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Application of a Technology-Based Data Collection System for the Writing Class of the IAIN Cirebon Student Da'wah Institute

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Abstrak- Effective data management plays a crucial role in optimizing the performance of educational institutions. This study aims to explore the implementation of a technology-based data management system for writing classes in the Student Preaching Institution of the State Islamic Institute (IAIN) Cirebon. The objective is to improve the efficiency and effectiveness of data collection, storage and analysis, ultimately enhancing the overall quality of the writing classes. This research utilizes a mixed-methods approach, incorporating qualitative and quantitative data collection techniques. Firstly, a comprehensive review of the existing data management practices is conducted to identify the limitations and challenges faced by the institution. Secondly, a technology-based data management system was developed, integrating modern tools and techniques to streamline the data collection process. The system is designed to facilitate easy data entry, retrieval and analysis, ensuring accurate and reliable information for decision-making purposes. The implementation of the technology-based data management system is evaluated through a series of case studies and interviews with relevant stakeholders. The findings reveal several significant benefits, including increased efficiency in data management, improved accuracy in reporting, and enhanced collaboration among the stakeholders involved in the writing classes. Moreover, the system enables the institution to track the progress of individual students, identify their strengths and weaknesses, and provide targeted interventions to support their learning and development. The results of this study contribute to the growing body of literature on the application of technology in educational institutions. The findings highlight the importance of leveraging technology to optimize data management processes, particularly in the context of writing classes at the Student Preaching Institution of IAIN Cirebon. The insights gained from this research can serve as a valuable resource for other

educational institutions seeking to enhance their data management practices and improve the overall quality of their programs..

Keywords : Technology-based data management system, writing classes, Student Preaching Institution, IAIN Cirebon, efficiency, effectiveness

1. INTRODUCTION

In the digital era that continues to grow, the use of information and communication technology has become an important element in various sectors of life, including education [1] [2] . Educational institutions around the world are increasingly realizing the benefits that can be obtained through the implementation of technology-based systems to improve their operational efficiency and effectiveness [3] . Likewise, the Student Da'wah Institute at IAIN Cirebon realizes the importance of utilizing technology in an effort to better data management.

One important aspect of the Student Da'wah Institute is the writing class, which has a vital role in shaping students' communication skills and writing skills. Through writing classes, students have the opportunity to hone their writing skills and express their ideas and views effectively [4] [5] . However, in practice, there are often challenges in collecting data and managing information related to this writing class. Traditionally, writing class data collection was done manually using handwritten notes or physical worksheets. This process often takes significant time and energy for managers of Student Da'wah Institutions. In addition, manual data collection is often prone to errors and data loss. In an era of increasingly advanced technology, it is important for the Student Da'wah Institute at IAIN Cirebon to take advantage of advances in information technology to increase the efficiency and effectiveness of writing class data collection.

In this context, implementing a technology-based data collection system is an attractive solution [6] . By using a technology-based data collection system, Student Da'wah Institutions can take advantage of advances in information technology to speed up and simplify the process of data collection and management of writing class information. This system can include the use of software, applications, or web-based platforms that can be used by the administrators of the Student Da'wah Institute and the students themselves [7] [8] . The main advantage of implementing this technology-based data collection system is increased efficiency [9] In this case, the data collection process which previously took time and effort can be carried out more quickly and efficiently through the use of technology. Data can be input easily through an

intuitive interface, and the system can automatically perform the necessary data processing [10] . In addition, technology-based data collection systems can also help reduce human errors and ensure higher data accuracy.

In addition to efficiency, the application of a technology-based data collection system can also increase effectiveness in managing writing classes [11] [12] . With an integrated system, managers of Student Da'wah Institutions can easily track and monitor students' progress in writing classes. They can see data on student attendance, progress, and evaluation results in real-time [13] . This allows administrators to provide more effective feedback to students, as well as identify areas where students may need additional assistance. A technology-based data collection system can also facilitate communication and collaboration between managers of Student Da'wah Institutions, teachers and students. Important information, eg class schedules, learning materials, and assignments, can be easily accessed by all parties through an integrated online platform [14] [15] . This facilitates communication and coordination between all stakeholders, increasing student engagement and participation in writing classes.

In the context of the IAIN Cirebon Student Da'wah Institute, the application of a technology-based data collection system for writing classes can have a significant impact. Students will benefit from more efficient and effective data management, which in turn will help them develop their writing skills [16] . Managers of Student Da'wah Institutions will also benefit in terms of managing information and providing better support to students. In this paper, we will explore the application of a technology-based data collection system for writing classes at the IAIN Cirebon Student Da'wah Institute. We will take an in-depth look at the system implementation process, the challenges faced, and the benefits generated. This study uses a mixed-methods approach, combining qualitative and quantitative data collection techniques to provide a comprehensive understanding of the implementation of this technology-based data collection system. This research is expected to provide valuable insights about the application of information technology in the context of education, especially in the management of writing class data at the Student Da'wah Institute. The results of this research can be a valuable source of information for other educational institutions looking to improve their data management practices and improve the overall quality of their programs [17] .

2. RELATED WORKS

In implementing a technology-based data collection system for writing classes, the designer looks for references to 3 journals that are similar but have different applications:

1. Utilization of information technology-based applications and communication at the Nurul Al-Qur'an Study Center muhammad and miftahul khair . Miftahul Khair Al-Quran Education Park (TPA) Al-Habibu Mosque and TPA Nurul Muhammad in carrying out his teaching and learning process and data collection of his students still using the conventional method. The teaching technique used is the iqro book and writing on the blackboard which causes the interest and attention of the students to only persist approximately 1 hour, in addition to the lack of teacher skills in using the device IT in order to develop its teaching methods so that it cannot create creative, innovative, and imaginative learning atmosphere. Data collection of students carried out by way of manually can cause difficulties in finding student data. The method used in order to provide solutions to these problems is the method of interviews, analysis, design, implementation and testing. The results achieved based on these methods is built a multimedia-based learning media that can display reading hijaiyah letters, and how to pronounce them as well as the application of data collection and monitoring of students web-based that can store student data and parents can monitor the presence of their children via the internet. After implementing and testing can it was concluded that the students' interest in learning increased to 85%, the level of ease its use reaches 90% and based on observations, students' enthusiasm for learning occurs increasing and administering students more effectively and efficiently [18] .
2. School data collection information system application Web-based

   School Data Collection School Information Systems are important for managing data and facilitating information for both the school and the community in viewing the school. School profiles, student data, teacher data are needed to find out the needs of each of these schools. This makes it easier for schools to record teachers and the number of students for each generation. Therefore school data needs to be stored and processed. However, school data collection which is done in the office is still done manually, so it requires a lot of paper usage and uses Microsoft Excel so that data can easily be lost

and damaged. The information system developed can make it easier for the head of department to see the school and the condition of the school and the students it accepts. So that makes the performance of the agency's employees to be very slow. In addition, data errors often occur so that the school has to re-send the student's data. Thus the need for how to design and build a Web-Based School Data Collection Information System. This research aims to change the old data collection system which is less effective and takes longer to look at schools along with the scope of the school and the research being developed is in the form of a web-based student data collection information system that can be accessed. The results of this study are a web-based student data collection information system that can simplify and speed up the school data collection process and the department can easily see the number of existing schools [19] .

3. Implementation of the CodeIgniter Framework in the Data Collection Information System Academic and Non-academic Achievements of SMA Negeri 4 Cibinong Students Web-based

   Information about data innovation has become a basic need that must be met by all person. This is because most of a person's daily activities involve data innovation assistance, be it in teaching, institutional work or business activities. School is a type of educational unit consisting of SD, SMP, SMA/SMK, SLB and other identical formal education units in order to achieve national education goals. One of the things that schools can do to improve quality according to predetermined standards is to score student achievements. Achievement data collection conducted at SMAN 4 Cibinong has not run optimally because it is still conventional. The research objective was to design an information system to report information about student academic and non-academic achievements based on the CodeIgniter framework website. In addition, researchers used the waterfall method in system development and used the Unified Modeling Language (UML) in system modeling. The results of the study are that users can directly enter achievement data and make it easier for admins to manage and report achievement data [20] .

3. METHOD

The research method used to evaluate the application of a technology-based data collection system for writing classes at the IAIN Cirebon Student Da'wah Institute may include the following steps:

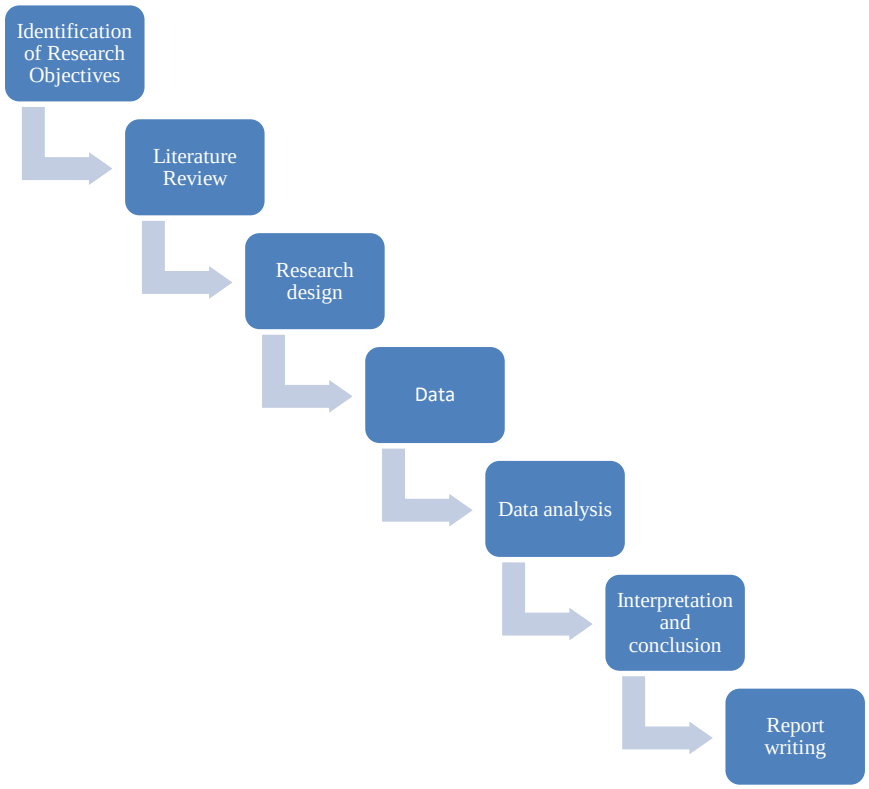


Figure 1: Waterfall Method

1. Identify Research Objectives: Define specific research objectives. For example, is the research objective to evaluate the effectiveness of technology-based data collection systems in improving students' writing skills or to measure student satisfaction with the use of data collection systems [21] .

2. Literature Review: Conduct a literature review to identify relevant research and relevant theoretical frameworks. In this case, you can look for research related to the application of technology in teaching writing, the use of technology-based data collection systems, and the expected benefits of using the system [22]

3. Research Design: Select a suitable research design to collect the required data. Some designs that might be used include case studies, experiments, or surveys. For example,

you can conduct a case study to see the effect of using a technology-based data collection system on students' writing abilities by comparing data before and after implementing the system.

4. Data Collection: Define the instrument to be used to collect data. This can include observation, interviews or questionnaires. If you want to evaluate students' writing skills, you can collect writing samples before and after implementing the data collection system and use a grading rubric to measure progress.
5. Data Analysis: Perform data analysis to answer research questions. This can involve statistical analysis if you are using a quantitative approach or thematic analysis if you are using a qualitative approach. For example, if you are collecting survey data on student satisfaction, you can use descriptive statistical methods to analyze and present the results.
6. Interpretation and Conclusion: Interpret the results of the data analysis and draw conclusions based on the research findings. Discuss the implications of research results and suggestions for further development. For example, if a technology-based data collection system is judged to be effective in improving students' writing skills, suggestions can be made for expanding the use of the system in institutions or improving teacher training in its application.
7. Report Writing: Prepare a well-structured research report, covering research background, methods used, main findings, analysis, and conclusions. Make sure the report complies with the applicable academic writing format and refers to the reference sources used.

4. RESULT AND DISCUSSION

1. System Requirement Specifications

To design a writing class data collection system, here are some requirements specifications that can be considered:

1. Student Data Management:

- Student registration: The system must be able to receive student personal data, such as name , ID number, study program, and contact information.
- Maintenance of student data: The system must allow updating and management of student data, such as changing contact information or changing student status.

2. Class Scheduling:
- Scheduling: The system must allow for the management of the writing class schedule, including determining the time, place and teacher.
- Class registration: The system should enable students to register for available writing classes and view relevant schedules.

3. Learning Material Management:
- Material storage: The system must have features for uploading and storing learning materials, such as writing samples, reading materials, or lesson notes.
- Material accessibility: Students must be able to access relevant learning materials according to the class they are participating in.

4. Rating and Feedback:
- Assessment of assignments: The system must enable teachers to provide assessments and feedback on assignments given to students [23] .
- Storage of assessment results: Assignment assessment results and feedback records must be stored in a structured manner and can be accessed by students and instructors.

5. Reporting and Monitoring:
- Progress reporting: The system must have a feature to generate progress reports of students in writing classes, such as writing progress, attendance, or grades.
- Class monitoring: Teachers and class coordinators must be able to monitor student attendance and class activity in real-time.

6. Security and Privacy:

- Data protection: The system must implement security measures to protect student data, such as proper encryption and access controls.
- Privacy policy: The system must respect the privacy policy and regulations regarding the collection and use of student data.

7. User Interface:
- Intuitive interface: The system should provide an easy-to-use and intuitive interface for students, instructors and administrators.
- Multiplatform availability: The system must be accessible via multiple devices, such as computers, laptops, tablets or smartphones.

2. System Design Diagram

1. Flowcharts

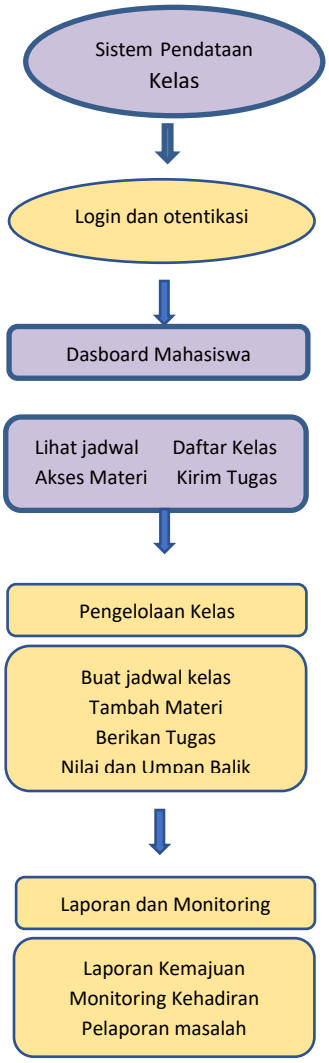
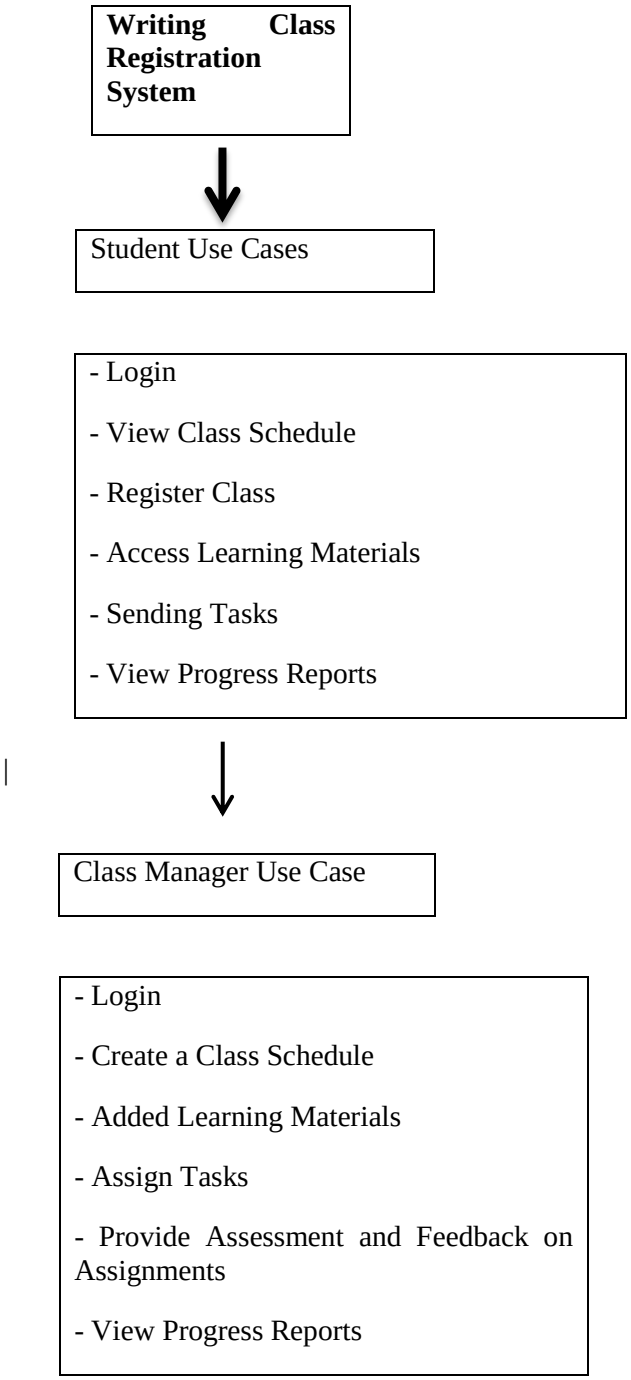


Figure 2: Flowchart

In the picture above is the order of the program if it is run. With the flowchart makes it easier to make the coding. Creation of a degenerate schedule after input is made and can be monitored and replaced if there are changes

2. Use Case Diagrams



5. CONCLUSION

The following conclusions are drawn from the technology -based student writing class data collection application using netbeans as well as the MySql database containing data related to the data of members of student da'wah institutions such as student registration number, name, class, gender and student address, so that later it can be developed further more perfect student data collection applications.

REFERENCES

[1] D. Ambarwati, U. B. Wibowo, H. Arsyiadanti, and S. Susanti, "Studi Literatur: Peran Inovasi Pendidikan pada Pembelajaran Berbasis Teknologi Digital," *J. Inov. Teknol. Pendidik.*, vol. 8, no. 2, pp. 173–184, 2022.

[2] Saluky, "Penerapan Aplikasi Mathematics Movie Terhadap Minat Belajar Matematika dan Kemampuan Analogi Responden," *Al - Ibtida*, vol. 3, no. 1, pp. 57–73, 2016.

[3] A. H. M. Nurdin, "Menuju Pemerintahan Terbuka (Open Government) Melalui Penerapan E Government," *J. MP (Manajemen Pemerintahan)*, vol. 5, pp. 1–17, 2018.

[4] F. D. Listiani, "Faktor Penyebab Kesulitan Menulis Fabel Dan Model Pembelajaran Yang Diharapkan Mahasiswa Pendidikan Bahasa Dan Sastra Indonesia Universitas Sanata Dharma," *KREDO J. Ilm. Bhs. dan Sastra*, vol. 4, no. 1, pp. 112–128, 2020, doi: 10.24176/kredo.v4i1.4883.

[5] Saluky, "Tinjauan Artificial Intelligence untuk Smart Government," *ITEJ (Information Technol. Eng. Journals)*, vol. 03, no. 01, 2018.

[6] R. Mursid and E. Yulia, "Pengembangan Pembelajaran dalam Teknologi Pendidikan di Era RI 4.0," *Pros. Semin. Nas. Teknol. Pendidik. Peran Teknol. Pendidik. Dalam Mengembangkan Dan Meningkat. Keprofesionalan Pendidik Di Era Revolusi Ind. 4.0*, pp. 35–42, 2019.

[7] I. G. L. P. Sumiantara, I. M. A. Pradnyana, and K. Agustini, "Pengembangan Sistem Informasi Akademik (Siak) Berbasis Web Pada Sekolah Tinggi Keguruan Dan Ilmu Pendidikan (Stkip) Agama Hindu Singaraja," *J. Pendidik. Teknol. dan Kejuru.*, vol. 16, no. 1, p. 109, 2019, doi: 10.23887/jptk-undiksha.v16i1.18342.

[8] S. Nurul Bahiyah, Wulandari, "THE DEVELOPMENT OF ISLAMIC RELIGIOUS EDUCATION ANDROID- BASED APPLICATION OF SALAT MATERIAL FOR ELEMENTARY 1 . Introduction The rapid advancement of technology and information in this digital era impacts every aspect of human life , including education .," *Al-Aulad J. Islam. Prim. Educ.*, vol. 5, no. 2, pp. 68–78, 2022.

[9] R. R. Rachmawati, "SMART FARMING 4.0 UNTUK MEWUJUDKAN PERTANIAN INDONESIA MAJU, MANDIRI, DAN MODERN Smart Farming 4.0 to Build Advanced, Independent, and Modern Indonesian Agriculture Rika Reviza Rachmawati," *Forum Penelit. Agro Ekon.*, vol. 38, no. 2, pp. 137–154, 2020.

[10] S. Luhriyani, “Sistem Pendukung Keputusan Persetujuan Kredit Mobil Dengan Metode Fuzzy Logic,” *Jtriste*, vol. 3, no. 1, pp. 1–14, 2016.

[11] D. Loryana and M. Syahidul, “Implementasi Sistem Informasi Manajemen Dalam Meningkatkan Pelayanan Pendidikan Sekolah di Masa Pandemi Covid-19,” *J. Inspirasi Manaj. Pendidik.*, vol. 9, no. 5, pp. 1221–1235, 2021.

[12] S. R. Saluky, Onwardono Rit Riyanto, “Digital Competence of Post-Pandemic Teachers Based on Gender, Work Period, and Certification Factors,” *EduMa*, vol. 11, no. 2, pp. 166–179, 2022.

[13] Burhanuddin, “Efektivitas penerapan model pembelajaran blended learning terhadap kemampuan menulis artikel ilmiah,” *EKSPOSE J. Penelit. Huk. dan Pendidik.*, vol. 20, no. 2, pp. 1280–1287, 2021.

[14] M. M. Syarah, “Peran E-Learning My Best Pada Pola Komunikasi Antara Dosen dan Mahasiswa Ilmu Komunikasi UBSI,” *Glob. Komunika J. Ilmu Sos. dan Ilmu …*, no. 1, pp. 29–41, 2022.

[15] S. S. Yoni Marine, “Penerapan IoT untuk Kota Cerdas,” *ITEJ (Information Technol. Eng. Journals)*, vol. 03, no. 01, 2018.

[16] S. Rahayu, “PEMANFAATAN APLIKASI MENDELEY DAN GOOGLE FORM A . LATAR BELAKANG Kemampuan menulis dan mempublikasikan karya ilmiah merupakan salah satu aktivitas penting bagi setiap mahasiswa dalam menyelesaikan kuliahnya , terutama pada saat menyusun tugas akhir . Meng,” vol. 6, no. 1, pp. 662–677, 2022.

[17] I. Haryati, I. Santoso, Sudarmaji, A. Rikfanto, R. E. S. Mulyati, and S. Megawati, “Upaya Meningkatkan Kompetensi Guru-Guru Bahasa Jerman Melalui Pelatihan Penelitian Tindakan Kelas,” *Prima Portal Ris. Dan Inov. Pengabdi. Masy.*, vol. 1, no. 3, pp. 65–74, 2022, doi: 10.55047/prima.v1i3.214.

[18] M. Muhajirin and R. Ratnawati, “Pemanfaatan Aplikasi Berbasis Teknologi Informasi Dan Komunikasi Pada Taman Pengajian Al-Qur’an Nurul Muhammad Dan Miftahul Khair,” *J. Inspir.*, vol. 6, no. 2, pp. 165–172, 2016.

[19] A. Lestari and M. Ula, “APLIKASI SISTEM INFORMASI PENDATAAN SEKOLAH,” pp. 88–93, 2022.

[20] S. Nabila and T. Wati, “Implementasi Framework Codeigniter Pada Sistem Informasi Pendataan Prestasi Akademik Dan Non-akademik Siswa SMA Negeri 4 Cibinong Berbasis Web,” *Inform. J. Ilmu Komput.*, vol. 18, no. 1, p. 80, 2022, doi: 10.52958/iftk.v17i4.4634.

[21] Nanang Pradita, “Perencanaan Sistem Informasi Strategis Perguruan Tinggi Menggunakan Metode Space,” *Technol. Informatics Insight J.*, vol. 1, no. 1, pp. 17–38, 2022, doi: 10.32639/tiij.v1i1.49.

[22] B. Pramitasari and N. Nurgiyatna, “Sistem Informasi Unit Kegiatan Mahasiswa Marching Band Universitas Muhammadiyah Surakarta berbasis Web,” *Emit. J. Tek. Elektro*, vol. 19, no. 2, pp. 59–65, 2019, doi: 10.23917/emitor.v19i2.7998.

[23] F. Puspitorini, “Strategi Pembelajaran Di Perguruan Tinggi Pada Masa Pandemi Covid-19,” *J. Kaji. Ilm.*, vol. 1, no. 1, pp. 99–106, 2020, doi: 10.31599/jki.v1i1.274.