



Critical Thinking, Collaboration, and Technology Use in Islamic Religious Education: A Qualitative Case Study of Teachers in Indonesia

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ABSTRACT

This study examines how critical thinking, collaboration, and technology utilization are manifested in technology-based Islamic Religious Education among teachers participating in the Subject Teacher Forum (MGMP) in Blitar, Indonesia. This qualitative case study design explored teachers' experiences, practices, and perceptions within their professional learning context. The study involved 96 Islamic Religious Education teachers affiliated with the MGMP, from whom 22 teachers were selected as intensive participants based on their active participation in more than 75% of forum meetings and their involvement in the forum's professional learning activities on technology-supported instruction. Data were collected over one semester through semi-structured interviews and focus group discussions. The data were analyzed using the interactive qualitative analysis process of data condensation, data display, and conclusion drawing and verification, supported by open, axial, and selective coding. The findings indicate that critical thinking was manifested in teachers' efforts to identify instructional problems, evaluate the relevance and credibility of information from digital sources, compare alternative teaching strategies, and make pedagogical decisions. Collaboration was reflected in knowledge sharing, joint lesson planning, collective problem solving, and mutual support among teachers. Technology functioned as an enabling medium through which teachers accessed learning resources, communicated with colleagues, shared instructional materials, and implemented digital learning activities. The findings further indicate that critical thinking and collaboration were interconnected rather than hierarchical competencies: critical thinking supported the evaluation and selection of information and instructional alternatives, whereas collaboration provided opportunities for teachers to discuss, validate, and refine their decisions collectively. The study concludes that technology-based Islamic Religious Education requires the simultaneous development of teachers' critical thinking, collaborative practices, and digital competence. The findings have implications for MGMP-based professional development, particularly in designing collaborative activities that strengthen teachers' capacity to critically evaluate digital religious learning resources.

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■ INTRODUCTION

Islamic religious learning at school is important for students to develop attitudinal aspects, in addition to knowledge and psychomotor aspects. Attitude is a significant part of daily life in society. Religious education

emphasizes attitudinal aspects and fosters students' character (Metcalf & Moulin-Stožek, 2021; Sahin, 2018). Islamic Religious Education teachers are therefore expected to help students understand the concepts learned and internalize the values embedded in them (Chanifah et al.,

2021; Suyatno et al., 2019). One means that can be used in the learning process and is well-suited to the characteristics of 21st-century participants is the use of technology. 21st-century students tend to involve technology in various events and activities (Lai & Hong, 2015). Islamic religious education teachers should be able to adapt to student characteristics by integrating technology into the learning process.

Islamic religious learning in schools so far tends to emphasize students' cognitive aspects through memorization; lecturers remain the center of learning, and technology use lacks variety. The media used in the learning process still prioritize PowerPoint and conventional media. An unvaried or inappropriate learning process leads to low critical thinking and collaboration skills (Chusni et al., 2021).

Using technology in Islamic religious learning in schools is important for improving learning outcomes and strengthening attitudinal aspects in life and society. According to Terzi (2020), most students are already familiar with technology such as cellphones, notebooks, and laptops. Islamic religious education teachers should be able to use and implement technology in the learning process. Preliminary observations in the study context indicated that teachers differed in their ability to utilize technology in the learning process. Some teachers used technology primarily for presentations, whereas others used digital platforms for information seeking, collaboration, and learning evaluation. According to Haleem et al. (2022), most teachers still use technology devices only for presentations in their teaching practice. Teachers can use technology in the learning process for evaluation, quizzes, media, and finding relevant teaching materials.

Using technology in the learning process requires critical and logical thinking. Critical thinking skills are needed to shape knowledge construction and develop logical, systematic understanding (Horanska et al., 2022) and to produce a flow of thinking aligned with the concepts learned (Hofman-Bergholm, 2018). The utilization of technology in the learning process can have adverse effects if it is not supported by critical thinking (Asigigan & Samur, 2021). In addition, acquiring information requires the ability to collaborate to construct valid knowledge from different perspectives and aspects.

Critical thinking is a cognitive skill needed to identify, analyze, and evaluate arguments and claims. According to Bassham et al. (2013), critical thinking skills help students formulate and present convincing reasoning to support conclusions and make logical decisions about problem solutions. Logical and systematic

thinking is one aspect of critical thinking that must be mastered to construct knowledge. Critical thinking skills improve the quality of the learning process conducted by teachers. Numerous studies have shown that explicit critical thinking instruction and inquiry-based learning improve students' critical thinking across subjects (Abrami et al., 2015), including science learning (Arifin et al., 2025), language learning (Khatib & Alizadeh, 2012), professional and social learning (Sin et al., 2015), and environmental learning (Arisanty et al., 2020). This indicates that critical thinking skills are important in the learning process, especially in materials related to everyday life. One of the most important materials related to daily life is religious and social attitudes materials (Kimani, 2024). Therefore, Islamic religious education materials are no exception; critical thinking skills can improve learning outcomes.

Critical thinking skills are more likely to improve cognitive abilities. According to Palavan (2020), critical thinking can train someone to make decisions and draw conclusions. This ability is important for teachers in implementing the Islamic learning process. Decision-making and conclusion-making in the learning process are important stages in determining the truth of the concepts learned. The truth of the concepts mastered shows the teacher's understanding of the learning process. Critical thinking should be part of learning to support the achievement of learning objectives. According to Arisoy and Aybek (2021), critical thinking can improve understanding, so learning media that fit the characteristics of the material and the students are needed.

Critical thinking is an essential skill in daily life. Critical thinking skills can improve learning outcomes (Boran & Karakuş, 2022; Ristanto et al., 2022), support collaborative inquiry (Garrison, 2016), and improve logical thinking (Horanska et al., 2022). Research on critical thinking skills has been widely conducted, among others by Akbaş (2021), Gürlü (2022), and Zubaidah et al. (2020). The core of critical thinking skills includes identification, analysis, clarification, solution-seeking, evaluation, decision-making, and scientific argumentation structures (Giri & Paily, 2020). This implies that Islamic Religious Education teachers must master critical thinking to improve the quality of the learning process.

Collaboration skills help students master various learning materials. Numerous studies have shown that collaboration can improve learning skills (Bancong & Song, 2020; Saldo & Walag, 2020; Stokes & Evans, 2020), the quality of learning about the surrounding nature and daily life (Cernicova-Buca et al.,

2023; Yılmaz, 2021), and learning outcomes on social aspects (Fallone et al., 2021; Schwab et al., 2021). Furthermore, Rojas et al. (2022) found that collaboration skills can also improve students' attitudinal and emotional aspects in the learning process. Meanwhile, Arisandi & Faisal (2021) found that collaboration skills make it easier to develop awareness of and care for one's surroundings. Collaboration skills increase one's awareness to solve problems in everyday life. Thus, Islamic religious education is no exception; collaboration skills can support learning outcomes, especially in attitudes and actions.

Collaboration skills tend to improve one's attitude and actions. The attitude aspect of environmental learning is essential to improve. According to Gündoğdu et al. (2019) and Badeni & Saparahayuningsih (2021), attitude is one of the learning outcomes that shapes a whole human character. Student character building is an effort to maintain human quality in terms of morals, actions, and attitudes so that the quality of life is maintained. By improving attitudes and morals in Islamic learning, it is expected to foster care in social life. Collaboration skills help Islamic religious education teachers think critically and solve problems. Collaboration can be implemented in groups to solve problems and build knowledge through balanced roles (Zambrano et al., 2019). Collaboration skills can produce good learning outcomes with the help of peers (Heinimäki et al., 2020). Collaborating teachers show positive outcomes, such as socio-cognitive roles and shared problem solving (Dowell et al., 2020), as well as improved digital literacy and knowledge content (Moore et al., 2019). This suggests that collaboration skills are an important factor in improving learning outcomes.

Collaboration in the learning process contributes to learning outcomes. Collaboration can foster strong competence (Ghavifekr, 2020) and develop thinking skills (Zhou, 2021). Collaborative interactions involve sharing goals, reaching high stages of negotiation, interaction, and interdependence (Falcione et al., 2019). Stronger collaboration skills can foster caring attitudes through sharing knowledge (Jung et al., 2021), sharing problem solutions (Kwon et al., 2019), and a willingness to interact with the surrounding community (Ocal & Altınok, 2016).

Technology-based Islamic learning can comprehensively improve knowledge and understanding from various aspects and perspectives. Observations of Islamic learning show that most of it is done through memorizing lectures, discussions, and question-and-answer sessions. Islamic Religious Education teachers tend to use technology sparingly. The low

utilization of technology leads students to have an understanding based on the knowledge possessed by the teacher. Students lack comprehensive knowledge. Technology can help students gain knowledge from different perspectives (Zhang et al., 2023). Students need a critical attitude to analyze the knowledge they gain (Fauziah & Kuswanto, 2020). Critical thinking can shape a stronger, more complex understanding.

Although previous studies have established the importance of critical thinking and collaboration in technology-supported learning, researchers have generally examined the two competencies separately or in relation to student learning outcomes. Less attention has been paid to how Islamic Religious Education teachers enact these competencies together within a professional learning community, particularly when evaluating and using digital learning resources. In addition, previous discussions tend to emphasize the potential benefits of technology without sufficiently describing the concrete processes through which teachers evaluate information, discuss alternative instructional choices, and collectively develop technology-supported learning practices. This study therefore focuses on the interaction between critical thinking, collaboration, and technology utilization in the professional practice of Islamic Religious Education teachers participating in an MGMP in Blitar.

Accordingly, this study addresses the following research questions: (1) How do Islamic Religious Education teachers demonstrate critical thinking when selecting and using technology-supported learning resources? (2) How is collaboration manifested among Islamic Religious Education teachers in sharing knowledge, planning instruction, and solving technology-related learning problems? Furthermore, (3) how do critical thinking, collaboration, and technology utilization interact in shaping teachers' technology-based Islamic Religious Education practices?

Preliminary observations in the Islamic Religious Education Subject Teacher Forum (MGMP) in Blitar indicated that teachers' use of digital technology remained concentrated on relatively basic instructional functions, particularly presentations, searching for teaching materials, and administering digital quizzes. The preliminary observation also showed variation in teachers' ability to evaluate and select digital learning resources based on instructional objectives and students' characteristics. Rather than treating limited technology use merely as a technical competence issue, these observations suggest the importance of examining the cognitive and collaborative processes through

which teachers decide which digital resources to use, discuss their relevance with colleagues, and adapt them to Islamic Religious Education. This empirical context provided the basis for examining critical thinking and collaboration within the MGMP as a professional learning setting.

■ METHOD

Research Design

This study employed a qualitative case study design to examine how Islamic Religious Education teachers enact critical thinking and collaboration when using technology in their professional and instructional practices. The case was bounded by the Islamic Religious Education Subject Teacher Forum (MGMP) in Blitar, Indonesia, a professional learning community where teachers regularly interacted, exchanged instructional resources, discussed learning problems, and developed teaching practices. A case study design was considered appropriate because the study sought to understand these practices within their naturally occurring professional context rather than to measure causal effects or statistical relationships among variables. Data were collected over one semester through semi-structured interviews and focus group discussions (FGDs).

Participants

The study was conducted within an Islamic Religious Education Subject Teacher Forum (MGMP) in Blitar, Indonesia, comprising 96 teachers. The 96 teachers constituted the broader professional community observed in the study, while 22 teachers were selected as intensive participants for interviews and FGDs. Purposive sampling was used to select intensive participants based on their sustained involvement in MGMP activities. Active involvement was operationalized as attendance at more than 75% of the MGMP meetings conducted during the study period and direct participation in professional learning activities related to technology-supported Islamic Religious Education. In addition, participants were required to have at least 10 years of teaching experience. This criterion ensured participants had sufficient experience to describe instructional decision-making, technology use, and collaboration in their teaching practice. The intensive participants represented variation in gender, teaching experience, and school context.

Data Collection

This study relied on primary qualitative data collected through semi-structured interviews and focus group discussions (FGDs) with the 22 intensive participants.

The semi-structured interviews explored teachers' individual experiences and perceptions concerning critical thinking, collaboration, and technology utilization in Islamic Religious Education. The FGDs allowed participants to discuss these issues collectively, clarify issues emerging from the interviews, and express convergent and divergent views. Both sources were audio-recorded and transcribed verbatim. No observational or documentary data were used as empirical sources in the analysis.

The semi-structured interview protocol was developed from the study indicators of critical thinking, collaboration, and technology utilization. Key interview questions included: (1) "How do you determine whether a digital learning resource is appropriate and trustworthy for teaching Islamic Religious Education?"; (2) "What do you usually do when you find different or conflicting information about an Islamic Religious Education topic on digital platforms?"; (3) "How do you discuss or share teaching resources and technology-based instructional strategies with other MGMP teachers?"; and (4) "Can you describe a situation in which discussion with other teachers changed or strengthened your decision about a teaching method, learning resource, or digital application?" Follow-up questions were used to clarify participants' reasoning, experiences, and examples.

Data analysis

Data analysis followed the interactive model of Miles et al. (2014), consisting of data condensation, data display, and conclusion drawing and verification. Coding proceeded in two cycles. In the first cycle (open coding), meaningful statements related to critical thinking, collaboration, and technology utilization were identified in the interview and FGD transcripts and assigned descriptive or *in vivo* codes. In the second cycle, axial coding grouped related codes into broader categories, and selective coding identified the overarching themes that recurred across the dataset. Interview and FGD transcripts were then compared to identify convergent and divergent patterns across the two sources of evidence. Through iterative comparison and refinement, three major themes emerged: (1) critical thinking in instructional decision-making, (2) collaborative professional learning and knowledge sharing, and (3) technology integration as a facilitator of reflective and collaborative teaching practices. The relationship between initial codes, axial categories, and selective themes is summarized in Table 1.

To enhance the trustworthiness of the findings, source triangulation was conducted by comparing evidence from semi-structured

interviews and FGDs. Statements from individual interviews were compared with participants' collective discussions during the FGDs to identify areas of convergence, clarification, and divergence. Member checking was conducted by sharing preliminary interpretations with selected participants to verify the accuracy of the emerging themes. An audit trail consisting of interview and

FGD protocols, transcripts, coding records, analytical memos, and thematic development notes was also maintained throughout the analysis. These procedures strengthened the credibility, dependability, and confirmability of the findings. Initial codes, axial categories, and selective themes are presented in detail in Table 1.

Table 1. Initial code, Axial category, and Selective theme

Initial code	Axial category	Selective theme
Evaluating source credibility	Digital information evaluation	Critical thinking in instructional decision-making
Comparing teaching alternatives	Pedagogical decision-making	Critical thinking in instructional decision-making
Sharing digital resources	Knowledge sharing	Collaborative professional learning
Jointly solving technology problems	Collective problem solving	Collaborative professional learning
Using digital platform after discussion	Technology-supported practice	Technology integration as facilitator

To demonstrate how the coding procedure was applied, one interview excerpt was traced from the raw data to the final theme. This excerpt was initially coded as "evaluating information sources" because the participant described examining the credibility and relevance of digital information. During axial coding, this code was grouped with related codes such as "comparing sources," "checking consistency with learning objectives," and "selecting appropriate materials" under the category "digital information evaluation." During selective coding, this category contributed to the broader theme "critical thinking in instructional decision-making." The same procedure was applied to the interview and FGD transcripts to identify convergent and divergent patterns across the two qualitative evidence sources.

Ethical Considerations

Before data collection, the researchers obtained permission from the leadership of the Islamic Religious Education Subject Teacher Forum (MGMP) in Blitar. All participants received an explanation of the research objectives, data collection procedures, voluntary nature of participation, and their right to withdraw from the study without consequences. Written informed consent was obtained from each participant before interviews and focus group discussions were conducted. To protect participants' privacy, personal names, school

identities, and other potentially identifying information were not reported in the manuscript. Participants were identified using codes such as Teacher 1 (T1), Teacher 2 (T2), and so forth. Transcripts and research documents were stored securely and were accessible only to the research team.

■ RESULT AND DISCUSSION

The analysis of the interview and FGD data identified three interconnected themes: (1) critical thinking in instructional decision-making, (2) collaborative professional learning and knowledge sharing, and (3) technology integration as a facilitator of reflective and collaborative teaching practices. Interview and FGD evidence were compared to examine convergence and divergence across participants' accounts. Representative statements, initial codes, and emergent themes are presented in Table 2.

As presented in Table 2, the interview evidence indicates three interconnected dimensions of technology-supported Islamic Religious Education. First, critical thinking was reflected in teachers' efforts to sort and select information from different digital platforms, consider its relevance to students and learning materials, and make decisions regarding instructional methods, media, and facilities. Second, collaboration was reflected in sharing ideas, information, and knowledge; collaborative problem-solving; and joint decisions about

technology-supported learning practices. Third, technology was described not only as a medium for presenting instructional content but also as a means of accessing information, facilitating digital collaboration, and supporting learning evaluation. Participants also associated technology use with greater student interest and motivation; however, these statements reflect teachers' perceptions rather than direct measures

of student engagement or learning outcomes. Taken together, the findings suggest an interrelationship in which technology provides access to information and digital interaction, critical thinking supports information selection and instructional judgment, and collaboration provides a context for sharing, problem-solving, and collective decision-making.

Table 2. Teacher Statements, Evidence from Interview, FGD, Initial Codes, and Emergent Themes

Informant	Evidence from interview	Evidence from FGD	Initial code	Emergent theme
T7 / F3	<i>"Critical thinking skills can be utilized to sort and select all information obtained through various digital platforms. Selecting information is important to match students' characteristics and the material studied. Critical thinking is required due to the diversity of sources of information and knowledge on digital systems to avoid mistakes."</i>	Participants emphasized that information obtained from different digital platforms was not used directly. They discussed comparing and selecting resources according to the learning objectives, learning materials, and students' characteristics.	Sorting and selecting digital information; contextual relevance; comparison of diverse digital sources.	Critical thinking in evaluating digital learning resources
T1 / F7	<i>"Critical thinking skills help teachers in considering and making decisions to determine the learning methods, media, and the facilities used."</i>	Participants described critical thinking as part of deciding which methods, media, and facilities were appropriate for particular learning situations. They emphasized that digital resources needed to be considered in relation to instructional objectives and student characteristics rather than selected only because they	Instructional decision-making; comparison of teaching alternatives; selection of methods, media, and facilities	Critical thinking in pedagogical decision-making

Informant	Evidence from interview	Evidence from FGD	Initial code	Emergent theme
T14 / F1	<i>“Critical thinking is an important part of teachers' instructional decision-making. Critical thinking was used to determine appropriate learning methods, media, and facilities. It was also associated with the process of sorting and selecting information obtained from different digital platforms.”</i>	were attractive or easily accessible. The FGD discussion reinforced that teachers compared information from different digital platforms and considered its relevance before deciding which resources to use. Participants also discussed adapting selected information to the learning objectives and students' needs.	Information selection; instructional decision-making; comparison of learning resources; contextual suitability	Critical thinking in evaluating digital learning resources
T13 / F14	<i>“Sharing ideas, information, and knowledge becomes the key to initiating creativity and innovation in technology-based learning.”</i>	Participants described sharing ideas, information, teaching materials, and experiences as a way to obtain different perspectives and generate new ideas for technology-based learning.	Knowledge sharing; exchange of ideas; creativity and innovation; multiple perspectives	Collaboration as collective professional learning
T19 / F14	<i>“Despite having sufficient critical thinking and knowledge, it [is] difficult to determine and decide the right choice from various digital platforms that will be used in the learning process, and they are more confident to implement innovations with collaboration because they have</i>	Participants explained that discussing alternative digital resources and instructional strategies with colleagues helped them compare possibilities and reach a collective decision. They also associated joint discussion with greater confidence in implementing the agreed innovation.	Collaborative support; comparison of alternatives; joint decision-making; collective implementation	Collaboration as collective professional decision-making

Informant	Evidence from interview	Evidence from FGD	Initial code	Emergent theme
T5 / F8	<i>been discussed and decided together.”</i>			
	<i>“Technology is not only applied as media in the form of videos, but to search for information and collaborate through digital systems. Furthermore, teachers can utilize various applications to conduct evaluations.”</i>	Participants described technology as serving several functions, including accessing information, communicating and collaborating through digital platforms, sharing instructional resources, and supporting learning evaluation.	Information access; digital collaboration; resource sharing; technology-supported evaluation	Technology as a mediating space for information access and collaboration
T9 / F19	<i>“Technology has multiple functions in Islamic Religious Education. Technology could make the learning process more engaging for students. Technology was also utilized to access information, facilitate collaboration through digital systems, and support learning evaluation.”</i>	Participants perceived that technology-supported Islamic learning could make learning activities more interesting for students, particularly when digital resources were interactive and relevant to the learning activity.	Information access; digital collaboration; technology-supported evaluation; perceived student interest	Perceived student engagement in technology-supported learning
T3 / F2	<i>“The learning process is more interesting for students when technology is applied to Islamic learning.”</i>	Participants similarly associated technology use with greater student interest and participation, while noting that technology still needed to be selected according to the learning objectives and students' characteristics.	Perceived learning interest; perceived student engagement; pedagogical suitability	Perceived student engagement in technology-supported learning

Critical Thinking in Selecting Digital Learning Resources

The findings of the present study relate to previous research on critical thinking instruction, but they extend the discussion into a different empirical context. Previous studies have examined critical thinking mainly as a learner competency developed through instructional strategies such as dialogue, authentic problems, and inquiry-based learning (Abrami et al., 2015; Arifin et al., 2025). This study focuses on teachers' professional decision-making when selecting digital learning resources for Islamic Religious Education. T7's account illustrates this difference: critical thinking was described as sorting and selecting information from various digital platforms and considering its suitability for students and learning materials. This finding is consistent with Arisandi & Faisal (2021), who reported that shared knowledge is built through collaboration; teachers therefore need collaboration skills alongside critical thinking to improve the quality of Islamic learning.

The contribution of the present study therefore lies not simply in confirming that critical thinking is important, but in showing how teachers enact it in technology-supported professional practice. Critical thinking in this context involves connecting information evaluation with pedagogical decisions. T19's account further indicates that teachers can discuss these decisions collectively through MGMP collaboration. Consequently, the findings extend the discussion from critical thinking as an individual information-processing competency to critical thinking as a situated professional practice supported by collaborative teacher interaction.

T7 explicitly connected critical thinking with the process of selecting information obtained from digital platforms:

"Critical thinking skills can be utilized to sort and select all information obtained through various digital platforms. Selecting information is important to match students' characteristics and the material studied. Critical thinking is required due to the diversity of sources of information and knowledge on digital systems to avoid mistakes." (T7)

The interview evidence was reinforced by the FGD discussion. Participants emphasized that critical thinking was necessary when teachers encountered diverse information through digital platforms. They described sorting, selecting, and evaluating information based on students' characteristics and the learning materials. The FGD discussion also indicated that critical thinking was connected to instructional decision-making, particularly when teachers selected learning methods, media, facilities, and digital

resources. These findings suggest that teachers perceived critical thinking not merely as an abstract cognitive skill but as part of practical decision-making in technology-supported instruction.

This account illustrates several stages of information evaluation. First, the teacher recognized that digital platforms provide diverse sources of information. Second, the information was not treated as automatically suitable for instructional use but was sorted and selected. Third, the selection aligned with students' characteristics and the learning material. Critical thinking therefore functioned as a mechanism for connecting information obtained from digital environments with pedagogical requirements.

T1 and T14 also described critical thinking as part of instructional decision-making:

"Critical thinking skills help teachers in considering and making decisions to determine the learning methods, media, and the facilities used." (T1)

"Critical thinking is an important part of teachers' instructional decision-making. Critical thinking was used to determine appropriate learning methods, media, and facilities. It was also associated with the process of sorting and selecting information obtained from different digital platforms." (T14)

According to T14, such selection was necessary to ensure that the information was appropriate for students' characteristics and the learning materials. This statement suggests that critical thinking extended beyond evaluating the content of digital information. It also involved deciding how to incorporate the information and technology into teaching. The teacher's decision was therefore shaped by the relationship between the available digital resource, the instructional objective, the learning material, and student characteristics.

An important point emerging from this finding is that access to digital information does not automatically result in appropriate instructional use. The abundance and diversity of digital resources require teachers to exercise professional judgment. In Islamic Religious Education, this process is particularly relevant because teachers may encounter different forms and sources of religious information through digital platforms. The present data, however, support the claim that teachers considered relevance and selection; they do not, by themselves, establish that participants systematically verified the religious authenticity or authority of every digital source.

Thus, this finding contributes by showing critical thinking as a situated professional practice. In this case, critical thinking involved moving from simply accessing digital

information to selecting information relevant to students, learning materials, and instructional decisions.

Collaboration as Collective Professional Decision-Making

The findings indicate that collaboration within the MGMP involved more than exchanging instructional materials. Participants described knowledge and information sharing as a way to address learning problems, generate ideas, and make decisions about technology-supported instructional practices. Collaboration among teachers leads them to share knowledge, jointly identify the causes of learning problems, and try to find creative and innovative solutions (Green & Johnson, 2015; Hetemi et al., 2022). Collaborating with fellow teachers to solve learning problems can indirectly foster caring. Thus, collaboration functioned as a form of collective professional learning in which teachers could draw on their colleagues' knowledge and experience.

T13 described knowledge sharing as an important part of collaborative practice:

"Sharing ideas, information, and knowledge becomes the key to initiate creativity and innovation in technology-based learning." (T13)

T13 further explained that sharing could help teachers address instructional problems collectively:

"The attitude of sharing helps them to work together in solving learning problems." (T13)

These statements suggest that collaboration was not limited to transferring information from one teacher to another. Information sharing created opportunities for teachers to discuss learning problems and generate possible solutions. The collaborative process therefore connected individual knowledge with collective problem-solving.

The FGD findings further supported the interview findings, as participants emphasized knowledge sharing and collaborative problem-solving. Participants described the exchange of ideas, information, and knowledge as an important basis for generating creativity and innovation in technology-supported learning. They also associated sharing with the ability to work together to address instructional problems. Thus, the FGD evidence reinforces the interpretation that collaboration functioned as a form of collective professional learning rather than merely as interpersonal interaction.

T19 described a relationship between individual knowledge, collaboration, and instructional decision-making:

"Despite having sufficient critical thinking and knowledge, it [is] difficult to determine

and decide the right choice from various digital platforms that will be used in the learning process, and they are more confident to implement innovations with collaboration because they have been discussed and decided together." (T19)

This account complements the finding on critical thinking. While T7 emphasized the individual process of sorting and selecting information, T19 emphasized the social process through which instructional alternatives could be discussed and jointly decided. Collaboration therefore provided a professional context in which teachers could exchange perspectives and gain greater confidence in implementing technology-supported innovations.

The findings consequently suggest that collaboration should not be interpreted merely as a positive attitude or interpersonal activity. Within the MGMP, collaboration operated as a mechanism for collective problem-solving and professional decision-making. The evidence also indicates that teachers' confidence in implementing technological innovations was associated, in their accounts, with decisions discussed collectively. This finding does not demonstrate a causal effect of collaboration on teaching quality, but it illustrates the role of collaborative discussion in shaping teachers' reported instructional decisions.

Technology as a Mediating Space for Information Access and Collaboration

The interview data indicate that teachers used technology for several instructional purposes, not solely as a medium for presenting learning materials. T5 and T9 described these functions as follows:

"Technology is not only applied as media in the form of videos, but to search for information and collaborate through digital systems. Furthermore, teachers can utilize various applications to conduct evaluations." (T5)

"Technology has multiple functions in Islamic Religious Education. Technology could make the learning process more engaging for students. Technology was also utilized to access information, facilitate collaboration through digital systems, and support learning evaluation." (T9)

These accounts indicate that technology served multiple functions in the teachers' instructional practices. First, digital platforms provided access to information. Second, digital systems enabled interaction and collaboration among teachers. Third, digital applications were used to support learning evaluation. Technology therefore served as an environment that connected different instructional activities.

T3 perceived technology-supported learning as more engaging for students:

“The learning process is more interesting for students when technology is applied to Islamic learning.” (T3)

T3 and T9 perceived technology-supported learning as more interesting and believed that it could encourage students to participate in the learning process. These statements reflect teachers’ perceptions rather than independently measured changes in students’ motivation or engagement. Because the study did not collect student-level data, the findings cannot establish that technology improved student learning.

The FGD discussion further indicated that participants perceived technology as serving multiple functions in Islamic Religious Education. Technology was described as a means of accessing information, facilitating collaboration through digital platforms, and supporting learning evaluation. Participants also perceived technology-supported learning as more engaging for students.

Taken together with the accounts of T7, T13, and T19, technology can be understood as a mediating environment that connects access to information with individual evaluation and collaborative professional practice. T5 emphasized access and digital collaboration, T7 emphasized information selection and pedagogical decision-making, while T13 and T19 emphasized collective discussion and decision-making. These accounts point to complementary functions rather than a hierarchy among technology use, critical thinking, and collaboration.

The Interrelationship between Critical Thinking and Collaboration

Taken together, the three themes indicate that technology, critical thinking, and collaboration were interconnected in teachers’ technology-supported Islamic Religious Education practices. T5 emphasized that technology provided opportunities to search for information, collaborate through digital systems, and evaluate learning. T7 described the need to sort and select information from digital platforms based on students’ characteristics and learning materials. T13 and T19, in turn, emphasized knowledge sharing, collective problem-solving, and joint decision-making within professional collaboration.

These accounts suggest a complementary relationship between critical thinking and collaboration. Critical thinking was manifested primarily through the individual evaluation and selection of information and instructional alternatives. In contrast, collaboration created a social context in which teachers could

exchange knowledge, discuss learning problems, and make decisions collectively. Technology connected these processes by providing access to information and digital spaces for interaction.

The findings should not, however, be interpreted as evidence that collaboration has a stronger effect than critical thinking or that either competency directly improves student learning outcomes. The study did not employ comparative measures of these competencies or independent measures of student achievement. Instead, the qualitative evidence illustrates how the two competencies operated together within teachers’ professional practices. The resulting relationship can therefore be understood as complementary: critical thinking supported teachers’ evaluation and selection of digital resources, while collaboration provided opportunities to discuss, validate, and collectively refine instructional decisions.

Critical thinking and collaboration are two complementary skills in technology-based learning. Critical thinking strengthens the establishment of appropriate concepts and methods in Islamic learning. Teachers’ beliefs about pedagogy and about the value of digital platforms shape how they integrate technology into instruction (Tondeur et al., 2017). The knowledge of learning obtained by teachers from various digital platforms is conveyed through discussion forums between teachers so that shared beliefs are obtained. This forms a group or community with similar knowledge and attitudes in dealing with the complexity of learning and technology problems. Similarities and alignment of attitudes in a community tend to produce similar actions (Reches & Feddes, 2019). Similar attitudes in the group tend to lead to the same perception of action. Similar knowledge and alignment on technology-based Islamic learning can reinforce shared belief in the importance of creativity and innovation to improve learning quality.

Practical Implications

The findings suggest that MGMP professional development should move beyond training teachers to operate digital applications and should incorporate activities that require teachers to evaluate digital information, compare instructional alternatives, collaboratively develop lesson plans, and discuss the credibility and pedagogical suitability of digital religious learning resources. MGMP coordinators and education policymakers can support this process by providing structured collaborative lesson-planning sessions, peer-review activities for digital teaching resources, and professional learning activities focused on critical evaluation of online information. These

activities may strengthen teachers' capacity to use technology not merely as an instructional tool but as part of reflective and collaborative professional practice.

Limitations and Future Research

This study was limited to an MGMP community in one geographical context and involved 22 intensive participants. The findings therefore describe the practices and experiences of the participants within the specific case rather than providing statistical generalizations to all Islamic Religious Education teachers. Future research could examine similar practices across different regions or educational settings. It could combine qualitative evidence with classroom-level or student-level data to investigate how teachers' critical and collaborative practices relate to students' learning experiences.

CONCLUSION

This study examined teachers' reported experiences and perceptions of critical thinking, collaboration, and technology utilization in Islamic Religious Education within an MGMP in Blitar. Based on evidence from semi-structured interviews and focus group discussions, the findings indicate that teachers described critical thinking as evaluating digital information, comparing instructional alternatives, and making pedagogical decisions. Participants described collaboration as knowledge sharing, collective problem-solving, and discussion of instructional decisions. Technology was perceived as a mediating environment that supported information access, communication, collaboration, and evaluation of learning. Because the study relied on teachers' interview and FGD accounts, the findings represent participants' reported experiences and perceptions rather than directly observed classroom practices or independently measured effects on students. Future research may complement these findings with classroom observations, documentary evidence, or student-level data.

DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

During the drafting of this manuscript, the authors used Claude (Anthropic) to refine sentence structure/translating text. Following the use of this tool, the authors reviewed and revised the content as necessary and accept full responsibility for the final content of the article.

AUTHOR CONTRIBUTIONS

Muhammad Asrori: designed the research; Imroatul Hayyu Erfantinni, Dessy

Putri Wahyuningtyas, and Mohammad Miftahusyai'an: collected the data; Agus Mukti Wibowo and Galih Puji Mulyoto: analyzed the data and wrote the manuscript.

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