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Dissemination of technology utilization of FM community radio as a means to support teaching learning activities for students during the covid-19 pandemic at Muhammadiyah Elementary School Tlogolelo, Hargomulyo Village, Yogyakarta Special Region, Indonesia

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ABSTRACT

Schools have used an online learning system during the COVID-19 pandemic. However, several schools are still not covered by cellular services due to their remote locations. The community service activity aimed to provide alternative solutions and support for the online learning and teaching activities at Muhammadiyah elementary school in Tlogolelo, Hargomulyo village, located in Yogyakarta Special Region, Indonesia. The main issue was that not all students could participate in online learning because of poor cellular signals in the area, which hampered internet access. Furthermore, some students had limited resources to support infrastructure for online learning, namely because they did not have smartphones or had to take turns with their siblings or parents. The main program implemented was the procurement and installation of supporting facilities to utilize and optimize the existence of Radio Voice Education. The community service team provided several radio receivers, including FM radios for underprivileged students and Android smartphone devices to assist teachers in creating radio-based learning content. Several activities to increase teacher capacity in creating educational content based on FM community radio were also included in this program, such as socialization and training on the use of Android-based podcast applications, Anchor FM, and Spotify, as well as assistance in making FM community radio-based learning-content.

KEYWORDS
Covid;
Online learning;
Educational Voice Radio;
signal repeater

1. Introduction

The news of the Corona Virus Disease (Covid-19) outbreak at the end of 2019 shocked the world [1], [2]. The virus, which can be transmitted through the air or saliva splashes, is exacerbating the situation [3]. The outbreak began in China and has since spread to other countries, including Indonesia. COVID-19 was said to have entered Indonesia in early March 2020. In response, on March 17, 2020, the Indonesian Ministry of Education and Culture (Kemendikbud) issued a policy in the form of a circular letter that included online learning and work done solely from home, also known as work from home (WFH), to break the cycle of the virus [4] [5].

Online learning and child abuse due to the impact of the COVID-19 pandemic on work and school-from-home occur in Indonesia [6]. Online learning in some countries is a new process. Some insights have come into Learning and Teaching Foreign Languages Online in the Era of the COVID-19 Pandemic [7]. It encourages self-management and the creation of an online state space with

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evolving self-organizing maps and differential learning for reinforcement learning [8]. Some research correlated with online learning includes transition to emergency online teaching [11], and understanding feedback in online learning – Critical review and analysis of metaphors [12]. We need to learn from experts on how experts engage and evaluate online content [13]. Wong explored the sequence of learner activities concerning self-directed learning in a massive open online course [14]. Rathor conducted a Comparative Study of Machine Learning Approaches for Amazon Reviews [15].

Digital technology disrupted, at some points, early childhood education [16]. Challenges in online practices are issues to overcome. It needs to embrace the desired difficulty to enhance practice-relevant online learning [17]. Bowyer assessed the effects of learning opportunities [18]. Students have their standpoints on online teaching and learning and the uncertainty of the COVID-19 lockdown [21]. Facilitating flexible learning can be performed by replacing classroom time with an online learning environment [22] by considering How online tutors motivate English E-learning [23]. Khader investigated online control of stencil printing parameters using a reinforcement learning approach [25]. Validity of the classroom community scale in a virtual learning environment need to be examined [55].

Online learning due to COVID 19 has attracted researchers to investigate it deeper, such as academic procrastination and online learning during the COVID-19 pandemic by Melgaard [31]. Academic self-efficacy, resilience, and social support among Israeli first-year nursing students studying in an online environment during the COVID-19 pandemic by Warshawski [36]. Online family medicine training amid the COVID-19 crisis at KSA, a mixed methods study by Rabbani [46]. Online learning for undergraduate health professional education during COVID-19: attitudes and perceptions of Jordanian medical students by Muflih [52].

The following are other research findings pertaining to online works. Online formative peer feedback in the Chinese context at the tertiary level: a critical review of the design, impact, and influencing factors by Zhan [26]. Online statistical learning tracking: Word segmentation in a target detection task by Lukics [27]. Validation of the online theoretical module of a minimally invasive surgical mixed learning course for nurses: A quantitative research study by Ortega-Morán [28]. Detection of Credit Card Fraud Using the Machine Learning Algorithm by Dornadula [29]. Facilitating goal setting and planning to improve online self-directed learning settings by Wong [32]. Supporting the independent learning of students in the Massive Open Online Course by Jansen [33] The concept of an expert system for creating personalized digital skills learning paths is described by Róewski [34]. Knowledge Aggregation and Smart Guide for Fragmented Learning by Liang [35].

Farchi [37] compared the combined data assimilation and machine learning methods for error correction in offline and online models. Benninger [38] researched self-study, transferable online monitoring systems for household electrical appliances. Wang [39] used neural networks and deep learning for the online scheduling of satellite images. Ma [40] discovered a powerful Lagrangian online support vector engine against enemy attacks. Initiatives for learning research Wang [41] investigated behavioral quantization and grouping of potential values. Glassman [42] developed an online collective efficacy for cohesion, collaboration, and the struggle to create an online learning community scale. Van Alten [43] discovered that self-learning support in reverse instructional videos improves learning outcomes.

Hsu [47] studied the stories of two classes, the cognitive load of tourism students, and learning outcomes in face-to-face and online classes. MADANI [49] investigated a social collaborative screening approach in an e-learning platform for course recommendation. The burden [50] set up Eskwel's Designing an Enterprise Learning Management System to Improve Social Networks and Reduce Cognitive. Sarosa [51] researched the effect of perceived risk and perceived cost on secondary school student's use of online learning. How to optimize financial portfolio with online deep reinforcement learning and a finite-stack autoencoder was probed by Soleymani [53].

Students frequently face a variety of challenges when learning online, particularly those in the Kulon Progo area who live in remote and mountainous areas where signals are hampered. Aside from signal issues, some students have limited access to online learning infrastructure because they do not own smartphones or share them with siblings or parents. This unfavorable situation has an impact on

the online teaching and learning process in schools. The community service team was concerned about these issues. The program offers the procurement and installation of supporting facilities to utilize and optimize the existence of Radio Voice Education. The community service team provided several radio receivers, including FM radios for underprivileged students and Android smartphone devices to assist teachers in creating radio-based learning content. Several activities to increase teacher capacity in creating educational content based on FM community radio were also included in this program, such as socialization and training on the use of Android-based podcast applications, Anchor FM, and Spotify, as well as assistance in making FM community radio-based learning- content.

3. Method

The activity plans for implementing the program were proposed on January 26 and 29, 2021, and the socialization and training on the use of the Android smartphone-based podcast application were held from January 30 to February 15, 202, which also assisted in creating learning media content for educational radio. On Monday, September 13, 2021, the procurement of supporting facilities for optimizing the radio-based learning process was carried out. On September 24, 2021, radio equipment was installed at Muhammadiyah elementary school, and educational radio FM 107.8 MHz was first broadcast via a radio transmitter.

4. Results and Discussion

The devotees carry out socialization and training on the use of the Android smartphone-based podcast application as shown in Figure 1. The figure shows that in this activity they introduce and explain how to use the Anchor and Spotify applications on Android smartphones with the target of participants being all teachers at SD Muhammadiyah Tlogolelo.

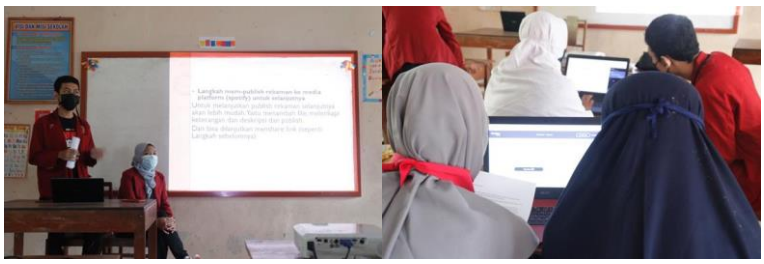

Fig. 1. Socialization and Training on the Use of Educational Radio Podcast Applications

Figure 1 depicts the socialization and training on how to use the Android smartphone-based educational radio podcast application. All teachers participate as community service members who introduce and explain how to use the Anchor and Spotify applications on Android smartphones. As illustrated in Figure 2, the community service team members assist in the creation of learning media content for educational radio. The aim was to provide opportunities for teachers to practice previously studied material and to overcome technical obstacles that teachers face when practicing radio content creation. The teachers developed their creativity by making Radio advertisement Jingles, which were used to promote the school.

Fig. 2. Assistance for Educational Radio learning, Media and Podcasts

The community service contributes several supporting tools to support online teaching and learning activities through the FM radio channel Educational Voice Radio (Radio Suara Edukasi), as shown in Figure 3. The tools include a 50-watt FM radio signal transmitter, an FM radio transmitting antenna, four portable digital FM receivers, a set of Android smartphones that can support and facilitate teachers in the creation of learning media content based on FM radio broadcasts, and a 2-channel audio mixer device to support the process of running educational radio broadcasts and enhance the sound quality.

Fig. 3. Contribution of Radio Transmitter Equipment and Android Smartphone

The following activity was to install and position an FM radio transmitter and supporting equipment for radio broadcasts. The installation was carried out at Muhammadiyah Junior High School, which is closer to the elementary school and has a science laboratory room that could be used for installing supporting equipment for FM radio broadcasts and the unused antenna tower so it could be used for radio broadcasting. Figure 5 depicts the installation of the FM radio transmitter antenna. The placement of FM radio equipment at Muhammadiyah Junior High School was considered more appropriate because the school has a special staff that can be seconded to operate and maintain the equipment.

Fig. 4. Installing Indoor Radio Transmitter, Transmitter Antenna, Audio Mixer

Fig. 5. Installing an outdoor FM radio antenna on the tower

The closing program was the inauguration of the FM 107.8 MHz Educational Radio named Radio Suara Pendidikan at Muhammadiyah Junior High School, as illustrated in Figure 6, attended by several teacher representatives and the Principal of both Muhammadiyah elementary school and Muhammadiyah Junior High School.

Fig. 6. FM 107.8 MHz Educational Radio broadcasting inauguration

5. Conclusion

During the COVID-19 pandemic, schools used an online learning system. However, because of their remote locations, several schools are still not covered by cellular services. The Community Service program, carried out at Muhammadiyah Elementary School in Tlogolelo, Hargomulyo Village, Special Region of Yogyakarta, Indonesia, aims to resolve problems with the online teaching and learning process at a low cost by donating e-transmitting devices and antennas, several portable FM signal receivers for underprivileged students, and Android Smartphone devices and Dual-channel Audio Mixers create Educational Radio broadcast-based learning content. This service program also has various activities aimed at improving teacher capacity. It includes socialization and other activities to help teachers develop educational content for student learning.

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Author Contribution

From these problems experienced by students of SD Muhammadiyah Tlogolelo, Hargomulyo Village, Kokap District, Kulon Progo Regency, DIY. Therefore, as a Servant, he contributes to offering solutions in the form of programs and activities during the community service process.

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Conflict of Interest

The authors declare no conflict of interest.

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