negeri Pengadilan 5 Kota Bogor. *JPI (Jurnal Pendidikan Indonesia): Jurnal Ilmiah Pendidikan*, *7*(4), 1-5.

Heriyati, T. S. (2023). Adaptasi kurikulum merdeka dengan model pembelajaran berbasis problem solving pada pendidikan agama Kristen. *Inspirasi: Jurnal Ilmu-ilmu sosial*, *19*(2), 713-720.

Indriyani, N., Darmansyah, & Desyandri. (2022). Desain model dan media pembelajaran berbasis ICT (Information and Communication Technology) pada tingkat sekolah dasar. *Didaktik: Jurnal Ilmiah PGSD STKIP Subang*, *8*(2), 1741-1758.

Jauhari, M. N., Mambela, S., Shanty, A. D., Nurmasari, D., Usfinit, A. H., & Batlyol, A. (2022). Optimalisasi media dan teknologi asistif dalam kurikulum merdeka belajar di sekolah inklusi. *Kanigara*, *2*(2), 446-452.

Khaira, H. S., Al Hafizh, M. F., Darmansyah, P. S. A., Nugraha, H., & Komara, D. A. (2023). Analysis of needs and teachers' perception towards business teaching materials at SMA Labschool UPI. *Curricula: Journal of Curriculum Development*, *2*(2), 299-314.

Kholid, I., Al Basyari, M. M., Anam, K., & Lestari, L. (2024). Pelatihan penyusunan RPP dan modul ajar versi ringkas dalam kurikulum merdeka di SD/MI Se-Kecamatan Compreng Kabupaten Subang. *Budimas: Jurnal Pengabdian Masyarakat*, *6*(1), 1-8.

Komara, D. A., & Widjaya, S. N. (2024). Memahami perilaku informasi gen-z dan strategi melawan disinformasi: Sebuah tinjauan literatur penggunaan media sosial. *Jurnal Pustaka Ilmiah*, *10*(2), 155-174.

Kurniawan, F. F., Rahmah, A. H., Anbiya, B. F., & Zubair, M. (2024). Mengintegrasikan teori pembelajaran konstruktivis melalui teknologi digital dalam pendidikan Islam. *Al-Qalam: Jurnal Kajian Islam dan Pendidikan*, *16*(1), 82-89.

https://doi.org/10.64014/hipkin-jer.v2i2.165

Lasut, E. M. M., Supit, D., & Lotulung, M. S. (2023). Pemanfaatan TIK dalam pembelajaran di sekolah dasar. *Jurnal Educatio FKIP UNMA*, *9*(3), 1401-1408.

Martatiyana, D. R., Derlis, A., Aviarizki, H. W., Jurdil, R. R., Andayani, T., & Hidayat, O. S. (2023). Analisis komparasi implementasi kurikulum merdeka dan kurikulum 2013. *Muallimuna: Jurnal Madrasah Ibtidaiyah*, *9*(1), 96-109.

Miftah, M. (2022). Strategi peningkatan kualitas pembelajaran melalui pemanfaatan media pembelajaran berbasis TIK. *Diajar: Jurnal Pendidikan dan Pembelajaran*, *1*(3), 237-243.

Mujiyanto, M. (2024). Kemampuan guru sekolah dasar dalam implementasi kurikulum merdeka. *Al Qalam: Jurnal Ilmiah Keagamaan dan Kemasyarakatan*, *18*(2), 927-936.

Mukhlis, H., Haenilah, E. Y., Maulina, D., & Nursafitri, L. (2024). Connectivism and digital age education: Insights, challenges, and future directions. *Kasetsart Journal of Social Sciences*, *45*(3), 803-814.

Munawaroh, L., Rokmanah, S., & Syachruroji, A. (2023). Penggunaan media pembelajaran berbasis Information and Communication Technology (ICT) untuk meningkatkan motivasi belajar peserta didik di sekolah dasar. *Jurnal Pendidikan Dasar*, *14*(1), 170-180.

Mustika, D., Maulana, M., & Syahid, A. A. (2024). Efektivitas model pembelajaran problem solving berbasis komputer dalam meningkatkan numerasi untuk persiapan AKM siswa sekolah dasar. *JagoMIPA: Jurnal Pendidikan Matematika dan IPA*, *4*(4), 857-867.

Nirmala, S. U., Agustina, A., Robiah, S., & Ningsi, A. (2024). Penerapan media pembelajaran berbasis teknologi informasi dan komunikasi pada kurikulum merdeka di sekolah dasar. *Ideguru: Jurnal Karya Ilmiah Guru*, *9*(1), 182-187.

Putra, L. D., Qur'ani, N., Indrayani, S., & Utami, M. F. (2023). Kompetensi guru dalam penggunaan teknologi informasi dan komunikasi pada pembelajaran di SD Negeri Pakel. *Jurnal Guru Kita*, *7*(4), 803-812.

Rahayu, O., & Yuliana, S. (2025). The Effectiveness of implementing the constructivist learning model in improving elementary school students' conceptual understanding. *Didaskalos Journal*, *1*(1), 17-24.

Rahayu, P., & Sulistyo, W. Y. (2024). Peningkatan kompetensi guru dalam pembelajaran berbasis TIK melalui In House Training (IHT) di SDN 02 Moga. *Edukatif Jurnal Ilmu Pendidikan*, *6*(1), 146-162.

Ratniasih, N. L., Harsemadi, I. G., & Vishnu, I. G. A. A. U. (2024). Pengembangan bahan ajar berbasis teknologi informasi dan komputer pada guru sekolah dasar. *Jurnal Ilmiah Pengabdian dan Inovasi*, *3*(1), 41-40.

Ratno, P. P. (2022). Pembelajaran teknologi informasi dan komunikasi (TIK) menggunakan model problem based learning dan sains teknologi masyarakat. *Allimna: Jurnal Pendidikan Profesi Guru*, *1*(2), 1-9.

Saputri, A. G., & Trihantoyo, S. (2022). Penerapan model pembelajaran problem solving dalam perspektif merdeka belajar di masa pandemi COVID-19. *Inspirasi Manajemen Pendidikan*, *10*(2), 352-363.

Sari, Y., & Jupriyanto, J. (2023). Pengembangan media interaktif terintegrasi model problem solving untuk siswa kelas V sekolah dasar. *Jurnal Ilmiah Pendidikan Dasar*, *10*(2), 143-154.

Utami, V. A., & Muqowim, M. (2020). Pengintegrasian nilai-nilai keislaman dengan pembelajaran TIK (Teknologi Informasi dan Komunikasi) pada siswa sekolah dasar. *Jemari (Jurnal Edukasi Madrasah Ibtidaiyah)*, *2*(2), 76-83.

https://doi.org/10.64014/hipkin-jer.v2i2.165

Weng, X., Ng, O. L., Cui, Z., & Leung, S. (2023). Creativity development with problem-based digital making and block-based programming for science, technology, engineering, arts, and Mathematics learning in middle school contexts. *Journal of Educational Computing Research*, *61*(2), 304-328.

Zahra, N., & Masyithoh, S. (2024). Strategi pembelajaran berbasis proyek pada anak sekolah dasar. *Elscho: Jurnal Pendidikan Guru Sekolah Dasar, 2*(2), 24-30.

https://doi.org/10.64014/hipkin-jer.v2i2.165