

Empowering Communities: Blynk Software Training and Prototyping for Environmental Monitoring Around Grape Plants

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ABSTRAK

Artikel ini membahas kegiatan pelatihan penggunaan perangkat lunak Blynk dan pembuatan prototipe untuk memonitor lingkungan di sekitar tanaman anggur. Pelatihan ini diadakan di sebuah kebun anggur di Tangerang Selatan. Mayoritas peserta memberikan tanggapan positif terhadap program ini karena mereka merasa lebih mudah dalam mengamati tanaman anggur. Dengan menggunakan perangkat lunak Blynk dan teknologi Internet of Things (IoT), pemantauan menggunakan smartphone menjadi lebih praktis, memberikan peserta cara yang nyaman dan efisien untuk melacak dan memerhatikan tanaman anggur. Kegiatan ini tidak hanya memberikan keterampilan teknologi kepada masyarakat setempat, tetapi juga meningkatkan kemampuan mereka dalam memantau dan mengelola pertanaman anggur dengan lebih efektif. Integrasi teknologi Blynk dan IoT terbukti menjadi solusi praktis untuk pemantauan lingkungan berbasis masyarakat, mendukung praktik pertanian berkelanjutan di sektor budidaya anggur. Pelatihan dan prototyping perangkat lunak Blynk untuk pemantauan lingkungan tanaman anggur di Tangerang, yang didukung oleh tim dosen dan mahasiswa, berjalan lancar. Tingkat kemudahan yang dilaporkan oleh peserta setelah pelatihan adalah sebagai berikut: 40% menyatakan sangat mudah, 40% menyatakan mudah, dan 20% menyatakan sulit.

Kata Kunci: Blynk; Tanaman Anggur; Pelatihan; IoT; Pertanian

ABSTRACT

This community engagement paper highlights a training initiative on Blynk software and prototype development for environmental monitoring around grape plants. The training took place in a vineyard in the Tangerang Selatan region. The majority of participants expressed satisfaction with the program, citing increased ease in grape plant observations. The use of Blynk software, coupled with IoT functionality, enabled seamless smartphone monitoring, providing participants with a convenient and efficient means of tracking and observing grape plants. This initiative not only empowered the local community with valuable technological skills but also enhanced their ability to monitor and manage grape cultivation effectively. The integration of Blynk and IoT technology proved to be a practical solution for community-based environmental observation, promoting sustainable agricultural practices in the grape cultivation sector. The Blynk software training and prototyping for grape plant environmental monitoring in Tangerang, supported by faculty and student teams, proceeded smoothly. Participants' reported ease levels after the training were: 40% very easy, 40% easy, and 20% difficult.

Keywords: Blynk; Grape Plants; Training; IoT; Agricultural

INTRODUCTION

In the current era of technological advancements, leveraging innovations in agriculture is crucial for enhancing productivity and efficiency (Karunathilake et al., 2023; Konfo et al., 2023). One crucial aspect to consider is the monitoring of the environment around grape plants, which significantly impacts their growth and harvest outcomes (Pampuri et al., 2021). However, farmers in rural areas often face limitations in accessing and understanding modern technology.

In Tangerang Selatan, a vineyard takes center stage in this training initiative. With the progression of time, farmers in this region are challenged to harness technology for optimizing grape cultivation. One primary issue identified is the limitation in effectively monitoring the environment, which can impact harvest success and plant health (Rizzo et al., 2021). Therefore, an introduction and presentation on the latest technological advancements for the community are needed in community service activities (Tjiptady et al., 2021).

In addition to teaching, a lecturer must engage in community service with the assistance of students (Fitriana, 2021). This is one of the contributions of lecturers to society (Syahza, 2019). Community service is a manifestation of knowledge acquired theoretically in the classroom and applied practically in everyday life (Effendy et al., 2023; Irwanto, 2021; Noor, 2011). In this context, it involves training activities on the use of Blynk for application in grapevine monitoring. In other words, this training is related to the presentation of the latest technology for Komunitas Anggur Tangsel (KAT) farmers. Training related to technology is crucial for society, especially since human life today is inseparable from digital technology. With that in mind, technology training will enhance human resources in this digital age (Mauliana & Jaya, 2022; Noor, 2011; Sulaiman & Hengki, 2019; et al., 2021).

In this context, this article discusses a training program focusing on the utilization of Blynk software and the development of prototypes for monitoring the environment around grape plants (Tjiptady, 2020). By incorporating Internet of Things (IoT) technology and the Blynk application, it is expected that this training program will provide a practical solution to enhance farmers' skills in monitoring and managing their agricultural environment. Blynk is an Internet of Things (IoT) platform enabling users to develop applications for remote control of specific devices via the Internet (Asmawati et al., 2019; Rinanda Saputri & Radithya, 2024; Windarto et al., 2020). It offers a dashboard where users can design a graphical interface using various widgets (Saputri & Dhaneswari, 2022).

The anticipated benefits of this initiative include increased efficiency and productivity in agriculture, as well as an improvement in the well-being of the local community. By granting farmers access to practical and easily implementable technological solutions, this program is hoped to serve as a foundational step towards promoting sustainable farming practices in the grape cultivation sector. Within this

framework, the article will explore solution plans, expected positive impacts, and contributions to sustainable agricultural development at the local level.

IMPLEMENTATION METHOD

The methods for implementation of this program consist of:

1. Introduction to the Empowering Communities Program: The activity begins with an introduction to the program from Universitas Multimedia Nusantara, providing participants with an overview of the purpose and objectives of the program.
2. Material Presentation: Following the introduction, relevant materials concerning Blynk and the prototype introduction are presented. This includes an in-depth explanation of the Blynk software and an introduction to prototype development.
3. Demonstration: Practical understanding is enhanced through demonstrations and examples illustrating the application of Blynk software and the use of prototypes. This step ensures participants grasp the concepts effectively.
4. Hands-On Practice: Participants are actively engaged by being asked to try using the prototype and the Blynk application themselves. This hands-on practice allows them to apply the knowledge gained during the demonstration phase.
5. Interactive Session: An interactive session follows, where participants can seek clarification, ask questions, and discuss their experiences in applying the newly acquired skills. This promotes a dynamic learning environment.
6. Closure and Questionnaire: The session concludes with participants filling out a questionnaire. This step is crucial for obtaining feedback, understanding the effectiveness of the training, and identifying areas for improvement.
7. Souvenirs and Group Photo: As a token of appreciation, participants are provided with souvenirs. The session wraps up with a group photo, creating a memorable conclusion to the training program.

This step-by-step implementation method ensures a systematic and comprehensive approach to the training activity, incorporating both theoretical understanding and practical application. The combination of hands-on practice, interactive sessions, and a closing feedback process contributes to a well-rounded and impactful training experience for the participants.

RESULTS OF ACTIVITIES

The results of the dedication consist of several aspects adjusted to the planned method.

1. Introduction to the Empowering Communities Program: The activity commences with an introductory session held at the onset of the program at the

Komunitas Anggur Tangsel. The introduction is conducted by a team consisting of UMN faculty members and students, aiming to provide our partners with a comprehensive overview of the program's purpose and objectives. Additionally, the PKM team also observes the conditions of the grapevine plantation at KAT and conducts interviews with the administrators to gain insights into existing challenges. The documentation of this step is in Figures 1 and 2.



Figure 1. Introduction to the empowering communities program to the partner



Figure 2. Field survey in the KAT location

2. Material Presentation: Our team is preparing to develop a Blynk-based monitoring system after identifying the challenges. Once the system is completed, we then prepare a presentation to be delivered to our partners,

outlining the details and functionalities of the monitoring system. Figure 3 is the prototype of the system and Figure 4 is the snippet of the prepared presentation file.

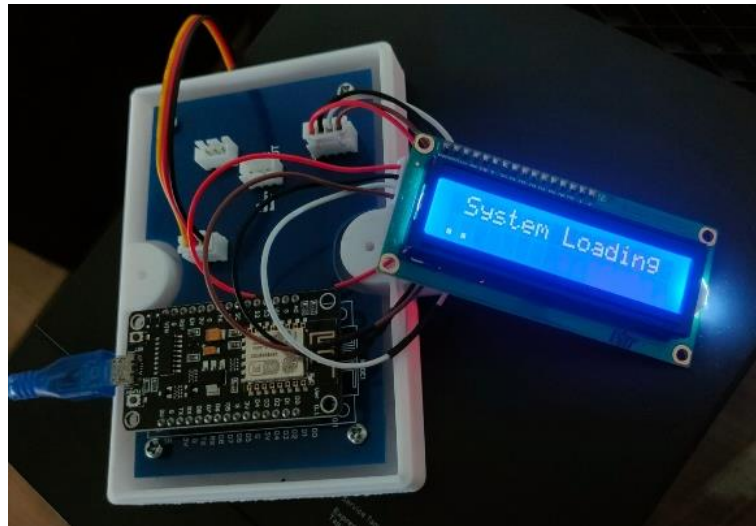


Figure 3. The prototype of monitoring system

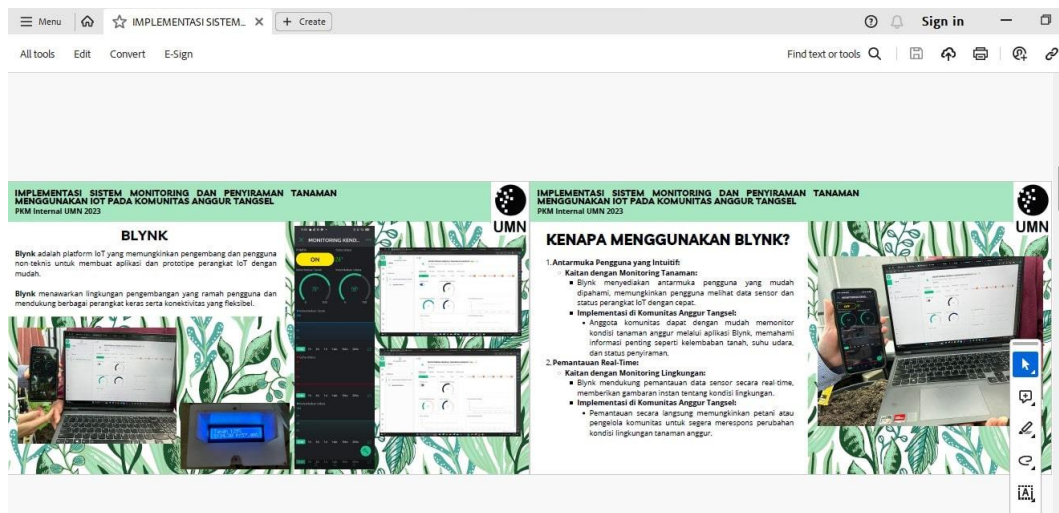


Figure 4. Presentation file

3. Demonstration: The demonstration activity is carried out by the PKM UMN team for the partners. Before the practical demonstration, a theoretical presentation is given. Following this, during the hands-on practice, participants are asked to try using the created system, enabling its application for grapevine monitoring.
4. Hands-On Practice: Participants are actively engaged by being asked to try using the prototype and the Blynk application themselves. This hands-on practice allows them to apply the knowledge gained during the demonstration phase. It not only reinforces the theoretical understanding provided earlier but also empowers them to navigate and utilize the monitoring system effectively.

This interactive approach aims to enhance participants' practical skills and confidence in employing the technology for grapevine monitoring.

5. **Interactive Session:** An interactive session follows, where participants can seek clarification, ask questions, and discuss their experiences in applying the newly acquired skills. The demonstration, practice, and interactive session are shown in Figure 5.



Figure 5. Demonstration and practice activity

6. **Closure and Questionnaire:** The session concludes with participants filling out a questionnaire. The culmination of this training is the completion of a questionnaire. Figure 6 represents the results of the questionnaire from the training participants. The pie chart illustrates the ease level of the training participants in using the monitoring system. 40% say it is very easy, 40% find it easy, and 20% find it difficult.

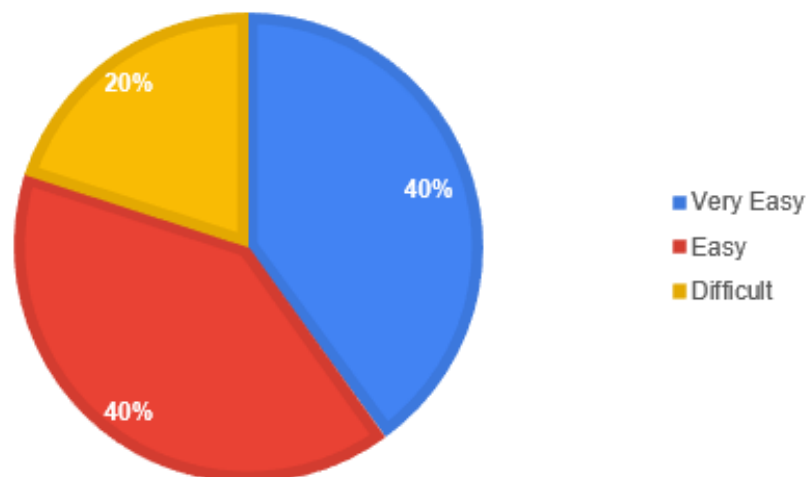


Figure 6. The result of the questionnaire about the ease level of monitoring usability

7. Souvenirs and Group Photo:

Figure 7 is documentation after training on the use of a plant monitoring system based on Blynk. The system is designed to monitor plant conditions using the Blynk platform, which is an IoT (Internet of Things) platform that allows users to control and monitor devices online.



Figure 7. The training program documentation

This training is part of a community service program in collaboration with the Tangsel Grape Community. The training aims to empower the community in the use of technology to assess plant conditions or manage crops, specifically in this case, grapevines.

The Blynk-based plant monitoring system can provide benefits such as real-time monitoring of soil conditions, temperature, humidity, and other factors that can affect plant growth. Thus, farmers or agricultural communities can make better decisions in managing their crops.

CONCLUSION AND SUGGESTION

The Blynk software training and prototyping for environmental monitoring around grape plants went smoothly with the assistance of faculty and student teams, and the participants were members of the Tangsel Grape Community. The activity took place in Tangerang. The ease level reported by participants in using the developed system after the training program is as follows: 40% found it very easy, 40% found it easy, and 20% found it difficult.

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