

Development of Tutorial Learning Media of UNS Web-Based Online Learning System (SPADA)Ngadimin¹, Sakroni², Daruwahyuningsih³ngadimin72@staff.uns.ac.id¹, sakroni@staff.uns.ac.id², daruwahyuningsih@staff.uns.ac.id³

Abstract: As the COVID-19 pandemic struck, faculty members are mandated to conduct online learning, in which UNS SPADA is recommended as the instrument. Various efforts have been made to optimize the utilization of SPADA. A survey conducted on 80 SPADA users revealed that only 35% could utilize the app well. Since face-to-face training, socialization, and assistance for SPADA utilization are impossible to do due to the situation, web-based tutorial learning media are required to equip the users with independent manual and guidance. This research implemented a Research and Development (R&D) method through the ADDIE model. The study aims to design, develop, and implement learning media of web-based UNS SPADA tutorials in text and images. At the FGD organized by the Center of Information Technology Development for Learning (PPTIuP), LPPMP of UNS highlighted that web-based tutorial media could provide a feasible solution to guide SPADA users. Of the two assessed aspects, accessibility and visual communication obtained excellent (54%), good (41%), and adequate (5%).

Keywords: tutorial, SPADA, e-Learning, ADDIE

Abstrak: Pada masa pandemi COVID-19 pembelajaran harus dilaksanakan secara daring, salah satu alternatif agar pembelajaran tetap berlangsung adalah menggunakan SPADA UNS. Berbagai upaya telah dilakukan untuk meningkatkan penggunaan SPADA. Survey dengan 80 partisipan pengguna SPADA menunjukkan 35 % belum dapat memanfaatkan SPADA dengan baik. Saat ini pelatihan, sosialisasi dan pendampingan penggunaan SPADA tidak bisa dilakukan secara luring. Untuk itu diperlukan media pembelajaran tutorial berbasis web agar pengguna dapat belajar secara mandiri. Metode penelitian yang digunakan adalah penelitian pengembangan (R & D) dengan mengacu pada model ADDIE. Tujuannya adalah untuk merancang, mengembangkan dan mengimplementasikan media pembelajaran berupa tutorial SPADA UNS berbasis web yang berupa text dan gambar. Dalam FGD yang diselenggarakan oleh Pusat Pengembangan Teknologi Informasi untuk Pembelajaran (PPTIuP) LPPMP UNS menyatakan bahwa pengembangan media tutorial berbasis web dinyatakan layak diimplementasikan. Dari dua aspek yang dinilai yaitu aspek aksesibilitas dan aspek komunikasi visual diperoleh 54% sangat baik, 40% baik dan hanya 6% menyatakan cukup.

Kata Kunci: tutorial, SPADA, e-Learning, ADDIE

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INTRODUCTION

The current COVID-19 pandemic in Indonesia has forced various activities to adapt. One of the activities that must be adapted on a large scale is teaching and learning in schools and universities. As stated by the United Nations, one of the sectors most affected by this outbreak is education (Purwanto, 2020). Offline learning, usually held before the COVID-19 pandemic, can no longer be carried out. As the World Health Organization (WHO) recommended, to prevent the spread of COVID-19, the public is asked to stop activities that will potentially cause crowds (Handarini, 2020). To implement the WHO recommendations, the Government of Indonesia has applied tiered Community Activity Restrictions (PPKM). Implementing either offline or online learning depends on the PPKM level in each area.

The central and local governments have made various efforts to continue teaching and learning. The online learning system, known as online learning, is one solution to keep the learning process safe from the spread of COVID-19. Firman and Sari asserted that online learning requires an internet network with connectivity, accessibility, flexibility and the ability to bring up various types of learning interactions (Firman & Sari, 2020). Universitas Sebelas Maret (UNS) has determined the implementation of learning during the COVID-19 pandemic, one of which is using the UNS Online Learning System (SPADA) application with the URL address of <https://SPADA.uns.ac.id/>. UNS SPADA is managed directly by the Center of Information Technology Development for Learning (PPTIuP) of the UNS Education Quality Assurance and Development Institute (LPPMP). The Rector's Regulation of Universitas Sebelas Maret, No. 1 of 2020 concerning the Online Learning System, explains that the function of SPADA is as a supplement, complement or substitute for conventional learning and as a support for the implementation of the distance learning program (PJJ). The objectives of implementing online learning with UNS SPADA are (1) increasing the efficiency and effectiveness of learning in achieving graduate competence standard (SKL) stated in the planned formulation of graduate learning achievement (CPL), (2) providing flexibility in learning interactions by utilizing information and communication technology, (3) enhancing communication, collaboration, critical thinking and problem solving, as well as creativity and innovation (4C) skills of students.

UNS SPADA was designed using Moodle version 3.4 as the Learning Management System (LMS). It has migrated from the former e-learning site to <https://elearning.uns.ac.id>. It is integrated with single sign-on (SSO) technology at the moment. Users enrolled as members of the UNS, including educators, education staff, and students, can access network resources through the app by logging in with a single user account called SSO. SPADA has a variety of capabilities that can be customized to meet the demands of online learning at UNS. Its characteristics are classified into two broad categories: resources and activities. Several learning resources are available to promote learning, including texts, pictures, videos, teleconferences, and an evaluation system in assignments or tests.

PPTIuP LPPMP of UNS has made numerous efforts to increase SPADA usage, including face-to-face training at LPPMP of UNS, faculty roadshows, video conferences in webinar series, the creation of pdf electronic guidebooks that can be downloaded directly from the SPADA website, and consulting services both online and offline via learning clinics. LPPMP's efforts to expand the number of SPADA users fall short of expectations. Numerous courses are carelessly created without learning resources or exercises, and the courses do not adhere to the principles of online learning. Of the courses establishing classes at SPADA, only 23.24% are actively used for lectures. By contrast, 76.76% of courses are not utilized for recuperation. According to firsthand observations on the UNS SPADA website, several courses are created but lack resources and activities such as online lectures. Several obstacles to using SPADA can be identified through consulting services, encompassing (1) users cannot quickly locate specific topics in the provided guidebook, (2) tutorials on using SPADA discussing

courses per topic are insufficient, and (3) offline training cannot be conducted during the COVID-19 pandemic.

This research aims to design, develop, and implement web-based SPADA tutorial learning media. Online learning media can ease users to use SPADA as a distance learning platform. Nuriansyah (2020) proved the efficiency of online learning media in research conducted at the Economic Education Department of Universitas Pendidikan Indonesia. The study unveiled that online learning has benefited students by increasing their GPA compared to the semester before the pandemic, and 51.9% of students strongly agreed that lecturers always utilize online media in lectures during the pandemic (Nuriansyah, 2020). According to Zang, quoted by Oktafia Ika Handayani, the internet and multimedia technologies can revolutionize how information is given and serve as a viable alternative to traditional classroom learning (Handayani, 2020). Online education needs supporting infrastructure, including computers, smartphones, and internet connections, to access material from anywhere and at any time (Gikas & Grant, 2013).

According to Khusniyah and Hakim's study, learning to use blogs benefits learning to read English, has consequences for the quality of teaching and learning to read in the classroom, and has a substantial impact on the growth of students' daily scores. Meanwhile, Anggraini's study indicates that online educational media boosts children's excitement and willingness to learn. Additionally, online learning materials motivate children to study independently (Anggraini, 2019). The use of online learning resources can enhance the educational experience. Experiential learning using web-based media can undoubtedly be delivered.

As seen by the research findings and a few of the references above, web-based tutorial learning media can be utilized for self-study. UNS SPADA users can immediately practice following the sequential stages without attending training. By accessing web-based tutorials, lecturers can learn how to design courses, offer materials, and conduct lecture activities freely. Independent training through these tutorials is considered a viable alternative to direct SPADA tutorials and helps decrease crowding during the COVID-19 pandemic.

RESEARCH METHODS

Development research is the research approach used to create web-based tutorial learning media. Development research, according to Sugiyono, entails developing and extending current knowledge, activities, and products. Development research aims to create a product and determine its viability (Sugiyono, 2012). This study focuses on the development of online learning products of media or tutorial modules.

The model established by Dick and Carry, specifically the analysis, design, development, implementation, evaluation (ADDIE) model, is the subject of this development study. The ADDIE model is divided into five stages, covering (1) analysis, (2) design, (3) developing, (4) implementation, and (5) evaluation (Tegeh, IM, & dkk, 2015). Following Tegeh (2014), as stated by Muhamad Ikhwanus Shofa et al., the benefit of employing the ADDIE model is that it enables the evaluation of product development activities at each step. This review step benefits the product being created since each stage includes an evaluation stage that helps decrease mistake rates or product shortages during the final stage of development (Shofa, Redhana, & Juniartina, 2020). The descriptive analysis approach was applied in this investigation. The research instrument is a questionnaire with an assessment sheet for material and media experts. This descriptive analysis approach was utilized to categorize data from

qualitative sources such as questionnaire responses, feedback, criticism, ideas for improvement, and the findings of direct interviews.

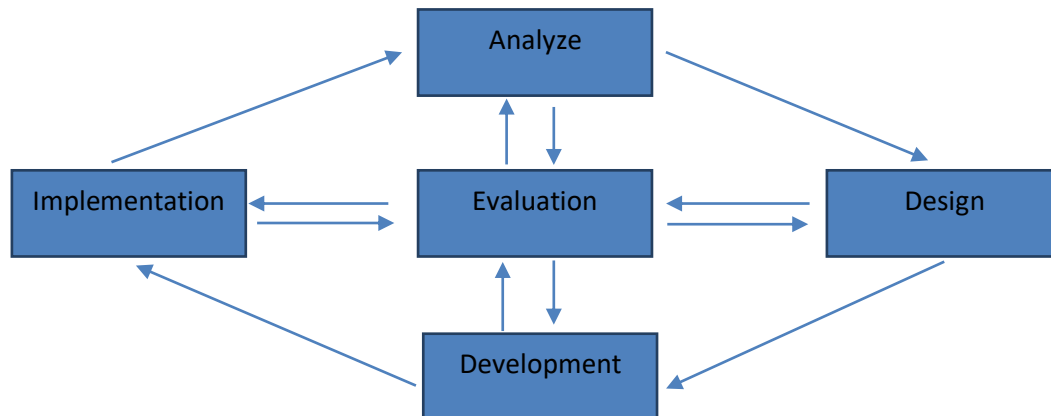


Figure 1. Stages of the ADDIE Model (Tegeh et al., 2015)

RESULTS AND DISCUSSION

Prior to building web-based instructional learning material, the first step was to run a requirements analysis. This step was conducted to collect data to identify issues developed after implementing the UNS Online Learning System (SPADA).

The analysis consists of (1) a review of the literature on the development of web-based learning media, (2) a Focus Group Discussion (FGD) with several professors and other users being members of the PPTIuP LPPMP of UNS peer group to ascertain the issues that need to be addressed, and (3) distribute questionnaires to obtain feedback and comments from SPADA users at Universitas Sebelas Maret Surakarta.

According to the findings of the literature review and FGD, the current tutorials for using UNS SPADA had several shortcomings, comprising (1) they were not yet organized in a neat and orderly manner, (2) the content was incomplete, and 3) no tutorial theme search navigation was provided. The researchers distributed questionnaires to overview SPADA’s usage as distance learning media at UNS. Eighty active SPADA users from a variety of UNS faculties were surveyed. The researchers solicited thoughts and feedback about the completeness of the SPADA tutorials. The following table summarizes the results of user views and feedback gathered through surveys: (1) tutorials that have not existed should be created, (2) printed modules with picture examples that users could study and practice should be established, (3) tutorials were less engaging, (4) tutorials were less practical, and (5) it was vital to create practical tutorials for each content easy to read, grasp, and simplify. The following graphs portray the questionnaire’s findings.

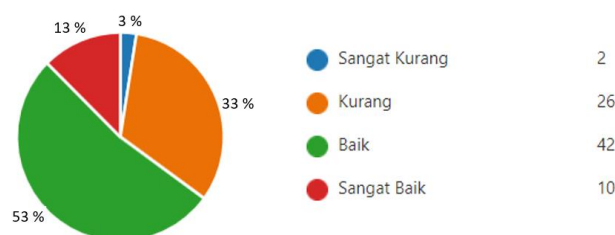


Figure 2. SPADA user abilities

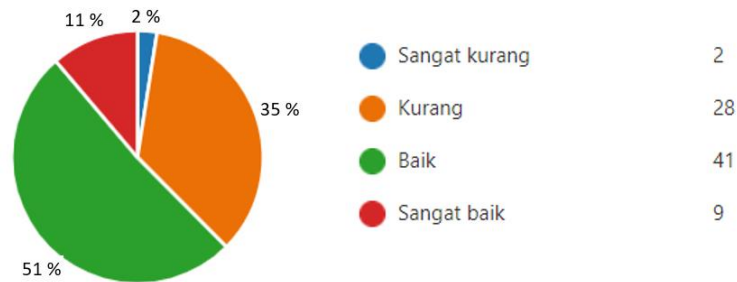


Figure 3. Lecturer abilities to present materials at SPADA

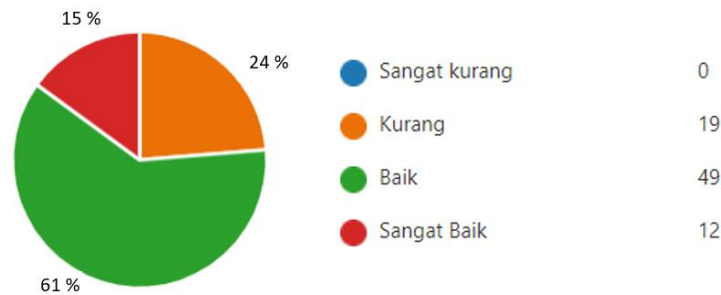


Figure 4. Availability of tutorials at SPADA

Figure 2 demonstrates the not excellent ability of SPADA users of 80 lecturers, totaling 36%. Figure 3 illustrates lecturers' ability to produce and deliver course content online with SPADA; 37% felt it was bad, while 63% mentioned it was fine. Figures 2 and 3 illustrate the association between lecturers' skills to use SPADA as a medium for distance learning at UNS. Following the perspectives gathered, some still perceived a lack of extensive socializing and training due to the inadequacy of the tutorials offered. The absence of tutorials to assist lecturers in using SPADA has resulted in the limited delivery of online lectures using SPADA. At SPADA, lectures could be delivered using text (documents/pdf/ppt) and learning media such as audio, video, animation, and visual information. The availability of tutorials on SPADA is displayed in Figure 4; 24% of lecturers responded to a questionnaire indicating that SPADA's tutorials were still deficient. The researchers attempted to build learning media of web-based online tutorials based on the findings of the questionnaire and the views of numerous users, both lecturers and students.

Designing the web-based tutorial learning media began with identifying issues through a development requirements analysis. The next step was preparing a module or prototype of web-based tutorial learning media during the designing stage, using the following steps:

Preparing Materials. This stage involved determining and mapping tutorial materials for the website. Materials were created in response to the findings of a requirements analysis that incorporated user feedback. The tutorial materials were separated into many sections, namely:

- 1) Introduction to the UNS SPADA page
- 2) Establishment of Courses at SPADA
- 3) Resource Management
- 4) Activity Management
- 5) Setting Resources and Activities

6) Rating

7) Video Conference

Preparing Media. Selecting the software or media to assist problem-solving based on media selection requirements analysis and evolution is vital. The development employed hardware, comprising a laptop or a personal computer loaded with software or apps such as php, xampp, an internet connection, and any other applications required for the development. Simultaneously, customers could view the materials through laptops, PCs, tablets, and smartphones.

Program Design. At this stage, researchers created a flowchart or a program flow diagram and use case. It was intended to keep the software organized and simple to create. Figure 5 depicts the program's flow diagram. Moreover, Figure 6 displays the use case of the web-based tutorial learning media. According to the use case diagram, web-based materials are accessible to just two users. Administrators and users encompassing lecturers, students, employees, and the general public have access. The administrator has complete access to the media, while the users have restricted access privileges according to the administrator's criteria.

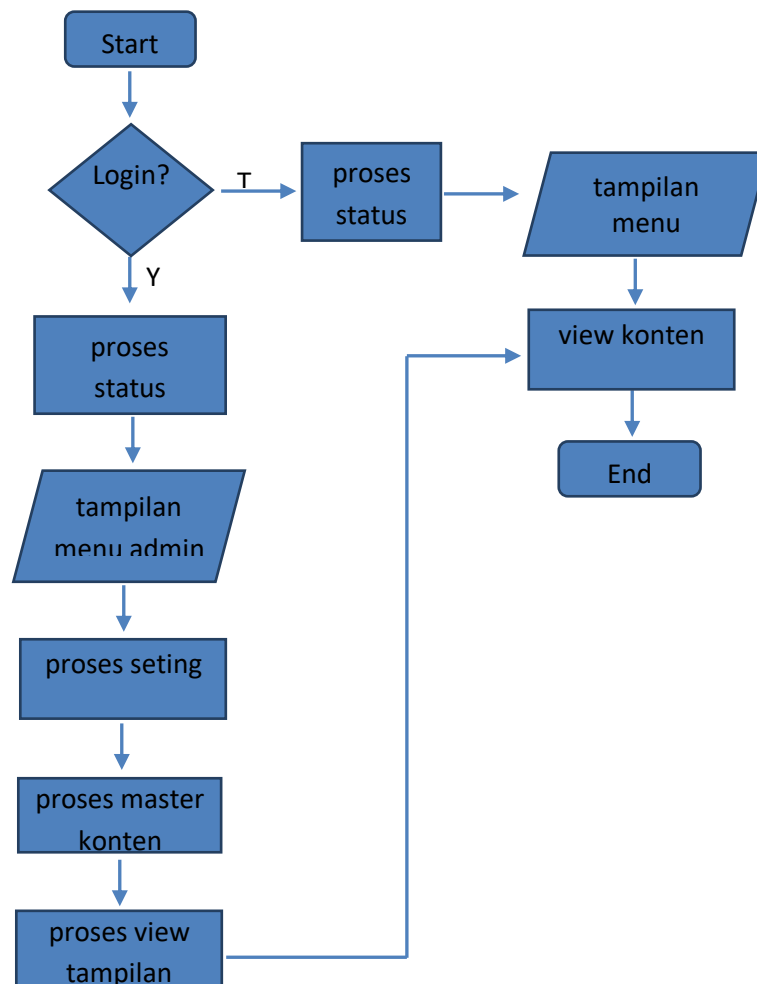


Figure 5. Program Flowchart

The development of web-based tutorial learning media occurred after the design stage. At this point, the design was evaluated. If a design mistake occurred during the development phase, it could be remedied instantly. Several actions were conducted at this point, including the following:

Media Creation. The development of web-based tutorial learning materials was carried out following the design. PHP, MySQL, and additional supporting software such as Microsoft Words, Lightshot, and FileZilla were utilized to create media. The tutorials are available at <http://pptiup.uns.ac.id/panduanSPADA>.

Throughout the course, a menu showed as a navigation button, making it simple for users to navigate from one material to the next. The tutorials were structured as stages with accompanying images and appropriate explanations. The researchers' goal was to create a simple, appealing, practical, and user-friendly display enabling users to comprehend information flow and learn autonomously. The administrator could modify, add, correct, or remove the menu.



Figure 6. Home scree of web-based tutorials

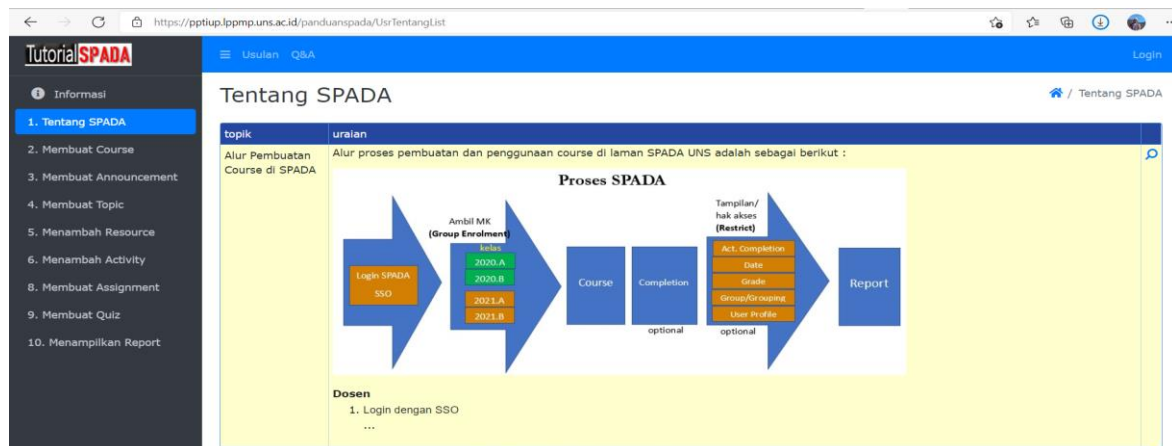


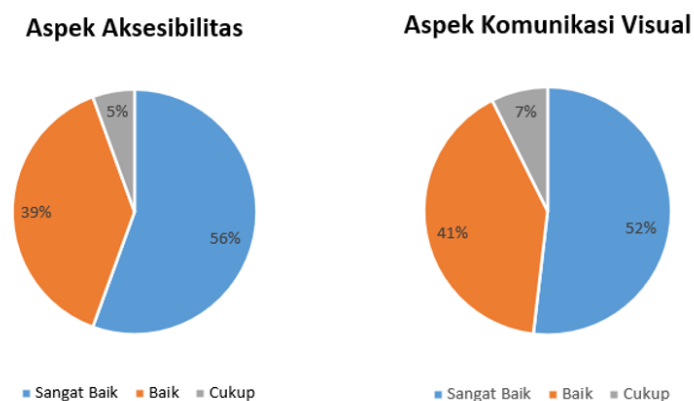
Figure 7. View one of the tutorials

Trial The trial of web-based tutorial media was conducted at the PPTIuP LPPMP of UNS with peer group members under the supervision of the e-learning coordinator and the learning media coordinator, both of whom were experts in their respective fields. The trial aimed to determine the practicality of the materials and tutorial media. The generated web-based tutorial media were enhanced during the trial stage based on the feedback and conclusions of media experts. The expert trial findings offered an overview of the media's practicality, and any remaining flaws that need to be addressed before the final draft of the educational media was ready for implementation.

Instructions for use. The objective of user guides is to educate users on how to utilize web-based tutorial media effectively. Instructions for use are visual or image-based guidance for simulations.

In the implementation and evaluation stages, small-scale socialization was conducted by inviting several SPADA users to access the <http://pptiup.uns.ac.id/panduanSPADA> portal directly. In implementing and evaluating the tutorial media, obstacles, strengths and weaknesses were discovered based on user assessments. Weaknesses found during implementation and evaluation were used as input for improvement and development in the future.

The trial and assessment of the web-based SPADA tutorials were carried out by media and material experts on two aspects: accessibility and visual communication. The results of expert judgment are on the following graph:



Gambar 9. Grafik hasil penilaian ahli media dan ahli materi

Figure 9. Graph of Assessment Results of Media and Material Experts

The accessibility metric was employed to determine the degree of comfort and convenience of accessing the UNS SPADA tutorials on the web. The instruments include a domain or web address, simplicity of access and operation, ease of administration and maintenance, and accessibility through various media. It was revealed that media and material experts rated the instruments as excellent (66%) and good (39%); only 5% rated them as adequate.

The visual communication part attempted to assess the ease with which readers could read and comprehend the tutorials presented in the web-based SPADA through text and images. This component includes a tutorial web display, navigation buttons, and the readability of both text and graphics. According to the evaluation findings of media and material experts, these three elements obtained excellent (52%), good (41%), and adequate (7%). Several advantages, implementation obstacles, and weaknesses of the web-based UNS SPADA tutorials were discovered throughout evaluation, as follows:

Table 1. Results of Elements

Advantages	Obstacles	Weaknesses
1) Easy to learn, simple and practical	1) Development technical constraints, where tutorial media must adapt to the needs of many users with different perceptions.	1) The web-based tutorial media were still in visuals in images captioned in texts. There were no video tutorials available.
2) The media were developed using a dynamic database to ease to develop again as needed.	2) The development involved institutions outside LPPMP, hampering its process.	2) Not all of the tutorials were displayed.
3) The administrator could easily add, revise, and delete the tutorial content.		3) The tutorial media portal has not been integrated with the UNS SPADA.
4) The media were developed following the input from SPADA users.		
5) The materials were arranged sequentially and equipped with navigation buttons.		
6) The media could be accessed online at any time with various gadgets. The media has fulfilled the research objective		

In conclusion, there is no doubt that the UNS SPADA tutorials can be deployed and utilized as online learning/training media for SPADA. Even though further content and changes will be required in the future, the web-based SPADA tutorials hope to serve as an independent training option throughout the COVID-19 pandemic.

CONCLUSIONS AND RECOMMENDATIONS

Independent training using web-based tutorial materials is one way for UNS SPADA users to practice without face-to-face interaction, while direct training and mentorship are currently unavailable. Independent training through online tutorials could help mitigate the danger of viral transmission and enhance the usage of UNS SPADA during the COVID-19 pandemic. SPADA users require these tutorial materials as a means of self-education.

Due to the fact that there were still certain limitations and deficiencies at the time of implementation, it is advised that as a follow-up to this study, tutorials bundled in text and videos be completed. Users can select from a variety of tutorials to meet their specific needs.

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