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IMPLICATIONS OF USING FINGERPRINT ATTENDANCE ON TEACHER WORK DISCIPLINE

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Abstract

Fingerprint attendance is a biometric-based system that uses hardware, software, and databases to accurately record teacher attendance, offering a more efficient method compared to traditional attendance systems. This research aimed to explore the impact of fingerprint attendance on teacher work discipline at SDIT Nur Fatahillah, involving 20 teachers, consisting of 16 permanent foundation teachers (GTY) and 4 non-permanent teachers (GTT). The study employed a descriptive qualitative approach, with a random sampling technique. The findings indicated that the use of fingerprint attendance significantly improves teacher discipline by simplifying the attendance process, ensuring more accurate records, and fostering greater punctuality. Teachers expressed increased satisfaction with the system's ease of use, which in turn boosted their sense of accountability. Moreover, the implementation of the system led to a noticeable improvement in teacher work discipline, as it encouraged teachers to adhere more closely to their working hours. The study also highlighted that the system provided benefits not only in terms of attendance accuracy but also in terms of enhancing teacher morale and job satisfaction. As a result, fingerprint attendance systems can be considered a valuable tool for educational institutions, promoting better teacher performance, administrative efficiency, and a more disciplined work environment, ultimately contributing to improved overall educational quality.
***Keywords**: Fingerprint Attendance; Teacher Work Discipline; Integrated Islamic School.*

A. INTRODUCTION

The rapid development of technology today has had a major impact on almost every aspect of human life, from the way we work, live, to how we interact. Technology is the result of changes in hardware and software based on science

which continues to develop along with user needs and developments over time (Taufik et al., 2022). These innovations provide convenience and efficiency in daily activities, including in the education sector. One increasingly popular technology application is the use of a fingerprint-based attendance system. This technology not only increases the accuracy of recording attendance but also reduces the potential for misuse such as absenteeism, making it a practical and effective solution.

Fingerprint technology refers to an electronic device used to scan fingerprints for identification and authentication purposes, which is included in the category of biometric technology. Sensors in fingerprint applications work by scanning and analyzing lines, bumps, and gaps in fingerprint patterns through sensitive elements such as cameras or optical sensors, to ensure individual identity (Andre et al., 2023). Each individual has a unique fingerprint, so data cannot be falsified or disguised (Kamal et al., 2020). With the ability to uniquely identify individuals based on fingerprint patterns, this technology offers a high level of accuracy, making it one of the most trusted authentication methods. However, the security of fingerprint-based biometric systems remains a concern due to risks such as spoofing, namely the using fake fingerprints, and theft of biometric template data. To address this threat, solutions such as life detection (liveness detection), which is capable of distinguishing between real and fake fingerprints, as well as template protection through non-inversion transformation (Cancelable Biometrics) and cryptographic systems, being an important step to improve security (Yang et al., 2019). Thus, although this technology offers a high level of accuracy, security enhancement efforts are still required to maintain its reliability in various applications.

Using fingerprint-based attendance technology is now increasingly widespread, including in the education sector. Education itself is a consciously designed effort to create quality and competitive human resources (Rosmawati et al., 2020). Fingerprint technology makes it easier for educational institutions to simplify the attendance administration process, increase data accuracy, and strengthen security systems. In addition, this technology is effective in preventing fraudulent practices, such as absenteeism, which has the potential to damage the quality of education. The application of this technology is also in line with efforts to improve teacher work discipline, which is closely related to compliance with school regulations (Srisiska et al., 2021). Managing attendance data which is still done manually risks increasing errors in calculating working hours and overtime, and can reduce employee performance (Nurtjahjani et al., 2022). The application of a fingerprint system can be used as a tool to control the discipline of teaching and education staff because this system simplifies the attendance process and is able to store all attendance data automatically (Rohati et al., 2020). Teachers or educators are a key element in the success of the learning process. Therefore, educators need to have a high level of professionalism and good discipline to achieve quality education (Rahayu, 2023). Professionalism in education can be

understood as the implementation of functions and tasks in the field of education that are based on expertise, obtained through special education and training, and carried out consistently throughout life (Sartka et al., 2023). However, educational institutions not only act as places of learning, but can also be a means of indoctrination, where certain beliefs are implemented without a critical evaluation process (Martin, 2023). Therefore, the application of technology and education management must be carried out transparently and responsibly to maintain the integrity of the world of education.

The application of fingerprints as an attendance system has been proven to increase teacher attendance levels. With this system, incidents such as teachers being late for attendance or entrusting their absences to colleagues will no longer happen. Research has also been conducted regarding the work discipline of teachers and students which discusses the use of fingerprints as an effort to improve teacher and student discipline at SMAN 3 Lumajang (Fiiazah et al., 2020). This research shows that modern attendance technology such as fingerprints has a positive impact in improving discipline, transparency and accuracy of teacher and student attendance data. The results of this research show that this system encourages teachers and students to be more disciplined regarding attendance and return times through automatic detection and application of rewards and punishments. This system also increases the accuracy of attendance data, makes it easier to manage and monitor absences, and eliminates manipulation practices such as leaving absences. Teachers and students are able to adapt to the procedures for using fingerprints and understand the applicable regulations and sanctions. However, despite the positive impact, there are still several cases of delays that require further evaluation to improve the effectiveness of this system.

Research regarding teacher work discipline has also been conducted regarding "Effectiveness of Using Fingerprint Attendance Towards Improving Teacher Discipline at SMA Negeri 11 Depok" which concluded that the use of Fingerprint attendance not only significantly improves teacher discipline but also makes it easier to monitor attendance and reduces data manipulation, so that this technology can be an effective tool in increasing work efficiency and discipline in the educational environment (Nurlina et al., 2024). However, the main factors in increasing teacher discipline are the use of attendance Fingerprint can still be studied more widely. Based on this description, researchers are interested in continuing related studies by conducting a research entitled "Implications of Using an Attendance System Fingerprint regarding Teacher Work Discipline at SDIT Nur Fatahillah".

B. RESEARCH METHODS

This research was conducted at SDIT Nur Fatahillah which is located on Jl. H. Jamat No. 28 A, Buaran, Serpong, South Tangerang City, Banten. This research uses descriptive qualitative methods. Descriptive qualitative is a research approach that produces data in the form of written or verbal descriptions obtained

through observations and interviews of individuals and the behavior observed (Fiiazah et al., 2020).

The sample in this study was taken using a random sampling technique, there were 20 respondents consisting of 16 permanent foundation teachers (GTY) and 4 non-permanent teachers (GTT) at SDIT Nur Fatahillah. The data collected is primary data obtained through interviews and observation. This research aims to describe and explain phenomena related to the implications of using fingerprints in monitoring teacher discipline and its impact on their behavior.

C. RESULTS AND DISCUSSION

1. fingerprint and Discipline

fingerprint is an information management system that is operated using devices with physical components such as hardware, databases, operational procedures, and personnel tasked with carrying them out. Absence fingerprint is an attendance recording technology that utilizes a software-based machine. Attendance system fingerprint facilitates better attendance monitoring, which has been shown to improve punctuality and reduce late arrivals (Melani et al., 2024). Absence fingerprint is a biometric technology that is able to record attendance accurately and encourage employees to be more disciplined in carrying out their duties. The selection of fingerprint implementation variables effectively predicts work discipline (Imam et al., 2022). This fingerprint system makes it easier for employees to take attendance quickly and accurately (Rokhayah et al., 2021).

Discipline is the result of the environmental formation implemented by the company, and has a very dominant role in business operations. Discipline is an eternal element in education that not only maintains order but also supports the development of responsibility and social skills (Karaoulas, 2024). Work discipline is an employee's attitude of responsibility and obligation to comply with applicable regulations (Jepry, 2020). Teacher discipline is an attitude of obedience or conscious obedience that a teacher has towards the rules, norms or rules that apply in the school environment, to avoid sanctions or punishment and support the achievement of the expected educational goals (Fransiska et al., 2020). Teacher discipline is the commitment and ability of an educator to carry out his duties and responsibilities in accordance with the regulations, ethics, and norms that apply in the world of education. This means that the teacher's presence is a form of responsibility in work discipline which can be made easier by the use of attendance fingerprint.

2. Interview Results From 20 Respondents

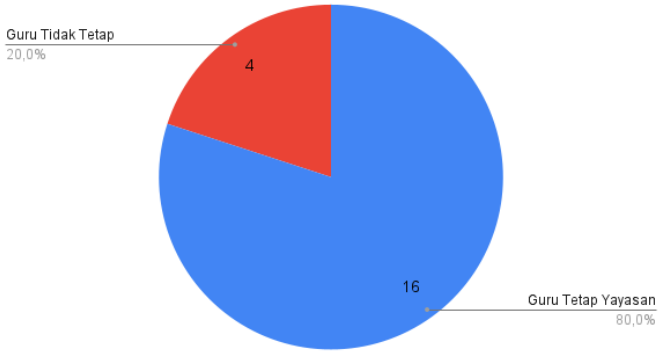
The interview results from 20 respondents were then processed using Microsoft Excel and then categorized according to the respondents' industrial background and aspects of the use of fingerprint attendance and teacher work discipline.

Table A.1 Characteristics of Respondents

No	Category	Total
1.	Foundation Permanent Teacher (GTY)	16
2.	Non-Permanent Teacher (GTT)	4

Source: Processed data (2024)

Figure A.1 Respondent characteristics diagram

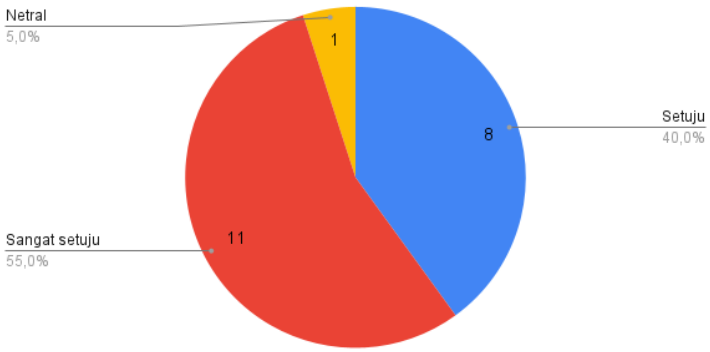


Source: Processed data (2024)

Based on the interviews, 20 respondents participated, comprising 16 permanent foundation teachers (80%) and 4 non-permanent teachers (20%). 16 permanent teachers are those who have been teaching at SDIT Nur Fatahillah for more than 3 years, while the 4 non-permanent teachers are those who have been teaching for less than 3 years, which is the requirement at SDIT Nur Fatahillah. The researchers believe that this sample is sufficient as it represents all teachers at SDIT Nur Fatahillah for the purposes of this research.

3. Use of Fingerprint Technology

Figure A.2 Statement diagram fingerprint make it easier for teachers to process attendance

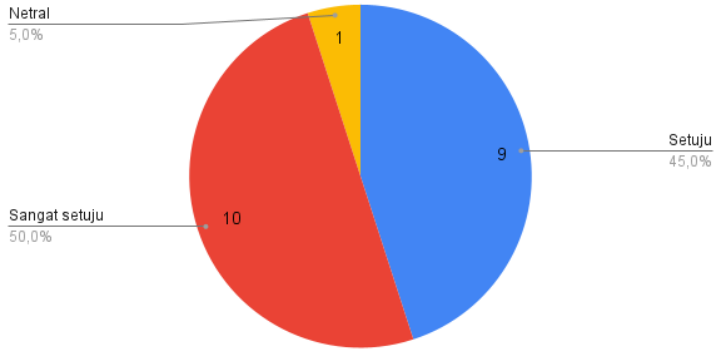


Source: Processed data (2024)

Based on the results of the interview, there were 11 teachers or 55% who strongly agreed that the fingerprint attendance system made it easier for teachers to process attendance, followed by 8 teachers, 40% who agreed and 1 teacher or 5% who said they were neutral. Fingerprint technology provides convenience and comfort for teachers at SDIT Nur Fatahillah School in recording attendance. With the facilities provided by the SDIT Nur Fatahillah school, it is hoped that it can increase attendance levels and reduce teacher tardiness. 95% of SDIT Nur Fatahillah School Teachers feel that accurate data can provide a fair assessment of teacher discipline. There are indeed problems with this technology, if there is a power outage, teachers will have difficulty filling in attendance. However, fortunately the school for situations like this provides the option of being able to manually sign attendance on the attendance sheet.

4. Teacher Discipline Level

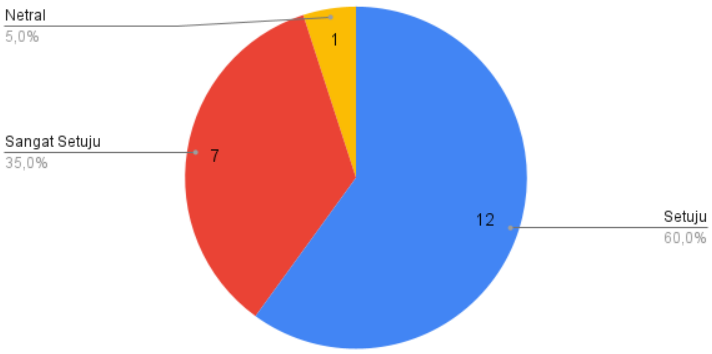
Figure A.3 Security statement diagram fingerprint very tall and difficult to manipulate



Source: Processed data (2024)

Based on the results of the interview, 10 teachers or 50% stated that they strongly agreed that the security of the fingerprint attendance system was very high because it was difficult to manipulate, followed by 9 teachers or 45% stating that they agreed and 1 teacher or 5% stated that they were neutral. This shows that attendance technology fingerprint is considered an effective solution to increase accuracy and transparency in absenteeism management. However, the presence of one neutral responses suggest potential areas for improvement.

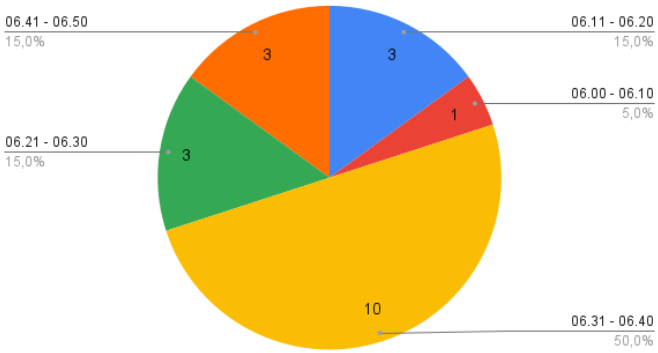
Figure A.4 Diagram of the teacher's statement of being more disciplined in coming on time due to absenteeism fingerprint automatically scheduled



Source: Processed data (2024)

Based on the interview results, there were 12 teachers or 60% who strongly agreed that teachers had become more disciplined in arriving on time because fingerprint attendance was automatically scheduled. followed by 7 teachers, 35% of whom agreed and 1 teacher or 5.0% said they were neutral. Fingerprint technology increases discipline in arriving on time for teachers at SDIT Nur Fatahillah School in recording attendance. With the facilities provided by the SDIT Nur Fatahillah school, it is hoped that it can increase attendance levels and reduce teacher tardiness. This shows that the use of technology such as fingerprint attendance has a positive impact in improving the discipline of teaching staff. This automatically scheduled system provides greater transparency and accountability, minimizing the opportunity for time violations. Neutral respondents may indicate the need for further adjustments or socialization to ensure the implementation of this system is effective for all teachers.

Figure A.5 Diagram of teacher arrival time routine

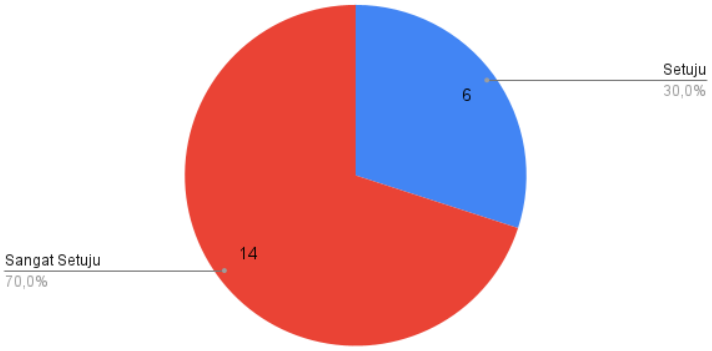


Source: Processed data (2024)

Based on the results of interviews, as many as 10 people, or 50%, arrived in the time range 06.31-06.40, making it the most dominant arrival time. The time 06.00-06.10 has the smallest number of teachers, namely only 1 person (5%). Meanwhile, other times, namely 06.11-06.20, 06.21-06.30, and 06.41-06.50, each

recorded the arrival of 3 teachers (15%). These data illustrate teacher arrival patterns, which can inform disciplinary evaluations or future planning.

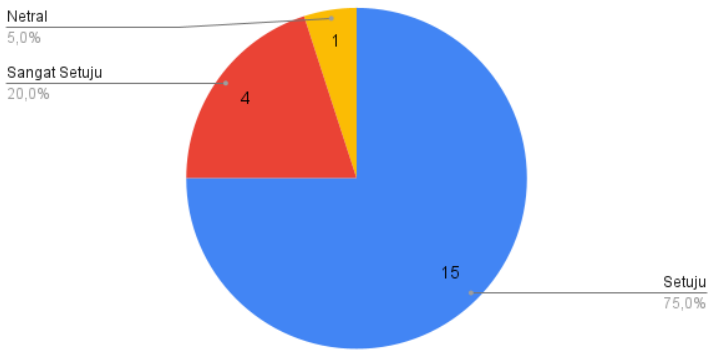
Figure A.6 Diagram of the statement that the principal must be a model of discipline, especially in terms of punctuality



Source: Processed data (2024)

Based on the results of interviews, 14 teachers or 70% stated that they strongly agreed that the school principal should be a role model for discipline, especially in terms of punctuality, followed by 6 teachers or 30% who agreed. This reflects the high awareness among teachers of the importance of the principal's role as a role model in creating a culture of discipline in the school environment. The principal's example in terms of discipline, such as punctuality, can have a positive impact on the motivation and behavior of all school members. As leaders, school principals are expected to be able to demonstrate consistency and integrity, which in turn can improve teacher performance and form a more professional work culture. Support for school principals is also needed, such as policies that support the implementation of discipline and facilities that support punctuality.

Picture A.7 Statement diagram when the teacher violates the existing rules, then there are consequences that are accepted

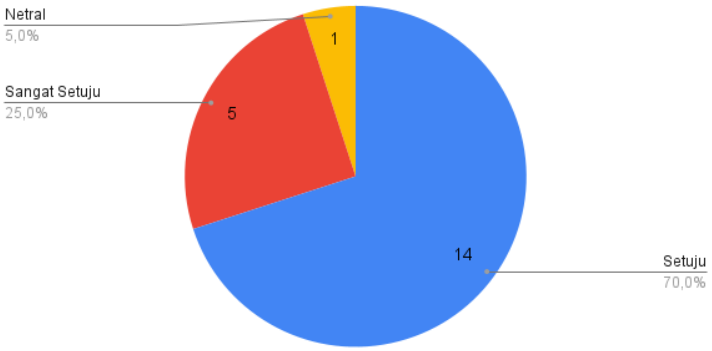


Source: Processed data (2024)

Based on the results of interviews, 15 teachers or 75% stated that they agreed that if teachers violate existing regulations, there will be consequences applied, followed by 4 teachers or 20% stating that they strongly agreed and 1 teacher or 5% stated that they were neutral. These results indicate that the majority of respondents support the implementation of consequences for rule violations by teachers, which reflects the importance of enforcing discipline in the school environment. This support can be an indicator that the existing system of regulations and consequences is considered relevant to maintain the professionalism of teaching staff. However, the presence of neutral respondents can be used as material for further evaluation, whether there are certain aspects of the rules or their implementation that need to be improved.

5. Teacher Performance and Perception

Figure A.8 Diagram of teachers' statements of satisfaction with the performance and discipline they apply during work



Source: Processed data (2024)

Based on the results of the interview, 14 teachers or 70% stated that they agreed that teachers were satisfied with the performance and discipline that the teacher applied during their work, followed by 5 teachers or 25% stating that they strongly agreed and 1 teacher or 5% stated that they were neutral. This reflects a high level of satisfaction with self-discipline efforts and professional performance among teachers. This satisfaction can be an indication that teachers feel that their efforts in carrying out their duties have gone according to expectations, both in terms of work results and contribution to the school environment. However, a neutral response from one teacher indicated a potential self-evaluation or need for further support, such as performance recognition, additional training, or feedback from the school.

Based on research results, 95.3% of teachers who teach at SDIT Nur Fatahillah feel helped by the implementation of the fingerprint attendance system. This system contributes significantly to improving teacher discipline and job satisfaction. These findings are an important basis for maintaining using fingerprint attendance while encouraging increased discipline in the school

environment. With its ability to record arrival and departure times according to the schedule set in the computer system, this system makes it possible to create more precise and accurate attendance reports (Saputra et al., 2024). This provides an overview of the respondent's industrial background, the implementation of the fingerprint attendance system, and its relationship to teacher work discipline at SDIT Nur Fatahillah. The majority of respondents, namely 16 people (80%), are permanent foundation teachers, while 4 people (20%) are non-permanent teachers. Research shows that the fingerprint attendance system provides various benefits and influences on teacher work discipline.

As many as 55% of respondents strongly agreed that fingerprint attendance made the attendance process easier, followed by 40% who agreed, and 5% were neutral. In line with the results of other research, research shows that employee discipline increases after the introduction of an electronic or fingerprint attendance system (Rahmawati & Fitriana, 2024). By placing your finger on the attendance machine, fingerprint data will be electronically captured, processed and stored in the personnel database (Hamdani et al., 2023). Apart from that, 50% of respondents strongly agreed that the security of the fingerprint system is high because it is difficult to manipulate, followed by 45% who agreed, and 5% were neutral. Fingerprint technology is able to overcome various problems that often occur in manual attendance systems, such as violations of attendance rules, falsifying attendance and data manipulation (Rahmah & Nurbaiti, 2023). This system also encourages discipline, with 60% of respondents agreeing that the system helps teachers arrive on time automatically, 35% strongly agree, and 5% are neutral. This is supported by the results of previous research which shows that the use of fingerprint attendance has a positive and significant influence on the level of teacher discipline (Mulyadi et al., 2024).

Furthermore, other research revealed that the work discipline of Prabumulih City DPRD Secretariat employees was influenced by the implementation of the fingerprint attendance system (Khairuman et al., 2022). The role of the school principal is also considered important as a model of discipline. As many as 70% of respondents strongly agreed that school principals should be an example in terms of punctuality, while 30% agreed. In addition, 75% of respondents agreed that teachers who break the rules should receive consequences, 20% strongly agreed, and 5% were neutral. The existence of an effective school principal is a crucial factor because even though the school has adequate facilities and infrastructure, sufficient financial support, and quality human resources, all of this potential will not be optimal if the school principal is not able to manage it professionally (Tanjung et al., 2021).

Satisfaction with teachers' own performance is also high, with 70% agreeing that they are satisfied with their work discipline, 25% strongly agree, and 5% are neutral. It is supported by previous research that most employees welcome fingerprint attendance technology, which encourages comfort and compliance with the rules and regulations in force (Mulyadi et al., 2024). In terms of arrival,

the time pattern shows that the majority of teachers arrive in the time 06.31-06.40 (50%), while the period 06.00-06.10 has the fewest number of teachers (5%). The other time shows a relatively balanced distribution of 15%. This indicates that the majority of teachers attend on time or according to schedule. In line with this research shows that fingerprint attendance increases employee supervision and awareness of arrival time discipline. The high percentage of employees who arrive on time shows that the implementation of the fingerprint attendance system has succeeded in achieving the expected targets (Mayunita & Jumaah, 2022).

Institutions can determine employee working hours and schedules, which will then be used as a basis for producing various reports regarding employee attendance and performance (Hardaningtyas & Holifah, 2023). Utilizing a sophisticated attendance system is critical to cultivating a disciplined workforce, increasing overall organizational success (Arifeny & Darmi Astuti, 2024). Overall, this research shows that 95.3% of teachers feel that the fingerprint attendance system makes things easier, which also contributes to increasing teacher discipline and job satisfaction. Consistent use of fingerprint attendance can have a significant impact on improving work discipline (Singal et al., 2023). Results This data can be used as a basis for maintaining the use of fingerprint attendance and improving discipline in the school environment.

D. CONCLUSION

It can be concluded that fingerprint attendance, as a biometric device, uses sensors to scan and analyze fingerprint patterns for individual identification and authentication. The implementation of this system at SDIT Nur Fatahillah has significantly improved productivity by streamlining attendance, enhancing discipline, and increasing teacher satisfaction. The majority of respondents recognize it as an effective solution with high security and resistance to manipulation. Additionally, the system contributes to improved teacher discipline by ensuring punctual attendance, with the school principal playing a key role as a role model for discipline at SDIT Nur Fatahillah.

This research supports the continued use of fingerprint attendance as a valuable tool in improving discipline and creating a more professional work environment at SDIT Nur Fatahillah. However, it is important to regularly evaluate and strengthen the technical infrastructure to fully optimize the benefits of the system.

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