

THE UTILIZATION OF TECHNOLOGY IN HISTORY LEARNING AT HIGH SCHOOLS IN KARANGANYAR REGENCY UNDER THE MERDEKA CURRICULUM

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ABSTRACT

The Merdeka Curriculum is designed to ensure the quality of education, namely to develop superior and competitive human resources capable of facing the global challenges of the 21st century based on modern technology. Teachers and students are required to utilize technology to explore knowledge and experiences that are student-centered. However, this demand is not necessarily achieved evenly, considering that each educational unit has different resources and constraints. The purpose of this study was to determine history teachers' understanding of the Merdeka Curriculum, the importance of technology in history learning, and the extent to which teachers and students at High School in Karanganyar have utilized technology in their daily history learning. This study used a qualitative descriptive-analytical approach utilizing data sources such as informants, documents, and relevant literature. The results showed that high school history teachers in Karanganyar Regency have varying levels of understanding of the Merdeka Curriculum; the position of technology in history learning in the modern era is very important, especially in creating active, creative, innovative, and enjoyable learning; most history teachers at Karanganyar High School have utilized various new technologies in their daily learning, both in planning, implementing, and evaluating learning. This article emphasizes that the philosophical ideals of implementing the Merdeka Curriculum have not yet been fully realized at the grassroots level. Structured and ongoing outreach, training, and mentoring are necessary. Optimal results will be achieved through diligent, synergistic, and proactive efforts by various stakeholders, including the government, outreach providers, and teachers as the frontline implementing units.

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INTRODUCTION

Historically, the Merdeka Curriculum is an initiative of the Indonesian government through the Kementerian Pendidikan dan Kebudayaan (the Ministry of Education and Culture) with its academic studies and prototypes first developed and introduced in the 2020–2021 academic year. This curriculum was then gradually implemented and

evaluated from the 2021–2022 school year through the 2023–2024 school year under the Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi (The Ministry of Education, Culture, Research and Technology), a ministry formed by the merger of the Ministry of Education and Culture and the Ministry of Research and Technology in 2021 (Peraturan Presiden Nomor 62 Tahun 2021). Presidential Regulation No. 62 of 2021). In the 2021/2022 school year, a total of approximately 3,000 schools—comprising pilot schools and flagship vocational high schools—had already implemented the Merdeka Curriculum, ranging from the earliest levels of education through to the senior high school level (Kompas, 2024).

At the high school level, this curriculum is being implemented gradually, starting with 10th grade. As a result, many schools in Indonesia are currently implementing two curricula simultaneously. There are three options for each educational institution regarding the implementation and enforcement of the Merdeka Curriculum for the 2022/2023 academic year, namely: (1) Implementing part of the Merdeka Curriculum without completely phasing out the old curriculum; (2) Implementing the Merdeka Curriculum using pre-prepared teaching materials; (3) Implementing the Merdeka Curriculum through independent development using various teaching tools (Almarisi, 2023).

During this approximately four-year period of gradual introduction and piloting, around 300,000 educational institutions voluntarily (or more accurately, “encouraged”) implemented the Merdeka Curriculum (Wahyuni et al., 2024). It was during this four-year period of experimentation and refinement that various challenges, grievances, shortcomings, and also strengths (new experiences) regarding this curriculum were felt, particularly by teachers and school leaders in the respective educational institutions that had implemented it (Astri et al., 2024; Mutia & Admawati, 2024; Zulaiha et al., 2023). In the 2024/2025 academic year, the Merdeka Curriculum was established as the national curriculum for early childhood education (PAUD), elementary education, and secondary education, except for certain schools in 3T regions, which were granted a grace period of up to three years, ending in the 2027/2028 academic year (Kompas, 2024).

This curriculum is designed to provide an alternative (a more effective option) or, as mentioned in other sources, aims to gradually replace (more accurately, improve) the previous curriculum, namely the Curriculum of 2013 (Nugraha, 2022). The Merdeka Curriculum was designed by the the Ministry of Education and Culture to address Indonesia’s educational shortcomings in literacy and numeracy. One of the primary sources of data regarding the weakness in students’ basic ability to understand simple reading passages or fundamental mathematical concepts in Indonesia comes from the results of the PISA (Programme for International Student Assessment) surveys in recent years, which consistently rank Indonesia near the bottom among dozens of countries worldwide (Jazilah et al., 2023; Wahyuni et al., 2024).

On the other hand, the emergence of the Merdeka Curriculum is closely tied to the phenomenon of Learning Loss—the reduction, regression, or even loss of students’ specific or general knowledge and skills in academic fields caused by educational gaps or discontinuities (Widyasari et al., 2022). Learning Loss has intensified due to disruptions in the indirect learning system (distance learning) during the COVID-19 pandemic. Many students have, for some time, experienced a significant decline in their motivation to learn, as well as in the time spent on and the quality of meaningful learning. Many school assignments were actually completed by parents. Learning Loss has further worsened educational outcomes, particularly in remote or underdeveloped (backward) areas that lack adequate technological facilities and educational infrastructure (Manik & Sinaga, 2022).

This curriculum began to be introduced (piloted) to the public in phases shortly after the emergence of the COVID-19 pandemic, which began to spread in late 2019 and started to take a serious toll in Indonesia in early 2020. Every aspect of life—including the world of education—was suddenly caught off guard and changed so rapidly. The COVID-19 pandemic necessitated restrictions on social activities, or what is more commonly known as “social distancing,” in nearly all aspects of life (Ministry of Health Regulation No. 9 of 2020). In the education sector, the term “Pembelajaran Jarak Jauh (PJJ)” or Distance Learning emerged, which relies on online learning. All learning activities were suddenly required to continue exclusively online. All elements of the education system, from the central to the local levels—particularly teachers, students, and even parents—experienced significant shock and disarray due

to the sudden demands and significant changes resulting from the COVID-19 pandemic (Nasirah & Makniah, 2022; Purwasih & Sahnun, 2023; Qudsi et al., 2024).

To continue to meet these demands, all stakeholders in the education sector must work hard to adapt from the “offline culture”—which has already become deeply ingrained—to a new culture, namely the “online culture.” One group that has felt the impact most acutely is teachers and students, who are at the forefront of education—including high school teachers and students in Karanganyar Regency, Central Java. One consequence of this shift in learning culture is the growing demand on teachers and students to utilize technology more extensively to support history education (Interview Results with Yuliana Kuncoro, 2023). The situation forced teachers and students to learn and practice using various new technologies to support online learning (Tanoto Foundation, 2020). Although learning has now returned to normal with in-person classes, assignments, the delivery of material, and the methods and media used have become increasingly varied. This seems to stem from the demands of the situation and the learning habits formed during distance learning. Teachers’ and students’ mastery of and knowledge regarding new technologies have developed as a result of the situation (the COVID-19 pandemic). This mastery and knowledge of new technologies have not completely disappeared, as teachers and students continue to utilize them in certain contexts even though conditions have returned to normal.

There are numerous studies on the implementation of the Merdeka Curriculum in school learning. The first study, conducted by Syahrir et al. (2024) examined the significant potential of the education curriculum in preparing Indonesia's golden generation aligned with the values of Pancasila. They also examined the effectiveness of this curriculum in developing character, skills, resilience, and creative freedom for educators and students in classroom learning. Slightly different, Abidin (2025) is more interested in highlighting the factors that influence the success of the Merdeka Curriculum in the context of Society 5.0, as well as identifying obstacles and opportunities. Subsequent research was conducted by Wardani & Sahayu (2024) who examined the concept of the Independent Curriculum from a progressivist perspective. This study demonstrated a strong push for active, student-centered participation. Teachers act as facilitators, encouraging students to actively observe, ask questions, implement, associate, and present.

Subsequent research, conducted by Munira & Suryana (2023) examined the implementation of the Merdeka Curriculum in history learning, specifically to determine the curriculum's success in providing space for innovation and independence for students and teachers in school learning. In line with this, Santosa et al. (2023) also conducted research on the extent to which history teachers were able to implement the Merdeka Curriculum. They also examined the inhibiting factors and challenges faced by history teachers in implementing this curriculum. Research on the Merdeka Curriculum was also the focus of Musyaffa & Atno (2025) who analyzed history learning models based on higher-order thinking skills (HOTS) within the Merdeka Curriculum. The models studied included Inquiry-Based Learning (IBL), Problem-Based Learning (PBL), and Project-Based Learning (PjBL).

Research on the implementation of the Merdeka Curriculum is numerous, but tends to focus on general aspects such as independence, freedom, activeness, creativity, character building, and strengthening 21st-century skills. In-depth research that focuses on highlighting the extent to which teachers and students explore and utilize new technologies is still limited. There has not been much research that has attempted to examine what new technologies teachers and students have explored to support history learning, why they chose these types of technology and media, what advantages these technologies have, and what obstacles they have faced in implementing these various technologies.

Based on the background described above, the main objectives of this study are to determine: (1) the level of teachers’ understanding of the Merdeka Curriculum and its implementation in schools; (2) the role or significance of technology in learning according to the Merdeka Curriculum framework; (3) the extent to which teachers and students at Karanganyar High School have used and utilized technology in their daily history lessons; (4) the obstacles faced and strategies implemented by teachers in utilizing technology in history learning. This study is expected to enrich existing research on history teachers’ level of understanding of the curriculum they use daily. Additionally, it aims to identify the capabilities and challenges faced by teachers and students in utilizing technology to support daily history learning.

METHOD

This study employs a descriptive-analytical qualitative approach, utilizing informants, documents, and literature as data sources. The data collection techniques used include interviews, Focus Group Discussions (FGD), online surveys via google forms, document analysis, and a literature review. Interviews were conducted with teachers and the chairperson of the High School History teachers' Working Group (Musyawarah Guru Mata Pelajaran/MGMP) in Karanganyar Regency. FGD and the distribution of questionnaires were conducted via sampling among ten history teachers from ten high schools in Karanganyar Regency, Central Java Province, Indonesia. Document analysis was conducted on a sample of ten Teaching Modules used by high school history teachers in Karanganyar Regency, as well as circular letters and government regulations relevant to the research. The literature review involved data collection through relevant academic sources such as books, journals, articles, and previous research findings (Yaniawati, 2020). This study employed source triangulation and data triangulation. Source triangulation emphasized that essential information needed to be collected from various sources, such as interviews, documents of teaching modules, questionnaire document distributed to teachers, and result dokumen of focus group discussions (FGD). Interviews were also conducted with several informants from different schools to obtain comparable data. Furthermore, data from oral sources also needed to be matched with data from written sources, such as teaching modules (lesson plans), government regulations, and relevant library sources.

Data analysis was conducted using interactive analysis, which included data reduction, data presentation, and drawing conclusions regarding the implementation and utilization of technology in history education based on the Merdeka Curriculum in Karanganyar Regency. Data analysis was conducted by organizing data into categories, breaking them down into units, synthesizing them, arranging them into patterns, selecting what is important and what will be studied, and drawing conclusions (Sugiyono, 2016). The data and analysis in this study emphasize the perspectives of high school history teachers in Karanganyar Regency, specifically regarding: (1) understanding and practice of the Merdeka Curriculum, (2) the role of technology in the Merdeka Curriculum, (3) the utilization of technology in high school history education, and (4) challenges and strategies in utilizing technology in high school history education. The narrative constructed in qualitative research aims to depict natural conditions or phenomena in the field as accurately as possible (Adlini et al., 2022). In this context, the researcher aims to present the results of an analysis regarding the practices of implementing the use and application of technology in history learning based on the Merdeka Curriculum, particularly from the perspective of history teachers as "learning architects" in high schools in Karanganyar Regency.

RESULT AND DISCUSSIONS

High School History Teachers' Understanding of the Merdeka Curriculum

Based on the results of the Focus Group Discussion (FGD) held on July 27, 2023, at Kebakkramat High School, it was found that, according to high school history teachers in Karanganyar Regency, the Merdeka Curriculum is: *First*, a curriculum designed to provide a sense of "freedom to learn." "Merdeka" here is interpreted as freedom or flexibility in learning, for both students and teachers. This means that the Merdeka Curriculum is a curriculum that provides "freedom to learn" for students and "freedom to teach" for teachers. This understanding among history teachers aligns with Khoirurrijal et al. (2022) view that, ideally, the Merdeka Curriculum is a curriculum featuring diverse intracurricular learning, optimized content so that students have sufficient time to delve into concepts and strengthen competencies, and teachers have the flexibility to choose various models, methods, and teaching tools so that learning can be tailored to students' learning needs and interests. "Merdeka Belajar" as embodied in the Merdeka Curriculum is an Indonesian educational philosophy that aligns with (or was intentionally drawn from) the ideas of the "father of Indonesian education," Ki Hadjar Dewantara, who stated that students should be allowed to grow according to their own "natural inclinations," while teachers should only strive to guide, direct, support, and nurture that nature (Yandri, 2022).

Second, the curriculum is designed to be student-centered. Students are free to choose learning methods that suit their individual learning styles. The goal is to make the classroom a fun “learning and recreation park.” *Third*, the curriculum prioritizes differentiated instruction, meaning it does not treat all students the same, as talents, interests, potential, motivation, and character vary among students within a single class. In line with the findings regarding student-centered learning and the emphasis on each student’s potential, interests, and talents, this aligns with Sumarmi’s view that the hallmark of the Merdeka Curriculum is student-centered learning—that is, focusing on the individual student’s personality, experiences, background, perspectives, talents, interests, capacities, and learning needs (Sumarmi, 2023).

Fourth, emphasize essential content—that is, the core foundational material that is truly important for students. Not all history material needs to be presented and discussed. In principle, students do not need to know everything. This differs from the previous curriculum (the Curriculum of 2013), which was known for its overwhelming volume of material that had to be “completely” covered with students. Ultimately, many students felt overwhelmed trying to absorb the material from their teachers. As a result, quite a bit of material was merely “skimmed over”—meaning much of it was not truly mastered or understood by the students. The “rush-through” approach to covering material is considered ineffective for fostering student comprehension.

Based on a survey of high school history teachers in Karanganyar Regency (July 27, 2023), there are 11 notable differences between the Merdeka Curriculum and the Curriculum of 2013 at the “conceptual” level, as shown in Table 1 below:

Table 1. Differences Between the Curriculum of 2013 and the Merdeka Curriculum According to History Teachers in Karanganyar Regency

No	Curriculum of 2013 (Kurtilas)	Merdeka Curriculum (Kurmer)
1	Focus on academic abilities	Focus on developing students’ talents, interests, character, and morals (natural disposition as per Ki Hadjar Dewantara)
2	Achievement of cognitive breadth (the material is vast)	Depth of content and process-based assessment
3	The terms "differentiated instruction" and "P5" are not yet familiar	Prioritization of differentiated learning and P5 (Projek Penguatan Profil Pelajar Pancasila) or Pancasila student profile strengthening project
4	There is Kriteria Ketuntasan Minimal (KKM) or a minimum competency standard	A new term has emerged: Kriteria Ketercapaian Tujuan Pembelajaran (KKTP) or learning objective achievement criteria
5	There is no requirement for practical fieldwork	There must be practical fieldwork
6	Project-based activities are less prominent	Project-based activities are very prominent
7	Student engagement is quite strong	Student engagement is increasingly strong
8	Identifying and nurturing students’ potential	Students must bring out their own potential
9	Teachers are committed to developing students' potential	Teachers are more flexible in developing students' potential
10	History class hours have increased	History class hours have decreased
11	There are no terms for Phase E and Phase F yet	There are Phase E (class X) and Phase F (class XI and XII)

Source: Compiled by the researcher, July 28, 2023.

Based on the results of the FGD held on July 27, 2023, it was found that high school history teachers in Karanganyar Regency have varying levels of understanding regarding the Merdeka Curriculum. Understanding

regarding the creation of Teaching Modules also varies among them. This situation is caused by the lack of serious and comprehensive outreach to the teachers. Teachers tend to have to “take the initiative”—that is, they must figure out the ins and outs of this new curriculum on their own. This contrasts with the outreach for the 2013 Curriculum, which, based on their experience, was more extensive and sustained. Teachers from various regions were frequently gathered at specific locations, such as schools and hotels, to be coordinated and briefed on the 2013 Curriculum. This level of organization has not yet been observed in the context of outreach for the Merdeka Curriculum. According to statements from history teachers in Karanganyar Regency, there has actually been some outreach regarding the Merdeka Curriculum, but it has been limited to specific teachers, primarily the “Guru Penggerak” (Lead Teachers).

Conceptually, the “Guru Penggerak” program was indeed designed by the government to serve as the vanguard in ensuring the success of “Merdeka Belajar” under the Merdeka Curriculum, acting as role models and mobilizing fellow teachers within their local educational environment or ecosystem to continuously innovate, implement student-centered learning, and strive to transform all learning activities to achieve or maintain the standards of the Pancasila Student Profile (Sibagariang et al., 2021). Unfortunately, the number of “Guru Penggerak” in the field remains limited. Consequently, non-Guru Penggerak teachers receive little to no training, leaving them without a thorough understanding of the Merdeka Curriculum.

In addition to external factors, the internal mindset of the teachers themselves also plays a role, as some teachers lack the strong motivation to learn the ins and outs of the Merdeka Curriculum. The government has provided various videos explaining the Merdeka Curriculum, but not all teachers are willing—or have yet to be willing—to watch, pay close attention to, and fully understand these videos. The Indonesian government also provides six forms of support for the implementation of the Merdeka Curriculum in educational institutions (schools), including: (1) the “Merdeka Mengajar Platform,” which offers a variety of training topics on the Merdeka Curriculum, as well as various teaching resources (guides, learning outcomes, and learning objective pathways) and learning materials that can be accessed independently anytime and anywhere; (2) “Webinar Series” organized by the Ministry of Education, Culture, Research, and Technology and Regional Technical Implementation Units to share best practices and the latest information with teachers, school principals, and education stakeholders; (3) “Learning Communities,” which facilitate processes of reflection, learning, and collaborative sharing in studying and implementing the Merdeka Curriculum; (4) “Experts Sharing Best Practices,” recommended by the Center and accessible through the Merdeka Mengajar Platform; (5) “Development Partners,” such as organizations, institutions, the business sector, or industry, which independently and voluntarily support community learning processes at the regional or school level; (5) “Help Desk,” consisting of educators and school principals who can ask questions and confirm their understanding through the help desk (Merdeka Mengajar, 2023).

Furthermore, the Indonesian government, through the National Agency for Education Standards, Curriculum, and Assessment, has also issued guidelines regarding the Implementation Stages of the Merdeka Curriculum in Educational Institutions, covering 13 key aspects, namely: (1) Designing the operational curriculum for educational institutions; (2) Designing learning objective pathways; (3) Planning instruction and assessment; (4) Using and developing instructional materials; (5) Planning projects to strengthen the Pancasila student profile; (6) Implementation of projects to strengthen the Pancasila student profile; (7) Application of student-centered learning; (8) Integration of assessment into learning; (9) Learning tailored to students’ developmental stages (elementary and secondary education); (10) Collaboration among teachers for curriculum and instructional purposes; (11) Collaboration with parents/families in learning; (12) Collaboration with the community/local organizations/industry; and (13) Reflection, evaluation, and improvement of curriculum implementation quality. These thirteen aspects encompass the Initial Stage, Developing Stage, Ready Stage, and Proficient Stage, which cover the levels of Senior High School, Vocational High School, and Special Education (Badan Standar Kurikulum dan Asesmen Pendidikan, 2022).

In its implementation in schools, the rollout of the Merdeka Curriculum has not gone as smoothly as expected. There are several discrepancies between the theoretical ideal design of the and actual practice in the field. Based on the results of a Focus Group Discussion (FGD) with high school history teachers in Karanganyar Regency (July 27,

2023), it was found that the Merdeka Curriculum has not reduced teachers' "administrative burden" in creating Teaching Modules. The complaints teachers had regarding the preparation of Lesson Implementation Plans under the 2013 Curriculum have, in fact, not changed; they have merely been renamed "Teaching Modules." In fact, some teachers noted that creating these Teaching Modules is, in reality, even more burdensome and increasingly draining of both energy and mental effort. While teachers are granted flexibility in designing Learning Outcomes, Learning Objectives, and the Sequence of Learning Objectives, as well as the models, methods, and materials within them, the administrative requirements—specifically the number of attachments that must be included—are more numerous and complex. It is not surprising that in the field, there are quite a few teacher teaching modules that are made by simply copying and pasting and tend to be careless. From a certain perspective, some teachers even dare to state that the Merdeka Curriculum, in reality, does not liberate teachers but rather burdens them due to the heavy, complex workload that has not yet been fully understood by teachers (Interview Results with Budi Darmasto, 2023).

The difficulties experienced by high school history teachers in Karanganyar Regency described above are exactly in line with the findings of Zulaiha et al. (2023) and Sumarmi (2023). Their findings indicate that many teachers struggle with analyzing Learning Outcomes, formulating Learning Objectives, designing Learning Objective Sequences, creating Instructional Modules, lack of proficiency in using technology (especially older systems), and insufficient time allocation for project-based learning (*PBL*). It turns out that various challenges in implementing this new curriculum are also experienced at the university level. Based on the study by Sabriadi & Wakia (2022), it is known that the implementation of the Merdeka Belajar Kampus Merdeka Curriculum has created challenges for faculty and students, particularly regarding mechanisms for collaboration with external internship partners, recognition mechanisms, and mechanisms for taking courses in other study programs and campuses. Regulations regarding the selection of courses in other study programs and campuses are stipulated in Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 concerning Higher Education Standards.

The Role of Technology in the Merdeka Curriculum from the Perspective of High School History Teachers in Karanganyar Regency

Technology plays a vital role in human life, whether it be traditional, semi-modern, or modern technology. In today's highly advanced global era, technology is deeply intertwined with human life. Thanks to technological advancements, information from all corners of the world can be accessed quickly. Technology has brought about significant changes in the various aspects of human life, encompassing all civilizations and cultures (Wahyudi & Sukmasari, 2018). One aspect of life that is inseparable from the role of technology is the world of education, particularly in the learning process. The use of technology in general, and specifically in the teaching of history in high schools in the 21st century, is of great importance.

Etymologically, the term "technology" itself derives from the Greek words *techne*, meaning "skill," and *logia*, meaning "knowledge" (Yaumi, 2018). As for, terminologically speaking, there are many definitions of technology according to experts. The first view states that technology is an object used to facilitate human activities. The second view states that technology is the development, application, and evaluation of systems, techniques, and tools to improve and enhance human learning processes. A further view states that technology is the development and application of various sciences, equipment, or systems to solve problems faced by humans in daily life (Arifin & Setiyawan, 2012). Simply put, it can be concluded that "technology" is the entirety of tools, systems, and knowledge aimed at increasing value, facilitating the resolution of problems, and supporting various human needs.

Essentially, the significance or role of technology in history education is not much different from the opinions of the experts mentioned above. Based on feedback from high school history teachers in Karanganyar Regency, it is evident that with current technological advancements, teachers and students find it much easier to access and explore the various historical materials they need. A wealth of historical materials can be obtained, explored, and shared online. For both teachers and students, the presence of technology ultimately helps lighten the workload in preparation and during the learning process. Its impact significantly supports the learning process, thereby broadening students'

horizons of historical knowledge. Additionally, the use of technology also offers opportunities for history learning that is more active, creative, innovative, and enjoyable. The availability of advanced technology can optimize student engagement, making learning more meaningful and capable of strengthening character in line with the Proyek Penguatan Profil Pelajar Pancasila (P5) or Pancasila Student Profile Strengthening Project. Such learning will gradually dispel the notion that studying history is boring because it is filled only with conventional lecture methods and rote memorization (Questionnaire Document, 2023)

The implementation of the Merdeka Curriculum as the new curriculum in Indonesia certainly presents real challenges for teachers who have long been accustomed to using the 2013 Curriculum, both at the elementary and secondary school levels. This also poses a challenge for history teachers in Karanganyar Regency. However, at the same time, this new curriculum also offers a “positive challenge” to instill historical thinking skills in students (Widiadi et al., 2022). The Merdeka Curriculum is designed to ensure the quality of education in Indonesia and to develop excellent and competitive human resources capable of facing the global challenges of the 21st century, which, in almost all aspects of life, are related to the use of the latest technology and information (ACER for Education, 2023)

The Utilization of Technology in High School History Education in Karanganyar Regency

Before the COVID-19 pandemic struck in early 2020 (coincidentally, the Curriculum of 2013 was still in effect at that time), the majority of high school history teachers in Karanganyar Regency still predominantly presented materials via *PowerPoint* (PPT) in their daily lessons. This was followed by the next most common method: watching videos and, occasionally, documentary films, followed by presentations and group discussions. In general, the technology used in history instruction in Karanganyar Regency is still considered outdated and fairly conventional (Result Document of the FGD, 2023)

This situation changed drastically when the COVID-19 pandemic struck and reached its peak throughout 2020 and 2021. Various aspects of life across the globe changed significantly, including the education sector in Indonesia, particularly in Karanganyar Regency. The COVID-19 situation necessitated “social distancing,” meaning teachers had to instruct students either from school or *via Work From Office* (WFO), or even from home via *Work From Home* (WFH) through online platforms. This policy was based on Circular Letter No. 4 of 2020 regarding Educational Policies During the COVID-19 Emergency, which mandated that learning must continue to be conducted online or remotely, giving rise to the term *Pembelajaran Jarak Jauh* (PJJ) or Distance Learning. Everyone was required to adapt as quickly as possible to the sudden changes, particularly regarding the use of technology in daily learning at schools and universities.

As a result, history teachers and students have become acquainted with, learned about, and grown more familiar with new tools, applications, and platforms that can support history learning, such as *Google, YouTube, Google Forms, Google Drive, Kahoot, Quizizz, Canva, Mentimeter, ProProfsGame, Zoom, Google Meet, Google Classroom, Office 365, WhatsApp, and WhatsApp groups*. Learning is entirely *online*, relying on laptops, computers, or *smartphones*. At the high school level in Karanganyar, learning during the COVID-19 pandemic has temporarily ceased to use conventional (outdated) technologies such as *PowerPoint*, projectors, markers, and whiteboards (Document of History Teaching Module, 2023; Questionnaire Document, 2023; Result Document of the FGD, 2023).

The use of technology in high school history education in Karanganyar Regency is implemented across various aspects, including the following stages: (1) preparation, (2) implementation, and (3) evaluation. *First*, the preparation or lesson planning stage involves searching for learning materials or resources, saving learning materials, and creating learning media. Teachers search for learning materials and resources online, such as online newspapers, YouTube, websites, social media, and others. After downloading them, teachers save them on laptops, cell phones, flash drives, email, Google Drive, or other storage locations. Some teachers also explore the use of the latest advanced applications to create learning media such as videos, films, recordings, *PowerPoint* presentations, and flipbooks (Document of History Teaching Module, 2023; Questionnaire Document, 2023; Result Document of the FGD, 2023).

Second, the use of technology in the learning process includes the delivery of instruction, the provision of learning resources, and the use of media, tools, and learning resources themselves. In conducting learning, history

teachers in Karanganyar Regency choose to use *Zoom*, *Google Meet*, *Google Classroom*, or a *Learning Management System (LMS)* as provided by each school. In delivering learning resources, teachers share the following with students: (1) PowerPoint presentations, (2) images, (3) recordings, (4) videos, (5) articles/writings. Teachers also share materials in the form of links, such as links to: (1) YouTube videos, (2) journal articles, (3) e-book articles, (4) blog posts, (5) online newspaper articles, (6) Virtual Museum Tours, and (6) social media links: *Facebook*, *Instagram*, and *Twitter* (Document of History Teaching Module, 2023; Questionnaire Document, 2023; Result Document of the FGD, 2023).

Third, the evaluation phase, which includes assigning assignments, collecting them, and communicating assessment results. High school history teachers in Karanganyar Regency assign assignments, explain how to submit them, and communicate assessment results via *WhatsApp*, *LMS*, *Google Classroom*, and, in some cases, other supporting applications. Detailed instructions for assignments are not provided verbally in class but rather through specific applications or technologies. Similarly, regarding assignment submission, many teachers require submissions in digital file formats (Word, PDF, JPG, MP3, and MP4). To ensure transparency in assessment results, history teachers in Karanganyar generally communicate students' assignment grades. This is where history teachers in Karanganyar have utilized technology to inform students of their assignment grades (Document of History Teaching Module, 2023; Questionnaire Document, 2023; Result Document of the FGD, 2023).

The findings above indicate that the COVID-19 pandemic, which coincided with the phased implementation of the Merdeka Curriculum, has had a significant impact, particularly on the introduction and use of new technologies in learning. Various new technologies that were previously unused and even unknown eventually became familiar to teachers and students. Although many teachers initially faced difficulties, the situation forced them to learn and become accustomed to using various new technologies in their daily history lessons. Technology, in the context of the pandemic and Merdeka Belajar, plays a crucial role in ensuring that learning continues, although it has both positive and negative aspects, much like a coin (Putri & Syafitri, 2023; RAHMANITA, 2020; Suryaningsih, 2022). During the COVID-19 pandemic, technology played a vital role in the continuity and effectiveness of distance learning (Tanoto Foundation, 2020). As learning shifted from online to in-person classroom settings, the use of new technologies has once again decreased. High school history teachers in Karanganyar Regency generally adopt a "middle way" or "collaborative approach," which involves combining old and new technologies to support daily teaching. In certain aspects, teachers continue to utilize new technologies they became familiar with during the COVID-19 pandemic, but in other aspects, they have returned to using traditional models and methods, adapted with the support of older technologies (Result Document of the FGD, 2023).

The tendency of educators to be comfortable and unwilling to make improvements is a fact found in many places. Current development should be able to stimulate educators' enthusiasm for learning, especially by improving digital literacy and skills in integrating digital technology. Furthermore, teachers should be aware of the need to learn and improve their TPACK (Technological Pedagogical Content Knowledge), both during the pandemic and post-pandemic (new normal conditions). TPACK is an internationally recognized framework as a professional teaching standard. Educators (including history educators) are required to be able to integrate three skills simultaneously in their classrooms: content mastery, pedagogical skills, and the ability to use media and technology. In the 21st century and the Industrial Revolution 4.0 or 5.0, the application of TPACK remains highly relevant for the advancement of educators, students, and educational institutions (Fontyn et al., 2025; Weidlich & Kalz, 2026).

Challenges and Strategies for Utilizing Technology in History Education at Senior High Schools in Karanganyar Regency

The use of technology in everyday history instruction is not without its challenges. From the teachers' perspective, many high school history teachers in Karanganyar Regency face difficulties. They are generally older teachers who lack proficiency in operating the latest technology. Younger history teachers, on the other hand, generally do not encounter significant challenges. Externally, the challenges faced in using modern technology include the fact that not all schools have adequate facilities and infrastructure, poor signal reception in certain areas, some students running out of internet data (financial issues), not all students' smartphones supporting the system, and the misuse of

smartphones during lessons, where they are instead used for playing games (Interview Results with Suryani, 2023; Result Document of the FGD, 2023).

Some of the methods or strategies employed by high school history teachers in Karanganyar Regency to learn and adapt to utilizing technological advancements in history instruction include self-directed learning, watching YouTube tutorials, learning together with peers, asking classmates with better technical knowledge, learning from younger colleagues, learning with their children at home, and even learning from the students themselves. In terms of IT, students today are already quite proficient in operating cutting-edge technology. Another key factor is to continue practicing and getting accustomed to using new technologies in daily history instruction until it becomes a ‘habit’ (Questionnaire Document, 2023; Result Document of the FGD, 2023).

CONCLUSION

The level of understanding among history teachers regarding the Merdeka Curriculum in senior high schools (SMA) in Karanganyar Regency is not uniform; rather, it varies. Externally, this is due to a lack of intensive and comprehensive outreach regarding the intricacies of the Merdeka Curriculum and its central concept, “Merdeka Belajar.” Internally, this is due to the teachers’ own mindset, as some teachers lack a strong willingness to learn about the Merdeka Curriculum. The role of technology in history learning within the framework of the Merdeka Curriculum is crucial. Technology facilitates teachers and students in accessing, exploring, and delving into various historical materials needed. It also offers opportunities for more active, creative, innovative, and enjoyable history learning. The use of various new technologies can optimize student engagement, making history learning more meaningful and capable of strengthening character in line with the P5. In practice, history teachers and high school students in Karanganyar Regency have utilized various new (modern) technologies in their daily learning, especially during the COVID-19 pandemic. Various new applications and platforms that can support history learning have been tried, such as *Google*, *YouTube*, *Google Forms*, *Google Drive*, *Kahoot*, *Quizizz*, *Canva*, *Mentimeter*, *ProProfsGame*, *Zoom*, *Google Meet*, *Google Classroom*, *Office 365*, *WhatsApp*, and *WhatsApp groups*. These various new and advanced technologies are used in the planning, implementation, and evaluation stages of learning. This article emphasizes that the philosophical ideals of Indonesian education regarding the implementation of the Merdeka Curriculum have not been fully realized at the grassroots level. Indonesian teachers currently comprise a cross-generational population with varying levels of technological literacy. With many history teachers still lacking technological literacy, the goal of implementing the Merdeka Curriculum, which prioritizes technology-based learning, will face serious obstacles. The central government’s aspirations will often be interrupted and evaporate midway. Therefore, more serious, structured, and sustainable socialization, training, and mentoring are necessary. Transmitting new methods and understandings is certainly not easy, but it is not utopian if it is carried out seriously, synergistically, collaboratively, and proactively by the government, those providing socialization, and teachers as the implementing units on the front lines. The most difficult challenge is when the curriculum frequently changes with each change of government. The unfinished socialization process is then hampered by new policies. Therefore, exploratory studies are needed to find an effective formula for providing recommendations to policymakers at the central level to avoid changing education policies too frequently. Ultimately, teachers and students are the primary victims when the central government frequently manipulates education policies.

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