

CHAPTER IV

FINDINGS AND DISCUSSION

In this chapter, the findings of the research and their subsequent discussion will be presented. The research findings will shed light on the role of digital technology in strengthening student's 4C skills in teaching practice, as well as the challenges and opportunities encountered in the process.

A. Findings

Research findings provide the information that is discovered by the researcher through research instruments. Because there are three research questions, this chapter requires three main points of research findings and three main points of research discussions.

Before conducting observations, the researcher collected data related to pre-service teachers and the schools that implement the *Kurikulum Merdeka*, particularly within the madrasah environment. The research findings revealed that among schools implementing *Kurikulum Merdeka*, four schools found the criteria for this study. However, given the novelty of *Kurikulum Merdeka's* implementation, most schools only applied it to X grade for Senior High Schools and VII grade for Junior High Schools.

From the main of pre-service teachers involved in implementing *Kurikulum Merdeka* in these schools, seven pre-service teachers were identified. Nevertheless, during the subject selection process, it was discovered that two of them were unwilling to participate as subjects in this research, reducing the

number of pre-service teachers involved in the study to five. In this context, and considering the emerging limitations, the number of pre-service teachers and schools selected for this study reflects a sufficient representation for conducting an in-depth and comprehensive analysis of *Kurikulum Merdeka* implementation in teaching practices.

The researcher conducted two observation sessions for each pre-service teacher, specifically during the middle and final test sessions of their teaching practice guided by mentor teachers. However, it is important to note that there were challenges in obtaining observation permissions, resulting in delays and missing the observation session for pre-service teacher C during the mid-semester test. Nevertheless, the researcher carried out observations during other teaching practice sessions as an effort to compensate for the missed session.

This data have been collected from 18 August- 5 September 2023. There are 4 schools, such as MTSN 2 Banjarmasin, MTSN 3 Pemurus Dalam, MAN 1 Banjarmasin, and MAN 3 Banjarmasin. during the teaching practice of pra-service teachers at school particularly in Madrasahs, in Banjarmasin, which have implemented the "*Kurikulum Merdeka*" in their educational programs, there were five pre-service teachers observed by the researcher. The data explained in the table below. In explained the instruments of this research, the researcher recalls the research question of this study. The findings are presented as follows:

- 1) What digital technology are used in strengthening 4C skills in student teaching practice?

- 2) What are the roles of digital technology in strengthening 4c skills in students' teaching practice?
- 3) What are the challenges faced by pre-service teachers in using digital technologies to strengthen skills in teaching practice?

In this research, the researcher observes the digital technology used and the role of digital technology in strengthening student's 4c skills during teaching practice. In this study, the data was presented in a table to help the reader in interpreting the data easily. To recognize the answers of the first and second research questions. The data is explained in the table below.

Table 4.1 The used and The Role of Digital Technologies Classroom Observation Data

No	Pre-service Teacher	School	Date & Time	Technology Used	Critical Thinking	Creativity	Collaboration	Communication
1.	Pre-service Teacher A	MISN2 Banjamasin	08-29-2023 (14.00-15.30)	Google Translate	Google Translate for language assignments	-	-	
2.	Pre-service Teacher A	MISN2 Banjamasin	09-05-2023 (09.30-11.00)	Quizziz	Utilized Quizziz provides a stimulus to think critically.	-	-	-
3.	Pre-service Teacher B	MISN3 Pemurus	08-18-2023 (15.20-16.00)	-	-	-		-
4.	Pre-service Teacher B	MISN3 Pemurus	09-01-2023 (08.55-09.30)	PowerPoint	Utilize PowerPoint to present material	Visual elements like images and videos in PowerPoint presentations		Visual and audio elements make the material clearer

5.	Pre-service Teacher C	MAN1 Banjamasin	08-28-2023 (11.05-12.25 AM)	Power Point, Google Translate	Teachers used PowerPoint with images and Google Translate	The use of images as a brainstorm at the beginning of the lesson in Power Point.	-	Two-way communication between students and pre-service teachers.
6.	Pre-service Teacher C	MAN1 Banjamasin	09-01-2023 (09.30-11.20 AM)	Power Point, Google Translate	Pre-service teachers used PowerPoint and student used Google Translate	Pictures in Power Point are used as a brainstorming method,	-	Two-way communication between students and pre-service teachers
7.	Pre-service Teacher D	MAN3 Banjamasin	08-31-2023 (10.30-12.30)	Power Point, Google Translate, Youtube, Google Form	PowerPoint and YouTube videos for explanation materials.	Students creatively take notes from the video	-	-
8.	Pre-service	MAN3 Banjamasin	09-04-2023 (11.30-13.30)	Power Point,	Using Power Point and	Pre-service teacher	-	Two-way communication

	Teacher D			Google Translate, Youtube, Google Form	YouTube videos to explain the materials. And use Google Translate when doing task.	play trending songs		between students and student teachers.
9.	Pre-service Teacher E	MAN3 Banjarnasin	08-31-2023 (13.00-15.40)	Power Point, Google Translate, Youtube	Teachers employed PowerPoint and YouTube and used Google Translate while doing task	-	-	Interactive communication between students and pre-service teacher
10.	Pre-service Teacher E	MAN3 Banjarnasin	09-04-2023 (09.30-11.30)	Power Point, Google Translate, Youtube	Utilized PowerPoint with images and videos and used Google Translate while doing task	Pictures are showed in Power Point used as a brainstorming method	-	Active two-way communication between students and pre-service teachers

1. Digital Technology are used in Student Teaching Practice

a. Google Translate

The observation showed pre-service teachers A, C, D and E allow students to use Google Translate presents a dual impact on critical thinking skills. On one hand, it facilitates access to diverse information sources, broad students' exposure to varied content and languages. However, it introduces challenges in critically evaluating the accuracy and reliability of translated content. While enabled comprehension of complex materials, reliance on translated information may impede students' ability to critically assess and validate the authenticity of the data they encounter.

This reliance on external tools might inadvertently diminish opportunities for students to engage critically with the material, thereby affecting their ability to evaluate information independently and develop a deeper understanding of the subject matter.

b. Power Point

In the observation, it was noted that Pre-service teacher B, C, D and E employed Microsoft PowerPoint as a tool to present educational material to students. Additionally, a dynamic two-way discourse ensued between the teachers and students regarding the subject matter. This use of technology facilitated an interactive learning environment, allowing for a structured presentation of content while encouraging active engagement and discussion between educators and learners. The

incorporation of PowerPoint aided in structuring the information, while the ensuing dialogue fostered a deeper understanding of the material through interactive exchanges and clarifications, critical thinking, communication

c. Youtube

During the observation, it was evident that pre-service teacher D and E utilized YouTube as a resource to elucidate the subject matter to students. Remarkably, the students displayed attentive engagement while observing the material presented via this platform. The utilization of YouTube as an educational tool served as an alternative medium for delivering content, potentially catering to diverse learning styles and preferences among students. The attentive focus of the students suggests that multimedia resources like YouTube can effectively capture and maintain student attention, offering an engaging and accessible approach to comprehending complex concepts.

d. Google Form

Pre-service Teacher D employed Google Forms to facilitate student exercises related to the material being taught. This utilization of digital tools allowed for the creation of interactive exercises or assessments, enhancing student engagement and comprehension. Google Forms provided a platform for structured exercises, potentially offering immediate feedback and streamlined assessment for both educators and students. This approach likely encouraged active participation, enabling

students to apply their understanding of the material in a practical and organized manner while leveraging technology for effective learning experiences.

e. Quizziz

In the observation, pre-service teachers A utilized Quizziz as a tool for student exercises pertaining to the subject matter. This incorporation of technology allowed for interactive and gamified assessments, potentially fostering a more engaging and enjoyable learning experience. Quizziz provides a platform for creating quizzes with diverse question formats and immediate feedback, which can encourage active participation and self-paced learning among students. The use of such interactive tools may promote a more dynamic approach to assessment, enhancing students' retention and application of the material through an enjoyable learning process.

2. The Role of Digital Technologies in Strengthening Student's 4C skills

a. Facilitator

1) Critical Thinking

The data derived from the observations indicates that digital technologies serve as facilitators of critical thinking in specific classroom settings. For instance, Pre-service Teacher B, C and E effectively employed PowerPoint presentations to facilitate critical thinking. The visual aids and structured presentation materials provided students with a framework for deeper analysis and critical

thinking about the subject matter. This demonstrated the potential of technology as a facilitator to promote critical thinking by establish a structured and engaged learning environment.

Moreover, Pre-service Teacher D effectively harnessed Youtube video and PowerPoint presentations to engage students in discussions and pose questions necessitating critical thinking. This approach compelled students to analyze and think deeply about the content presented in the videos, underscoring the facilitative role of technology in stimulating critical thought.

2) Creativity

Pre-service Teacher D employed Youtube music as a creative stimulus during the brainstorming phase of the lesson, showcasing the potential for technology to act as a facilitator by inspiring and enhancing creativity. Technology's facilitative role in fostering a more imaginative and stimulating learning environment may vary based on its strategic integration.

3) Collaboration

The data derived that digital technologies can serve as facilitators of collaboration within the classroom. Notably, Pre-service Teacher D encouraged collaboration through discussions, note-taking. The technology employed, such as the use of Youtube video and PowerPoint presentations, created a conducive environment for collaborative engagement. This indicates the potential for technology

to facilitate collaboration by providing a structured platform for students to work together, discuss, and jointly analyze information

a. Creative tool

1) Critical Thinking

In certain observed contexts, digital technology functioned as a creative tool to foster critical thinking. Pre-service Teacher B, C, D, and E integrated visual elements, such as images and videos, into their teaching materials using Power Point, serving as creative tools to engaged students' critical thinking. This demonstrated how technology can be utilized as a creative tool to encourage students to think critically, make connections between concepts, and adopt a more imaginative approach to learning.

2) Creativity

Certain classroom contexts indicate that digital technology effectively functions as a creative tool to nurture creativity among students. Both Pre-service Teacher B, C, and E integrated visual elements, including images and videos, into their instructional materials. This usage showcases the potential for technology to serve as a creative tool, thereby encouraging students to think innovatively, establish connections between concepts, and adopt a more imaginative approach to the learning process.

Furthermore, Pre-service Teacher D also harnessed visual and video components in the instructional materials to invigorate creativity,

underlining technology's capacity to function as a creative tool that fosters inspiration among students and makes the learning experience more engage and imaginative.

b. Self-directed learning

1) Critical Thinking

The use of Google Translate in teaching practice of Pre-service teacher A, C, D and E, support self-directed learning. Self-directed learning enhances critical thinking by encouraging students to explore and evaluate information independently, leading to more profound critical analysis.

3. The Challenges faced by Pre-service Teacher in strengthen student's 4C skills in teaching practice

Observations carried out on prospective teachers in various schools have provided different understandings regarding the technical and pedagogical challenges of strengthening 4c skills. The observation data is explained in the table below.

Table 4.2 Classroom Observation Data of The Challenges

No	Pre-service Teacher	School	Date & Time	Technical Challenges	Pedagogical Challenges
1.	Pre-service Teacher A	MISN2 Banjarmasin	08-29-2023 (14.00-15.30)	-	-
2.	Pre-service Teacher A	MISN2 Banjarmasin	09-05-2023 (09.30-11.00)	During observations, several student teachers experienced technical problems related to using Quizizz, such as internet connection problems. However, this obstacle does not completely hinder the strengthening of students' critical thinking skills.	-
3.	Pre-service Teacher B	MISN3 Management	08-18-2023 (15.20-16.00)	-	-
4.	Pre-service Teacher B	MISN3 Management	09-01-2023 (08.55-09.30)	During the observations, the student teachers experienced several technical challenges, such as technical problems with the projector device or Power Point software. This disrupts the flow of learning.	-
5.	Pre-service Teacher C	MAN1 Banjarmasin	08-28-2023 (11.05-12.25 AM)	-	Even though technology is used well, some students still lack focus on the material.

6.	Pre-service Teacher C	MAN1 Banjarmasin	09-01-2023 (09.30-11.20 AM)	-	-.
7.	Pre-service Teacher D	MAN3 Banjarmasin	08-31-2023 (10.30-12.30)	Students faced technical challenges, relying on Google Translate for language comprehension. Additionally, issues surfaced with Google Forms, hindering some students' access due to potential link errors..	-
8.	Pre-service Teacher D	MAN3 Banjarmasin	09-04-2023 (11.30-13.30)	Students faced technical challenges, relying on Google Translate for language comprehension. Additionally, issues surfaced with Google Forms, hindering some students' access due to potential link errors.	-.
9.	Pre-service Teacher E	MAN3 Banjarmasin	08-31-2023 (13.00-15.40)	-	-
10.	Pre-service Teacher E	MAN3 Banjarmasin	09-04-2023 (09.30-11.30)	-	.

a. Technical Challenges

Technical challenges are evident in various contexts. Pre-service Teacher A encountered issues with internet connectivity during the use of Quizizz. This underscores a significant technical challenge that disrupted the learning experience. Technical challenges can encompass hardware, software, or internet connection issues, and in this case, it was connectivity-related and limited technology infrastructure,

Conversely, Pre-service Teacher B faced technical challenges linked to limited technology infrastructure within the school. The scarcity of resources, such as having only one LCD for the entire school, led to the potential for disruptions. Emergency classroom situations added to these challenges, further illustrating how technical challenges can emerge from the unavailability of necessary technology.

Moreover, Pre-service Teacher D observed students resorting to Google Translate for language comprehension and task completion. This highlighted a distinct technical challenge overcoming language barriers without technological aid. Additionally, difficulties in accessing online assignments were noted, revealing the technical obstacles that can affect the learning process.

b. Pedagogical Challenges

On the pedagogical front, the challenges linked to student engagement. Pre-service Teacher C noted the struggle to maintain students' undivided attention to the lesson, despite the absence of

significant technical challenges. This emphasizes the pedagogical challenge of ensuring active student participation and attentiveness in a digital learning environment.

This observation underscores that pedagogical challenges were not prominent, despite the integration of technology. It demonstrates that while technical challenges can disrupt the learning process, pedagogical challenges often revolve around student engagement and attentiveness.

B. Discussion

After the data were processed and present in this study, the researchers present the findings above. It concerned about the research questions. The discussion of this study explains the correlation between the findings and the theory that has been explained in chapter two. After conducting the research and analyzing all the data, the researcher would like to conclude all the result of the study as follows:

1. Digital Technologies are used in Student Teaching Practice

As previously elucidated Hwang et al. (2019), emphasize personalized learning experiences facilitated by online platforms, mobile applications, and educational software. The emergent technologies such as virtual reality, augmented reality, and AI-driven adaptive learning platforms present promising avenues for dynamic and personalized learning environments.

Based on the findings, the researcher analyzed that digital technology such as Microsoft PowerPoint, Google Translate, YouTube,

Google Forms, and Quizizz are used by pre-service teachers reflects a personalized learning approach, resonating with the transformative impact of technology in accommodating diverse learning styles and individualized needs. The utilization of digital tools among pre-service teachers aligns with foundational stages of technological evolution in education, however hinting at the potential required for further integration of emerging technologies to advance pedagogical practices and enrich student learning experiences. The findings showed that pre-service teachers tend to prefer commonly used digital technologies, showing a hesitancy to explore and adopt the latest innovations. This reluctance is evident in their teaching practices, where the integration of digital technology does not fully incorporate recent advancements. Instead, pre-service teachers primarily rely on established tools and methods, indicating a need for greater openness to embrace and utilize emerging digital innovations in their teaching approaches.

2. Role Digital Technologies in Strengthening student's 4C Skills in Teaching Practice

Means, Bakia, and Murphy (2014) assert that the incorporation of digital tools surpasses conventional teaching methodologies. This integration provides versatile pathways for bolstering Critical Thinking, Creativity, Collaboration, and Communication (the 4Cs) and encourages self-directed learning. In this diverse capacity, digital technology

functions as a facilitator, creative tool, collaborator, and communication medium, all pivotal in underpinning self-directed learning.

Based on the findings, the researchers analyzed that pre-service teachers utilize digital technologies such as Microsoft PowerPoint, Google Translate, YouTube, Google Forms, and Quizizz, each playing a distinct role in enhancing the 4C skills with their respective functions. Microsoft PowerPoint and YouTube videos serve as facilitators for critical thinking, creativity, collaboration, functioning additionally as creative tools for critical thinking and creativity. On the other hand, Google Translate, Google Forms, and Quizizz contribute as tools for self-directed learning, impacting critical thinking. From these findings, it's evident that each technology employed serves a role in fortifying 4C skills. However, the lack of recent digital innovations and the suboptimal utilization of technology limit their potential benefits. Constraints in activities and methodologies during teaching sessions result in an incomplete manifestation of all skills in every session, especially in collaboration and communication due to the predominance of individual tasks assigned.

3. The challenges faced by pre-service teachers when using digital technologies to strengthen skills in teaching practice

Technical challenges encountered by pre-service teachers encompass issues related to internet connectivity, limited technology infrastructure and language barriers. These challenges align with

Becker (2000) highlights that inadequate infrastructure can hinder the effective use of technology for education and that technical issues can disrupt the learning process.

Beyond technical hurdles, pedagogical challenges associated with student engagement and attentiveness were observed. These challenges underscore that effective teaching necessitates not only the use of technology but also strategies for keeping students focused and attention.