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Teaching Practice from Home: Exploring Pre-Service Teachers' Perspectives on Online Microteaching during The COVID-19 Pandemic

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A B S T R A C T

The COVID-19 pandemic has forced initial teacher education institutions to deliver teaching and learning sessions online, including the conversion of face-to-face to online microteaching. Regarding this, pre-service teachers will experience an unprecedented change in their academic journey to become teachers, impacting their attitudes toward the phenomenon. Therefore, this study examines pre-service teachers' (PST) perspectives toward implementing online microteaching. More specifically, it explores the challenges and advantages of online microteaching, as suggested by PSTs. The data were collected from a qualitative survey and reflective journal completed by 18 PSTs at President University, Indonesia. The results of the qualitative analysis revealed that the PSTs experienced six significant issues in online microteaching, including technical, circumstantial, linguistic, psychological, learning material, and time management issues. Despite this, the PSTs perceived that online microteaching offers a number of advantages, such as promoting adjustments in teaching, teaching development, awareness of classroom interaction, language use, efficacy, and time management. Further recommendations for research and practice are also thoroughly discussed in this study.

1. INTRODUCTION

The emergence of the COVID-19 pandemic has impacted various aspects of education worldwide, including teaching and learning activities. In this regard, there is a considerable change in the delivery of teaching and learning from face-to-face to online mode. In Indonesia, the Ministry of Education instructed all school and university stakeholders to implement a study-from-home session from March 2020 to curb the Coronavirus spread (Iqbal, 2020). As a consequence, school and university students encountered an unprecedented shift from offline to online learning, which can result in unexpected ramifications in their learning process. Some recent studies reveal that university students in Indonesia faced various obstacles during the implementation of online learning, including technical difficulties such as internet connection and limited technological readiness of the teachers and students, limited access to learning media and resources, as well as limited interaction and supervision between lecturers and fellow students (Agung & Surtikanti, 2020; Ariyanti, 2020; Bagata, 2020; Churiyah et al., 2020).

The implementation of online learning can give more complexities, particularly to university programs that emphasize practical activities, including the initial teacher education. Regarding this, initial teacher education programs are often characterized by teaching and learning activities that allow PSTs to prepare themselves to become effective and reflective teachers, as well as equip themselves with essential theoretical and practical competences before embarking on the teaching profession (Amobi & Irwin, 2009; Aydin, 2013). One of the important courses that PSTs experience in teacher education colleges is microteaching, which refers to simulated planning and implementation of short teaching activity to a group of peer PSTs under the supervision of main lecturers and fellow PSTs (Mahmud, 2021; Murtiana, 2012). Amid this study-from-home period, therefore, university lecturers must make the necessary adjustment to the microteaching activities to suit the principles of online learning.

Since microteaching is mostly conducted in a face-to-face setting, it will substantially affect its implementation as well as the way lecturers and PSTs perceive the implementation changes. In relation to this, examining PSTs' perception toward the change of microteaching implementation is considered vital. This is because positive perception possessed by students toward a certain course leads them to have a sustained enthusiasm and better performance in the course (Davies et al., 2013). Furthermore, students' perceptions toward a particular phenomenon can be unanonimous (Ng, 2004). In other words, it is important to explore the PSTs' perceptions since they may have varied responses toward the implementation of online microteaching.

Although previous studies have discussed the implementation, advantages, and disadvantages, and students' perception of microteaching, the majority of studies emphasized traditional microteaching that is conducted in a face-to-face setting (Koc & Ilya, 2016). Meanwhile, the exploration of online microteaching implementation and the PSTs' perception is still considered as an underexplored area, particularly in the Indonesian context. Therefore, this study is intended to fill the research gap by investigating the following research questions:

Q1: What challenges were experienced by the PSTs during their online microteaching practice?

Q2: What advantages were perceived by the PSTs during their online microteaching practice?

2. METHODOLOGY

The qualitative descriptive case study research design was employed in this study as the research design focuses on examining the way subjects of a study being investigated make sense of their lived experiences through their narrative accounts of a case being questioned within a certain scope of study (Bhattacharya, 2017; Cohen et al., 2018). The qualitative descriptive research design is considered relevant to be employed in the current study as the study deals with exploring PSTs' experiences, perceived challenges, and advantages of online microteaching practice.

This study involved 18 PSTs (2 males & 16 females) who were enrolled in a compulsory course titled "Teaching Methods in Elementary School (TMES)" during their third semester at the Primary School Teacher Education study program, President University, Indonesia. Due to the COVID-19 pandemic, all teaching and learning activities were conducted online through a streaming platform (Google Meet) for synchronous teaching and learning activities, and the campus-developed Learning Management System named "PresUniv e-Campus" for asynchronous teaching and learning activities. In the TMES course, the PSTs explored approaches and methods, including approaches to e-learning, for teaching elementary school students in Indonesia in various school subjects. Throughout Week 13-15 of the course, each student was given an opportunity to demonstrate their practical understanding of the course by performing an online microteaching in 15 minutes in English through Google Meet and other teaching media. The other PSTs were enacted as the students in the online classroom during the microteaching performance. Furthermore, each student was responsible for providing peer feedback for the microteaching performers through Padlet Apps.

In this study, the data were collected from multiple sources, including an open-ended qualitative questionnaire and a written reflective note. After the PSTs performed the online microteaching performance, they were asked to fill in the qualitative questionnaire consisting of 10 questions about their overall experience in online microteaching, the advantages of online microteaching, the challenges of online microteaching, the use of teaching media/resources, teacher and student interaction, teaching method, and language use. The multiple types of data and methods of data collection employed in this study become parts of the triangulation process as a means of ensuring the credibility of the information being analyzed (Creswell, 2012).

In this study, the data were analyzed qualitatively through the NVivo 12 Plus program. Regarding this, the questionnaire data from Google Form were converted to a Microsoft Excel spreadsheet. Meanwhile, the reflective notes written by each PST in Google Docs were downloaded as a Microsoft Word document. Both types of data were then processed through the NVivo 12 Plus program to be coded.

3. RESULT AND DISCUSSION

3.1. The Challenges in Online Microteaching Practice

Based on the data that has been qualitatively coded and analyzed, it was discovered the pre-service teachers faced six significant challenges in online microteaching practice, including circumstantial, technical, linguistic, learning material, psychological, and time management that can be identified in Figure 1 below. In this regard, interaction challenges are related to online classroom interaction and family matters, while technical challenges are connected with connection and device, teaching media, and the lack of technological literacy.
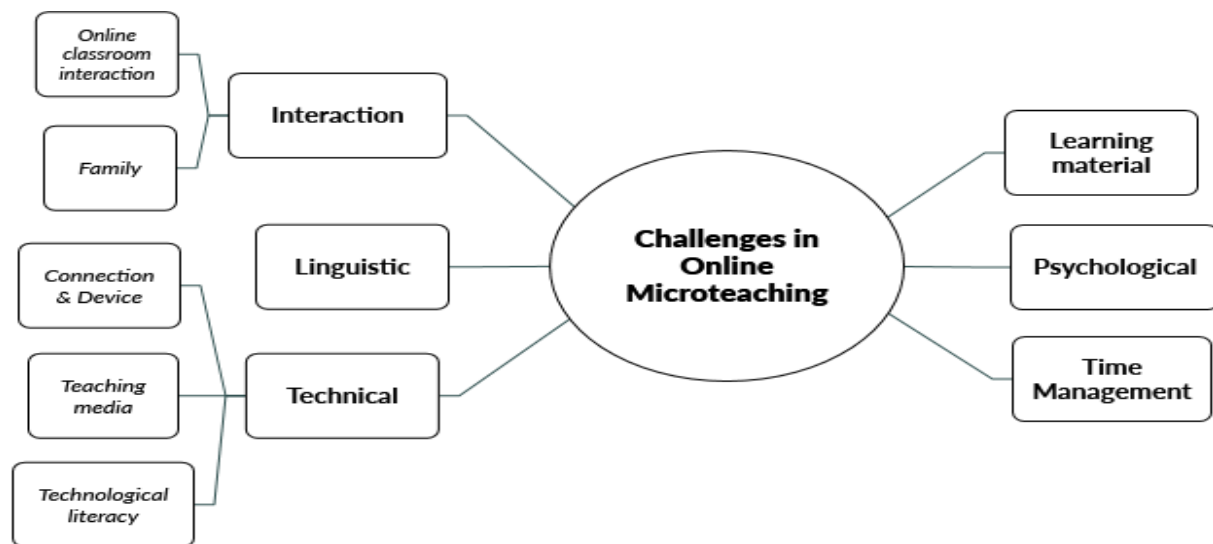
Figure 1. The Challenges in Online Microteaching From the Data Analysis

After identifying the kinds of challenges faced by the PSTs in online microteaching, this study also examined the number of instances for each kind of challenge from the codes being analyzed to explore the dominant challenges reported by the PSTs both in the qualitative survey and reflective notes. In this case, there were 100 identified codes/references related to the challenges of online microteaching. It was identified that technical challenges became the most dominant challenges that were reported by the PSTs with 30 codes/references in the data. Following this, PSTs also reported that they encountered issues in interaction during the online microteaching with 24 codes/references. From the analysis, linguistic and psychological issues were also found in 19 and 15 codes/references, respectively. Ultimately, there were six numbers of codes/references for each issue of learning material and time management. The details of codes and references regarding the challenges of online microteaching can be identified in the following table.

Table 1. The Number of Codes/References Regarding the Challenges of Online Microteaching

Issues	Number of Codes/References	Total Codes/References
Technical	30	
Interaction	24	
Linguistic	19	
Psychological	15	100
Learning material	6	
Time management	6	

3.2. Technical Challenges

As stated earlier, technical challenges became the most apparent challenges that can be identified from both the qualitative survey and reflective notes written by the PSTs with 30 codes/references. Regarding this, there are three identified subthemes within the technical challenges, including connection and device, teaching media, and technological literacy. For instance, one of the student teachers mentioned that the problem of internet connection became a significant obstacle during online microteaching. This problem eventually raised

other issues, such as "communication barriers" between the student teachers and the classmates who became the students during the online microteaching practice.

Internet connection and technological understanding become some major issues during the online microteaching practice. Sometimes the internet connection problem also caused communication barriers between the teachers and the students. Technological understanding should also be improved by myself for the online microteaching practice.

The technical challenges were also reported by recent studies that focused on pre-service teachers' remote teaching and learning during the pandemic (Ferri et al., 2020; Ogbonnaya et al., 2020; Ozkaral & Bozyiğit, 2020; Syafryadin et al., 2021; Trust & Whalen, 2020). Regarding this, they reported a lack of sufficient internet access and connection issues because places where students live lack sufficient internet network coverage. As a result, students and teachers are unable to communicate effectively during the teaching and learning activities. In this case, Swank et al. (2021) reported that students experienced lack of interaction with peers, instructors, families, and activities. Morgan (2020) suggests ensuring equity in which every student has sufficient internet access and computers at home to obtain the benefits of online learning.

Another subtheme found within the theme of technical challenges was the difficulty in utilizing teaching media. In this case, one of the PSTs expressed:

When I delivered my teaching materials about history to the students, I experienced some difficulties presenting my PowerPoint slides and turning on the camera because of an unstable internet connection.

Some PSTs also mentioned that they still did not possess adequate technological literacy that led them to face difficulties to navigate the online platforms such as Zoom to deliver the lesson online:

The first problem that I felt during online microteaching is the limitation in the technological understanding. I am still not used to presenting some materials with Google Meet and other apps, that made myself less confident in teaching.

Regarding the issues, it is critical to properly conduct a digital competency training in which pre-service teachers cooperate on digital concerns regardless of their prior experience (Reisoğlu & Çebi, 2020). This could be executed by integrating technology in the curriculum of pre-service teacher education. Ally (2019) suggested fifteen key competencies for the online educators such as the ability to adjust to new technology, to utilize multimedia to offer educational information in various formats and to self-teach new technologies and software. While such digital competency training was not significantly emphasized during the pre-COVID 19 era, the urgency to revitalise and digitalize the initial teacher education program is indispensable in the post-pandemic era.

3.3. Interaction

Interaction challenges refer to the difficulties that the PSTs face during the communication that they conducted during the microteaching practice. Regarding this, the data identified

that the PSTs experienced interaction issues in terms of the interaction between teachers and students, as well as the disruption from family members during the microteaching session.

It was difficult to interact with my classmates as the students and to ensure if they understood the materials that I delivered. When teaching online, it was also hard to grab their attention because I kept thinking about the Wi-Fi signal to make sure that everything would go well.

Simultaneously, the PSTs also reported that they experienced some disruption from family members when they conducted teaching practice from their homes. One PST stated that:

Besides presenting the teaching materials and unstable internet connection, the problems came from some of my family members who were at home that disturbed my concentration in teaching.

The interaction difficulties between teachers and students are in line with the previous investigations by Almazova et al. (2020), and Sepulveda-Escobar and Morrison (2020). They reported teachers' incapacity to organise successful online interactions with students. Online education does, in fact, have a negative impact on teacher-student communication and effectiveness (Alawamleh et al., 2020). To solve this, Alawamleh et al. (2020) suggested that teachers and students engage informally using WhatsApp groups, Messenger chats, and private video conversations. The issue can also be further solved by integrating communication skills into pre-service teacher programs aiming at effective online cooperation and communication between an instructor and a learner. The skills/competencies will include: 1). involving the learners in the communication, 2). using proper non-verbal communication when dealing with students via video and text, 3). using social media to interact with students and peers and 4). using the learner's language (Ally, 2019). Meanwhile, disruption caused by family members during the microteaching session could be solved by setting an environment in which families could not interrupt them during online micro-teaching.

3.4. Linguistic Challenges

With 19 identified codes, the other issue faced by the PSTs who practiced teaching online during the pandemic is the linguistic aspect. Regarding this, President University is one of the few universities in Indonesia that uses English as a medium of instruction. As a consequence, all students are expected to communicate in English during the teaching and learning activities, including the students that were being examined in the current study. One PST reported that:

My first challenge during the online microteaching was the fact that I have to use English during the practice. I consider that my English is not really good. Because of this and the unstable internet connection, I often made mistakes during the online teaching.

This finding indicates that PSTs who attend an EMI university do not guarantee that they will have no difficulty using English in the classroom. This is in line with an investigation in EMI context by Othman and Saat (2009) that PSTs were struggling with their own English language ability. Besides, when the PSTs use the English language while performing the microteaching

activity, they are expected to use formal and academic variations of English instead of non-formal ones. In relation to this, pre-service teachers in the initial teacher education institutions find it difficult to utilise formal and academic English variations in microteaching (Makafane, 2020).

Another study by Fhaeizdhyall et al. (2018) also found that pre-service instructors faced difficulties teaching English classes to learners with limited English proficiency. To cope with the issue Othman and Saat (2009) suggested intensive programs such as English for a specific purpose (ESP) aiming at enhancing their language skills to teach in English. They also recommend the pre- service teacher to have a close collaboration with English-proficient peers.

3.5. Psychological Challenges

The next issue faced by the PSTs when they performed an online microteaching is psychological difficulty. Regarding this, they reported their nervous experience to speak and teach in front of their lecturer and friends.

One of the difficulties I faced was nervousness. Talking and teaching in front of the lecturer and my friends made me quite anxious.

The psychological-related issues have been reported by previous studies that focused on PSTs teaching practice experience at ITE programs. For instance, Meherali et al. (2021) accounted that children and adolescents experience fear, concern, helplessness, and social and dangerous behavioural issues as a result of pandemics. Another study by Kidd and Murray (2020) shows that a sense of 'uncertainty' about what was occurring and how long it would continue was expressed by PSTs who were about to start practicum at the start of lockdown. It is also supported by Al Abiky (2021) that pre-service instructors felt disoriented and worried by which they entered the survival stage. One solution to cope with the psychological issues is to organise an e-practicum under the guidance of a university supervisor who also serves as an e-mentor, with the goal of enhancing pre-service teachers' competency and preparing them for online teaching (Ersin et al., 2020). This strategy was found to be beneficial for pre-service teachers since it assisted them in overcoming their worries about online teaching (Ersin et al., 2020). In other words, the practicum for online teaching could be integrated in the pre-service teacher's curriculum.

3.6. Challenges in Learning Material and Time Management

The last identified challenge in the student's survey and written reflective notes is the challenge in learning materials and time management. The challenges in learning materials refer to the PSTs' difficulties in simplifying the materials for elementary students to understand during the online microteaching performance.

At first, I had a problem simplifying the topic so that students could understand it, but in the end, I was able to do so.

In order to address the problem, the PSTs need to be equipped with certain digital competences in which technology is incorporated into education in an appropriate way from a pedagogical perspective (Caena & Redecker, 2019). In this case, they highlighted educators' competence to select, create, modify, and manage digital educational resources that work for

students. Similarly, Ally (2019) suggests several key pedagogical strategies to assist PSTs achieve the learning objectives, including: 1) Choose digital technology that supports the content and learning outcomes. 2). Produce high-quality digital learning resources, 3) Create learning resources that are tailored to the individual needs of each learner.

Meanwhile, time management challenges refer to difficulties in balancing learning content with instructional time. One PST accounted the difficulty in maintaining the balance between the learning content coverage and the given time during the online microteaching activity:

The challenge I faced while implementing this microteaching was maintaining a balance between the amount of learning content and the amount of available learning time. It exhausts my brain about what type of innovative activity I should assign to my students. Additionally, difficulties arise from some factors when this activity is conducted online. These difficulties are caused by a poor signal as well as issues with the device being used for teaching.

This is in line with an investigation by Ogbonnaya et al. (2020) that pre-service teachers struggled to manage their time throughout their online learning preparation due to a lack of digital skills and technology tools. To cope with this, Caena and Redecker (2019) suggest developing digital competence in teaching and learning which focus on how to plan, design, and organise the use of digital technology. This means the ability to prepare, design, and organise the use of digital technology will assist them balance learning material and learning time.

3.7. Perceived Advantages of Online Microteaching Practice

There has been an extensive body of research documenting the benefits of online microteaching (Arsal, 2014; Aydin, 2013; Lin & Zheng, 2015; Özonur & Kamışlı, 2019; Shahidan et al., 2020). The participants of this study perceived significant benefits of online microteaching practices that they attended during the pandemic. In this study, the data were analyzed through qualitative content analysis. Regarding this, there were six benefits reported ranging from teaching development, awareness of classroom interaction, language use, adjustments, time management, and efficacy. The following chart was generated to guide the discussions:
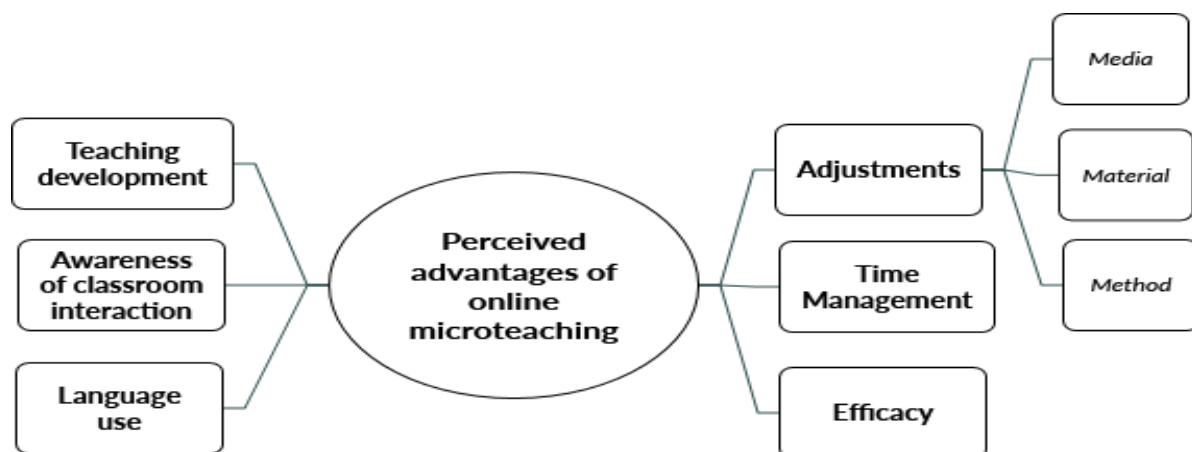

Figure 2. The Perceived Advantages of Online Microteaching From the Data Analysis

Based on the above chart, the element related to adjustment in teaching was further categorised into adjustment related to media, material, and method. Furthermore, based on their representations on the chart, the categorisation of advantages of online microteaching practice was depicted in the following table:

Table 2. The Number of Instances Regarding the Advantages of Online Microteaching

Advantages	Number of Codes	Total Codes
Adjustment in teaching	25	
Teaching development	17	
Promoting efficacy	13	71
Awareness of classroom interaction	7	
Language use	5	
Time management	4	

From the above table, adjustment in teaching became the most significant advantage that the participants perceived during the online microteaching practice, followed by teaching development, promoting efficacy, awareness of classroom interaction, and language use. Time management became the least benefit reported in this study.

3.8. Adjustment in Teaching

The PSTs participating in this study agreed that through the online microteaching practice gave them opportunities to learn how to modify their teaching skill in order to achieve the desired goals. Related to adjustment in the use of media and materials for teaching, one of the participants reported that:

Online microteaching had a huge impact on me. With my existing microteaching experience, I can measure the extent of my ability to teach. To be a professional teacher, we must be able to teach in any situation and condition. With online microteaching I can learn new skills and master existing technology.

This participant argued that online microteaching practice allowed her to explore her knowledge of teaching to accommodate any conditions in the classroom. Different conditions in the classroom might require different media used to deliver teaching materials to reach certain learning goals. The online microteaching allowed the PSTs to learn technology that became one of the significant tools needed in the classroom during the pandemic. PSTs need to adjust to the online teaching and learning environment related to digital competencies, classroom management, and pedagogical skills particularly due to the recent extensive technology integration in the teaching and learning activities (Akram et al., 2021). With regards to teaching methods, one of the participants believed that the online microteaching practice provided opportunities for the PSTs to explore different teaching strategies:

Online microteaching really needs to be implemented for students, especially teachers. This is an illustration of how we will implement teaching methods later when we become educators. We do not know in the future the conditions and learning situations in Indonesia. But by doing training like this, it adds to the experience of using technology when learning

takes place. As a teacher, I have to provide more fun learning methods so that students also interact more and understand the content.

In addition to exploring teaching methods, the participant also suggested an anticipation for future learning due to the unprecedented condition that teachers might face. This implies that equipping teachers with digital competencies need to be extended beyond the pandemic time (Akram et al., 2021).

3.9. Teaching Development

Feedback becomes a significant element in any professional development process, and through feedback, professional competence will be developed (Skovholt, 2017). The findings of this study demonstrated that the PSTs developed their professional competence through feedback from their lecturers and peers. These feedbacks have enabled them to be aware of what they need to prepare for future practices. One of the participants stated that:

It really helps me if one day I have to do online teaching. I have experience and feedback from lecturers and friends on what I need to improve and reduce as well as time to prepare materials and learning methods properly so that there are no mistakes when teaching.

The above statement suggested that the online microteaching practice provided them with spaces to learn from their lecturer's and peers' feedback. The contribution of feedback, according to Chaudhary et al. (2015), could be seen by the PSTs awareness of their teaching strategies suggested by their lecturer and peers. In this regard, the student viewed feedback as a means to identify her progress and errors in order to guide them in improving their mistakes in teaching. The participant also noted that the feedback she got from multiple sources has been useful for future teaching practices, especially related to the implementation of materials and methods for teaching. From the feedback, the PSTs were able to know their strengths and weaknesses performances during the online microteaching in the mini teaching. In other words, feedback has been useful to improve and increase what the student-teachers should do for future teaching. The participant further suggested that feedback provided opportunities to practice self-reflection and to improve pedagogical skills in teaching. Previous studies have also reported the contributions of feedback during the microteaching practice. Through a survey conducted to students in Turkey, Önal (2019), for example, investigated the benefits of implementing video-recorded microteaching practice.

3.10. Promoting Efficacy

The participants in this study agreed that the online microteaching practice helped them explore their capabilities to effectively handle tasks and to face challenges related to teaching and learning activities and increase their confidence. The PSTs also experienced a transformation from being students to student-teachers and believed that the online microteaching practice has paved their roads to improvement. One of the participants stated:

There is more opportunity to understand get a picture as a teacher when conducting the online teaching and learning process because so far I have only adapted as a student, so it is very helpful for me to understand more about the situation illustrated by a microteaching practice with children and their feedback serve as a mirror for us to be able to learn and improve.

Previous studies also reported that microteaching helped promote PSTs teaching efficacy (Arsal, 2015; Cinici, 2015; Karışan, 2017). Karışan, for example, investigated the contribution of microteaching practice towards PSTs self efficacy in Turkey. The researcher found out that microteaching practice played significant roles in developing PSTs self-efficacy towards teaching by enhancing their motivation and confidence in teaching, as well as lower their teaching anxiety level prior to their journey in the real teaching session (Karışan, 2017). Similarly in this study, during the online microteaching practice where PSTs had teaching practice with peers, supervised by their lecturer, some of the participants might face anxieties. One of the participants said:

As an introvert, this one makes me more confident, but I still need to learn English a lot, but on the other hand I want to teach directly because the smiles and enthusiasm of children become positive energy to become better.

The quote showed that the participant recognized her weakness and her progress in gaining confidence. She also believed that the microteaching sessions contributed to her teaching efficacy development. Previous study has also reported that microteaching practice provided a supportive and rich environment for PSTs to develop their pedagogical and professional skills (Cinici, 2015).

3.11. Awareness of Classroom Interaction
The findings of this study have shown that online microteaching practice have facilitated the PSTs pedagogical development which let them improve their teaching skills. One of the participants stated:

I feel online microteacing has a very important role in giving me my first experience (of teaching). After knowing the atmosphere in learning, I know what things still need to be improved.

Based on the above statement, the participant reported that the online microteaching provided an opportunity to be engaged in teaching and learning activities. During the teaching practice, the PSTs were assigned to practice a number of sessions of teaching (and learning) with their peers, supervised by their lecturer. Through a repetition of teaching practices with their peers the students experienced a transformational learning (Spear & da Costa, 2018).

3.12. Language Use
The findings of this study generated advantages related to PSTs language use for teaching. The online microteaching practice helped the PSTs improve their communication skills. One of the participants said:

The role of online microteaching for me is that I must be able to make the learning atmosphere more fun, and interesting. Furthermore, in teaching I need to use appropriate language, clear and can be heard by students.

The participant reported that her involvement in teaching and learning activities allowed her to build her awareness of the classroom atmosphere so that she could modify their

teaching strategies, especially related to the use of language for teaching. In this regard, the PSTs had opportunities to practice how to communicate well with the class members. Similarly, the PSTs could also use the extensive feedback from their peers and lecturer to learn how to give explanations, respond to queries, ask questions, and provide reinforcement appropriately to create an interesting classroom atmosphere. In other words, their communication skills were developed. Furthermore, the use of appropriate language during the microteaching practice has also been proved useful to boost the PSTs affective domain, for instance by giving reinforcement. Students practiced giving reinforcement while at the same time received the same favour from their peers and lecturers through feedback. Moore, for instance, suggested that educational practitioners need to always take care of students' affective domain such as by praising them, considering that this becomes an important aspect in instructional process. Constant reinforcement enhances the possibilities of students' learning success (Moore, 2000).

3.13. Time Management

The majority of the participants believed that the online microteaching practice helped them in improving their time management strategies for teaching. One of the participants reported:

In my opinion, what I got from microteaching this time was to evaluate time management so that the lesson plans can be implemented according to expectations.

Based on the above explanation, the participant revealed that she had the opportunity to improve her time management strategy. This further helped her in allocating time for the other activities she had during the practice teaching such as in making sure that the lesson plans were implemented well during the teaching and learning activities. A previous research also reported that during the microteaching practice, PSTs had the opportunities to develop their competencies in preparing lesson plans, determining learning goals, managing time effectively, and practicing assessment techniques.

4. CONCLUSION

In summary, the emergence of the global COVID-19 pandemic has shifted the learning and teaching activities in teacher education programs from offline to online setting. Regarding this, ITE institutions that heavily rely on practical and face-to-face learning activities to support the journey of shaping future professional teachers must transform swiftly and adaptively to cope with the COVID-19 pandemic. Due to the abrupt change, PSTs in this study experienced considerable challenges in performing online microteaching, mainly in terms of technical and didactic-related aspects. Although the digitization of ITE programs has been immensely discussed in the global context, it has not progressed significantly particularly in a developing country like Indonesia where the reliable internet network is still sparsely covered. Consequently, the technical problems faced by the PSTs in this study are foreseeable. However, the problems should not be left unaddressed due to the importance of microteaching in developing and adjusting teaching, promoting efficacy, as well as improving the PSTs' awareness of classroom interaction.

While the implementation of online microteaching in this study could be regarded as an emergency response towards the abrupt shift from offline to online learning to curb the virus spread, it is strongly recommended that other ITE programs enhance the future

implementation of online microteaching. Instead of regarding it as an emergency response, online microteaching must be perceived as an inexorable reality of future education journey for PSTs in the post-pandemic era. Therefore, ITE programs must undertake significant support to empower PSTs in addressing possible challenges they may face in performing online microteaching, primarily technical and didactic-related challenges. For instance, ITE programs can introduce certain pedagogical tools to increase the student-teacher engagement in the online teaching realm, such as Padlet, survey-based activities, and many others.

Besides addressing the emerging problems of online microteaching, teacher educators can also navigate the way the online microteaching implementation shapes the PSTs' professional identity construction as a future teacher. Regarding this, the way PSTs perceive themselves as a future post-pandemic teacher must be examined in order to maximize the importance of online microteaching for the PSTs' journey as a future professional teacher. For example, teacher educators may encourage the PSTs to not only reflect on their past online microteaching performance but also their future projection or implication of online microteaching towards their practice and identity as a future teacher in the form of multimodal reflective notes.

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