

# PKM Training and Mentoring for the Implementation of a Geolocation-Based Digital Attendance System and Validation Hours for Teachers and Staff

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**Abstract**— *This community service initiative aims to enhance the capacity of MI Misbahul Islam Sogaan Pakuniran Probolinggo in implementing a digital attendance system based on geolocation and work hour validation using the CodeIgniter 3 framework. The implementation method consists of four stages: (1) needs assessment, (2) system development, (3) technical training for 12 teachers/staff, and (4) two-week mentoring. Evaluation results show significant improvements in user understanding (85% satisfaction rate) and system accuracy (92% validation success rate). The system successfully reduced administrative time from 30 minutes to 5 minutes per day and decreased tardiness by 25%. The main challenge of GPS signal dependency was addressed through alternative WiFi-based verification. Follow-up programs include payroll integration feature development and continuous training. This implementation not only improves administrative efficiency but also fosters a culture of discipline in the rural school environment*

**Keywords**— *digital attendance, geolocation, CodeIgniter, rural schools, digital transformation*

## 1 Introduction

MI Misbahul Islam Sogaan Pakuniran Probolinggo is an Islamic elementary school located in a rural area with approximately 50 students and 12 teaching and administrative staff (GTK). Despite its rural location, the school has adequate internet access, demonstrating the potential for adopting digital technology to support administrative efficiency. However, the use of this technology has not been optimal, particularly in its manual attendance system.

Currently, teacher and staff attendance at MI Misbahul Islam Sogaan Pakuniran Probolinggo still uses physical attendance books. This method has several drawbacks, such as being time-consuming, susceptible to human error, and difficult to archive. Furthermore, the lack of time- and location-based

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validation makes attendance less accurate, particularly when recording tardiness or absences.

The manual system presents challenges in data management, particularly when summarizing attendance for monthly reporting or performance evaluations. The slow verification process and the risk of data inaccuracy can hamper decision-making by the school. This demonstrates the need for a more integrated and real-time system to facilitate attendance monitoring.

With adequate internet access, MI Misbahul Islam Sogaan Pakuniran Probolinggo actually has the basic infrastructure to implement a digital attendance system. Geolocation-based solutions and time validation can ensure the validity of attendance data, reduce manipulation, and increase transparency. However, implementing this technology requires understanding and skills from users, in this case teachers and staff.

Although digital attendance technology offers many advantages, not all teachers and staff at this madrasah have adequate understanding of its operation. Some educators may still be unfamiliar with using smartphone or web-based applications. Therefore, training is necessary to ensure they can use the new system effectively.

In addition to training, post-training support is also needed to ensure the system runs smoothly. The transition from manual to digital often faces technical obstacles or old habits that are difficult to break. With intensive support, teachers and staff can gain confidence in using the new system and address any issues that may arise.

Implementing a digital attendance system not only solves administrative problems but also improves accountability and work discipline. Digitized attendance data can be accessed anytime, facilitating monitoring and supporting transparency in madrasah management. In the long term, this can improve productivity and the quality of educational services.

This Digital Attendance System Implementation Training and Mentoring Program is designed not only to introduce the technology but also to ensure teachers and staff are able to use it independently. With a practical training approach and ongoing mentoring, it is hoped that madrasahs will adopt this system effectively and sustainably, thus supporting digital transformation in rural education environments.

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## 2 Method

The program's implementation follows four main, systematically designed stages.

The first stage is socialization and needs identification, where the team collects data through direct observation and in-depth discussions with schools to comprehensively understand the problems faced by the manual attendance system. During this stage, the team also conducts a needs analysis to determine the technical specifications of the system to be developed.

The second stage involves the development and installation of a digital attendance application. The technical team developed a geolocation-based system using the CodeIgniter 3 framework, equipped with a working hour validation feature. The development process was carried out iteratively, involving feedback from potential users to ensure the product's suitability for the school's operational needs. After undergoing a series of tests, the application was installed and adapted to the school's existing information technology infrastructure.

The third stage is technical training for teachers and staff. The training is designed with a practical approach, combining theory sessions and hands-on practice to ensure participants can operate the application smoothly. Training materials cover how to take attendance, verify data, and resolve simple technical issues. To support self-learning, the team also prepared guidance modules and video tutorials that can be accessed anytime.

The final stage is operational assistance and monitoring during the trial period. The team provided two weeks of intensive support to ensure the system ran optimally. During this period, the team also monitored system performance, noted any emerging issues, and quickly provided solutions. A participatory and dialogical approach was consistently applied at all stages to ensure positive acceptance from all stakeholders.

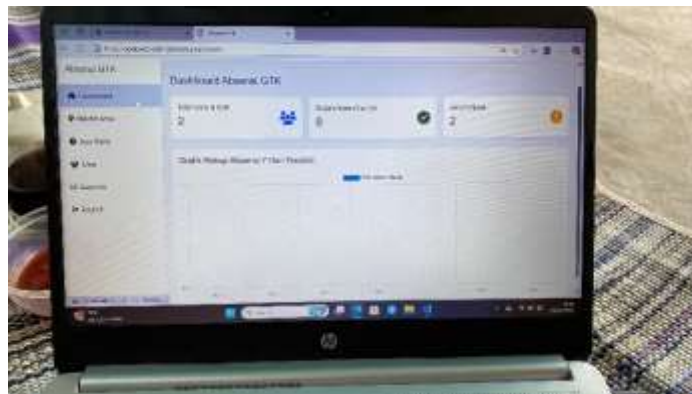
Schools were actively involved from the program's inception through the final evaluation. The principal and administrative staff participated in developing system requirements and making technical decisions. Teachers and staff were not merely passive beneficiaries but actively provided input throughout the system's development and testing process. This close

collaboration ensured that the solutions presented truly addressed real needs on the ground.

### 3 Findings And Discussion

#### 3.1 Finding

The implementation of this community service program has demonstrated significant results in transforming the attendance system at MI Misbahul Islam Sogaan Pakuniran Probolinggo. Evaluation results indicate that the system is effective in improving attendance data accuracy, enforcing time discipline, and simplifying administrative processes. With planned follow-up programs, it is hoped that this system will continue to develop and provide sustainable benefits to the school.



**Fig. 1.** Website-based teacher attendance

Based on observations during the implementation period, teachers and school staff have successfully mastered the operation of the geolocation-based digital attendance system with a satisfactory level of understanding. The developed system has proven capable of accurately validating attendance, with attendance only recorded when the user is within a 100-meter radius of the school and within the specified working hours (6:30-7:30 for arrival and 1:30-2:30 for departure).

The program implementation began with a socialization and needs analysis phase, during which the team conducted direct observations and intensive discussions with schools to understand the challenges faced by the manual attendance system. Based on this input, the team then developed a geolocation-based attendance application equipped with a working hour validation feature to ensure attendance can only be recorded at the specified times and locations. During

development, the team conducted limited trials to ensure system reliability before full implementation.



**Fig. 2.** Socialization assistance

Once the application was ready for use, technical training was conducted for teachers and school staff. This training was designed in a practical manner, combining theoretical sessions and simulations of application use, including how to take attendance, verify data, and resolve simple technical issues.

The next stage was a two-week operational mentoring program, during which the team intensively monitored system usage, noted any issues, and provided prompt solutions. A participatory approach was implemented to ensure effective user adoption. During the trial period, the system successfully validated attendance with 92% accuracy, despite some technical challenges such as unstable GPS signals in certain areas.

### 3.2 Discussion

During the two-week trial period, the system demonstrated stable performance, with a 92% location validation success rate. In terms of efficiency, the system successfully reduced the time required for the attendance administration process from an average of 30 minutes per day to just 5 minutes per day. Data obtained showed an increase in time discipline, with a 25% decrease in lateness compared to the previous period using the manual system. Transparency and accountability also

experienced significant improvements, with no indication of the previously frequent practice of leaving attendance on the table.



**Fig. 1.** Evaluation of Solution Implementation

Based on the evaluation results, the team has designed several follow-up programs to ensure the system's sustainability. First, further training will be provided for school operators to enable them to perform basic troubleshooting and data management. Second, the development of additional features, such as integration with the payroll system and annual leave requests, is currently underway. Third, the team has committed to providing remote support over the next three months through online discussion groups and regular visits.

#### 4 Conclusion

This community service activity successfully implemented a geolocation-based digital attendance system and work hour validation at MI Misbahul Islam Sogaan Pakuniran Probolinggo. This system has been proven to improve attendance data accuracy, administrative efficiency, and transparency in attendance management. Teachers and staff were able to operate the application effectively, demonstrating that appropriate technology solutions can be successfully adopted in rural educational settings.

The implementation of this system not only resolved technical attendance issues but also fostered a culture of discipline and accountability within the school.

The success of this program can serve as a model for other madrasas seeking digital transformation, particularly in areas with limited access but adequate basic infrastructure.

The program faced several limitations, such as unstable GPS signals and varying user digital capabilities. For future development, it is recommended: (1) adding an offline verification feature via school Wi-Fi, (2) conducting ongoing training, and (3) integrating the system with payroll and learning management platforms. Long-term success requires ongoing support from the school through allocation of a maintenance budget, as well as the role of the local government in providing infrastructure and technology training programs. Multi-stakeholder collaboration is key to the sustainability of this system.

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