

TRAINING AND IMPLEMENTATION OF COMPUTER-BASED EXAM APPLICATION USING LARAVEL FOR TEACHERS AND STUDENTS OF SMPN 206 JAKARTA BARAT

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ABSTRACT

This community service activity aims to enhance the digital literacy of teachers and students at SMPN 206 Jakarta Barat through the development and implementation of a secure and efficient computer-based testing application using Laravel. By applying the Participatory Action Research (PAR) method, this program ensured active involvement from the school community, promoting both system usability and sustainability. The training sessions introduced practical skills in operating and managing the application, with a focus on data security and ease of access. The results showed improved competence among participants and successful integration of the application into school testing activities. The initiative also received strong support from local stakeholders, including Kelurahan Meruya Selatan, which contributed to the smooth execution of the program. Further development is encouraged to integrate this system with broader academic reporting tools and provide continuous training for future users.

Keywords: Community Service, Digital Literacy, Laravel Application, Computer-based Testing, Participatory Action Research.

1. INTRODUCTION

The rapid development of technology across various fields education, economics, social, and others has had a significant impact on daily activities (SAPUTRI & MEGAWATY, 2023). One of the sectors most affected by this advancement is education. The development of information and communication technology (ICT) has greatly influenced the educational field, especially in the learning process. One of the applications of ICT in education includes the utilization of multimedia tools and the Internet in learning activities (ADILA & RODIYAH, 2024). The integration of information and communication technology in the learning process aims to increase the effectiveness of teaching and learning activities, which is ultimately expected to improve student learning outcomes as well as enhance their individual capacity to use technology appropriately and beneficially (Maghfiroh, 2022). Furthermore, with the advancement of information technology, access to data or information can be conducted quickly, efficiently, and accurately (LATHIFAH, 2021; SEPTILIA & STYAWATI, 2020; WATI ET AL., 2019).

One example of the application of technological advancement in education is the implementation of computer-based testing (Astino et al., 2023). Exams themselves are a way to assess a person's ability by providing questions either in written, oral, or other forms (ARYATAMA & YUNITA, 2021). In this context, computer-based exams refer to assessments conducted using computer media. These are administered by educational institutions to measure and evaluate students' competency achievements as a way of assessing academic performance (KURNIA ET AL, 2021). To support such implementation, online exam information systems serve as digital platforms that enable assessments to be carried out online using information and communication technology (Sahi, 2020). The existence of these online examination systems brings various benefits, such as instant scoring, reduced administrative costs for schools, improved security of exam content, and more flexible exam scheduling (Martono et al., 2020).

Nevertheless, behind the convenience and sophistication of online exam systems lies a significant challenge academic dishonesty. The contributing factors include 10% from self-control, academic self-efficacy, and academic achievement, while the remaining 90% are influenced by the severity of punishment for such behavior, peer influence, perception of course materials and instructors, among others (Aulia, 2017). Forms of academic dishonesty vary, such as copying friends' answers during exams, duplicating assignments, accessing the internet via mobile phones, referring to textbooks during tests, and copy-pasting from the internet (Mushthofa et al., 2021; Nursalam et al., 2013). Such

misconduct can occur due to weak supervision during exams (FRANSISKA & UTAMI, 2019). Therefore, it to design an online exam system that is not only efficient but also capable of minimizing cheating to uphold academic integrity.

In this context, similar challenges are also faced by partners involved in community service activities, particularly schools and educational institutions. In today's digital era, information technology has become an integral part of many aspects of life, including education. One major challenge is adapting to technology-based learning and evaluation systems. Currently, many schools still rely on conventional examination methods, which require substantial time and resources and are vulnerable to cheating. In the implementation of this community service activity, the main partner is the Meruya Selatan Sub-District Office, which plays a role in supporting various aspects of administration, coordination, and program sustainability. The targeted community for this activity is SMPN 206 Jakarta Barat.

Based on a situational analysis, SMPN 206 Jakarta Barat faces several key problems. First is the limitation in technology, where the school does not yet have an integrated and adequate online exam platform. Currently, the school relies on Google Forms as the examination tool, which has various limitations such as a lack of security features, limited participant access control, and minimal automatic exam result analysis. Without a more comprehensive system, the validity and reliability of exams are not well guaranteed, potentially affecting the quality of learning evaluation. Second, there is a shortage of human resources. Teachers and staff have not received adequate training in managing and utilizing online exam platforms effectively. The lack of technical understanding in managing these systems hinders the effective implementation of technology in assessment processes. In addition, limited technical support and IT resources at the school present another challenge in ensuring the smooth implementation of exams. Without improving the capacity of educators and education staff, existing technology cannot be maximized to enhance the quality of education.

To address these issues, this community service activity aims to achieve three main objectives. First, the development of an online exam application based on Laravel, equipped with features such as question management, exam security, real-time monitoring, automatic grading, and exam result analysis to enhance the efficiency and reliability of assessments. Second, the delivery of comprehensive training to teachers in exam management and results analysis, students in system usage and exam simulations, and IT staff in application maintenance and technical troubleshooting. Third, improving the quality of assessment through enhanced exam security and reliability, accelerated grading processes, increased accessibility, and the provision of analytical reports to assist teachers in developing strategies for improving learning.

2. METHOD

This Community Service (PKM) activity was conducted at SMP Negeri 206 Jakarta Barat on May 20, 2025, through a Training and Implementation Program of a Computer-Based Exam Application Using Laravel for Teachers and Students of SMPN 206 Jakarta Barat. The training and application implementation activities were carried out based on the principle of non-patronizing interaction, ensuring that the mentoring process was not one-directional but instead a dialogical and participatory learning process between mentors and participants.

This community service activity employed the Participatory Action Research (PAR) method. Participatory Action Research, or PAR, is an approach used to address various obstacles or issues within a community (Anti et al., 2021). This method is a participatory approach aimed at solving problems, responding to community needs, generating knowledge, and facilitating socially and religiously nuanced change (Afandi et al., 2022). Another opinion describes PAR as a research approach that involves the community as the main subject of the research. The primary goal of PAR is to create positive change and significant improvements through an inclusive, collaborative, and progressive

research process (Ricky et al., 2024). Figure 1 below shows how a cycle of PKM activities with PAR method (WITARTI et al., 2024).



Figure 1. The cycle of PKM Activities with PAR method

The Community Service (PKM) activity at SMP Negeri 206 Jakarta Barat applied the Participatory Action Research (PAR) method, which emphasizes inclusive collaboration, problem-solving, and sustainable change. The following are the systematic stages based on the PAR framework:

- 1) **To Know.** The initial stage involved the Social Preparation process, where the community service team approached SMPN 206 Jakarta Barat to gather preliminary information. This step aimed to recognize the existing conditions regarding exam implementation and the technological infrastructure available at the school. This early engagement served as a means to establish trust, open communication, and a shared context between the mentoring team and the school community.
- 2) **To Understand.** In this phase, a Community Research and Social Problem Diagnosis was conducted. The team and school stakeholders collaboratively identified and analyzed challenges through open discussions. Problems highlighted included the absence of a secure and reliable online exam platform, dependence on Google Forms with its security limitations, incidents of academic dishonesty during exams, and limited integration of technology in assessment processes. This stage helped all stakeholders develop a shared understanding of the key issues to be addressed.
- 3) **To Plan.** With a clear understanding of the issues, the team and school stakeholders collaboratively moved to the Planning phase. They co-designed a training and implementation roadmap for a Laravel-based computer-based testing (CBT) system. The plan covered training schedules, materials to be presented, role distribution, and expected outcomes. This collaborative planning ensured ownership and alignment with the school's needs.
- 4) **To Act.** The Political Action phase involved the execution of planned activities, including conducting training sessions, providing technical support, and deploying the Laravel-based exam application. A school-based digital exam implementation team was established, comprising teachers, administrative staff, and students. This phase emphasized hands-on engagement and capacity building to ensure the sustainability of the system.
- 5) **To Change.** The final phase after the implementation, a reflection process was conducted to assess the results and gather feedback. Teachers and students participated in reflection sessions to assess their experiences. Feedback forms were distributed to gather insights and satisfaction levels. The results of this reflection provided the basis for ongoing improvements and laid the foundation for sustained change through the institutionalization of digital examination practices at SMPN 206 Jakarta Barat.

3. RESULTS AND DISCUSSION

As part of the implementation of the Tri Dharma of Higher Education, this Community Service (PKM) activity was carried out by a team of lecturers from Universitas Mercu Buana as a tangible contribution to improving the quality of education in Indonesia. Digital transformation in the field of education has become an urgent necessity, especially following the Covid-19 pandemic, which accelerated the integration of technology into teaching and assessment processes.

One of the key challenges faced by schools is the limited capacity to conduct secure, efficient, and structured computer-based examinations. SMP Negeri 206 Jakarta Barat is among the schools still facing obstacles in this regard,

particularly in terms of optimizing technology use during examinations. Therefore, this PKM initiative was designed to provide training and assistance in the use of a Laravel-based exam application for both teachers and students, with the goal of fostering a more effective, transparent, and modern evaluation system.

1) The Urgency of Training and Implementation of the Exam Application at SMP Negeri 206 Jakarta Barat

SMP Negeri 206 Jakarta Barat is currently facing several challenges in the learning evaluation process. One of the main issues is the absence of a dedicated computer-based exam system tailored to the specific needs of the school. So far, online exams have relied heavily on Google Forms, which presents limitations in terms of security and exam result management. This situation increases the potential for cheating, inefficiency in grading, and lack of integration between exam data and the school's academic system.

Additionally, limited infrastructure and insufficient teacher knowledge regarding digital examination technologies pose further obstacles. Therefore, training and implementing a Laravel-based examination system is considered crucial to addressing these challenges. Laravel was selected due to its flexibility and robust capabilities in building secure, interactive, and customizable web systems that align with school requirements.

Through the adoption of this technology, the learning evaluation process is expected to become fairer, more efficient, and measurable, ultimately supporting better learning outcomes.

2) Training and Implementation Process of the Exam Application at SMP Negeri 206 Jakarta Barat

The training and implementation process of the Laravel-based online exam application at SMP Negeri 206 Jakarta Barat was conducted in a structured manner, following five main stages based on the Participatory Action Research (PAR) approach: To Know, To Understand, To Plan, To Act, and To Change.

At this initial stage, the community service team approached the school management to establish communication and gain a firsthand understanding of the real issues faced in exam administration. On-site observations were conducted to assess the school's facilities and technological readiness, including computer equipment, internet network, and the readiness of teachers and students to adopt new technologies.

The next stage involved collaborative problem identification through open discussions between the team and the school representatives. The most prominent issue identified was the school's reliance on Google Forms for exams, which lacked sufficient protection against cheating. This discussion was facilitated with the school's vice principal as the key informant.



Figure 2. Discussion with the Vice Principal of SMP Negeri 206 Jakarta Barat

This participatory dialogue helped both parties develop a deeper understanding of the limitations of the current digital examination system and the urgency to implement a more secure and integrated solution.

Third Stage, Based on the findings, the team collaboratively planned the development and training of a Laravel-based exam application. Together with the vice principal, the team outlined the training schedule, learning materials, and system interface design. The training materials included Introduction to Laravel framework basics, Creation of a digital question bank, Management of student and teacher data and Utilization of the admin dashboard to monitor and evaluate exam results

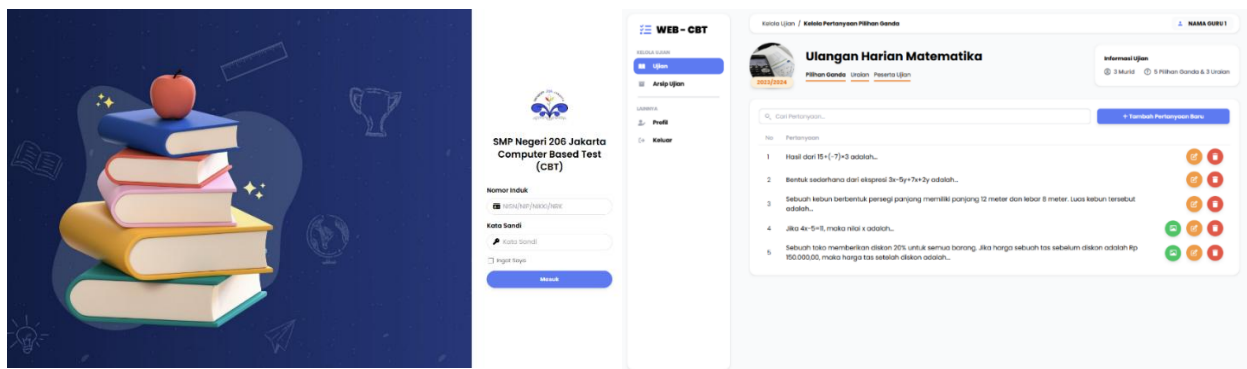


Figure 3. User Interface of the Laravel-Based Online Exam Application

Fourth stage, involved the direct execution of training activities at SMP Negeri 206 Jakarta Barat. Teachers and students participated in hands-on sessions and simulations using the system in a real-exam scenario. A Digital Examination Team was formed, comprising teachers and administrative staff, to ensure the long-term maintenance and sustainability of the system.

The system was then tested in a simulated environment to assess its effectiveness and identify potential technical issues.



Figure 4. Implementation of Online Exam Application Training at SMP Negeri 206 Jakarta Barat

In the final stage, a joint reflection and evaluation session was conducted to assess the effectiveness of the training and implementation. The evaluation was conducted using two methods:

a. Practical Evaluation:

Participants were assessed based on their ability to operate the application, including creating exam questions and managing the exam process. The facilitators also evaluated participants' active engagement as a success indicator. Results showed that most participants were able to operate the system effectively, and some even demonstrated the ability to make improvisations beyond the provided material.

b. Questionnaire Feedback:

A satisfaction survey was distributed via Google Forms to all 31 participants at the end of the training session. The evaluation indicators focused on participant satisfaction and feedback regarding the materials, facilitators, and overall implementation of the training.

Survey results showed a high average satisfaction score, indicating that the training program was highly relevant to the school's needs. The partner institution expressed appreciation and satisfaction with the contributions provided by the community service team.

3) Results of the Training and Implementation of the Exam Application at SMP Negeri 206 Jakarta Barat

The training and implementation activities of the Laravel-based online exam application produced several key outcomes:

a. Improved Understanding and Skills Among Teachers

Teachers at SMP Negeri 206 Jakarta Barat demonstrated a significant improvement in their understanding of digital examination systems. They successfully created exam questions, managed participant data, and monitored exam results independently through the developed application.

b. Active Student Participation in Digital Exams

Students gained a new experience in taking computer-based exams using a more structured and transparent system. This led to an increased awareness among students of the importance of academic integrity.

c. Formation of a School-Based Digital Exam Management Team

The school established a digital exam implementation team comprising teachers and administrative staff. This team is responsible for ensuring the continuity and sustainability of the digital examination system within the school environment.

d. Recommendations for Infrastructure Strengthening and Follow-Up Training

The evaluation indicated a need to improve internet infrastructure and procure additional supporting devices. Furthermore, teachers recommended follow-up training to support the development of additional features and integration of learning outcome reports.

Overall, the activity successfully laid the foundation for digital transformation in the learning evaluation system at SMP Negeri 206 Jakarta Barat. It is expected that ongoing technical assistance and program continuity will enable the school to develop and manage its digital exam system independently and sustainably.

4. CONCLUSION

This community service initiative has successfully enhanced the capacity of both teachers and students at SMPN 206 Jakarta Barat in adopting and operating a secure and efficient computer-based examination system developed using the Laravel framework. By addressing the urgent need for digital assessment tools, particularly in the post-pandemic educational landscape, the program provided practical solutions to academic integrity challenges often associated with online examinations.

The use of a Participatory Action Research (PAR) approach ensured that stakeholders were actively involved throughout the process, from identifying needs to designing and implementing solutions. This participatory model not only fostered a sense of ownership among users but also contributed to the long-term sustainability of the system. The formation of a dedicated Digital Examination Team within the school further reinforces the program's continuity and integration into the school's operational ecosystem.

In light of the positive outcomes observed, future efforts should focus on expanding the functionality of the application by integrating it with broader academic systems such as grade reporting and student performance analytics. Moreover, continuous capacity building through regular training for newly recruited teachers and students is recommended to maintain system effectiveness and user proficiency. This initiative demonstrates how targeted technological interventions, when combined with collaborative approaches, can significantly contribute to the advancement of digital literacy and assessment quality in secondary education settings.

ACKNOWLEDGMENT

This community service activity was funded by Universitas Mercu Buana through the Institute for Research and Community Service (LPPM) under the Community Service Grant Scheme, Contract Number 01-I-4/KDN-55201/003/B-SPK/III/2025. The authors express sincere appreciation to the principal, teachers, and students of SMPN 206 Jakarta Barat for their active participation and support throughout the program. Special thanks are also extended

to the Kelurahan Meruya Selatan for their collaboration and facilitation during the implementation. Gratitude is due to all team members whose dedication made this initiative a success.

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