
Effectiveness of Using Barcode Scanner-Based Student Attendance to Improve Student Discipline at Madrasah Aliyah Assalafiyah Mlangi

Author:

Ratna Rosita Pangestika¹
Yuni Mariani Manik^{*2}
Afifah Qodri Rinjani³
Farah Mufti Muhanik⁴
Dian Isnawati⁵
Yuliastuty Puspitaningrum⁶

Affiliation:

Universitas Negeri
Yogyakarta^{1,2,6}
Universitas Jendral
Soedirman⁵
Universitas Tidar³
Universitas Islam Negeri
Sunan Kalijaga⁴

Corresponding email

yunimarianimanik@uny.ac.id

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Abstrak:

Based on a preliminary study conducted by researchers, the use of attendance technology utilizing a barcode scanner at MA Assalafiyah Mlangi has been in place since 2020. The researchers are interested in examining whether barcode scanner-based attendance is effective in improving student discipline. Therefore, they plan to conduct a study entitled *The Effectiveness of Barcode Scanner-Based Student Attendance in Enhancing Student Discipline at Madrasah Aliyah Assalafiyah Mlangi*. The method used in this research is a quantitative approach. The subjects of this research were all students of Classes X, XI and XII MA Assalafiyah Mlangi. The sample used was 70 students from the entire population. The sampling technique uses simple random sampling. Data collection techniques use questionnaires interviews, and documentation. Validity testing was carried out using Pearson product moment with reliability testing values using Cronbach's Alpha (α). Data were analyzed using linear regression analysis using the SPSS 22.0 for Windows program. The research results show that: barcode scanner based attendance (X) is effective and has a significant influence on student discipline (Y), which is reflected in the t count of 10.983 with a significance level of 0.000. The barcode scanner based presence coefficient value is 0.923 Based on these values, it can be concluded that attendance using a barcode scanner system is effective in improving student discipline at MA Assalafiyah Mlangi. Barcode scanner-based attendance is effective in increasing student discipline with a high discipline percentage of 90%, Barcode scanner makes it easier for its users, both students, teachers and employees at MA Assalafiyah.

Key Word: Barcode Scanners; Discipline; Presence

Introduction

The attendance system at MA Assalafiyah utilizes a barcode scanner. According to K. Laksmi Sudha et al. (2015: 1), a barcode is a machine-readable representation of information in visual form, consisting of parallel lines and spaces of varying sizes. These black-and-white lines are arranged in a specific pattern that can be interpreted by a scanner. Barcodes offer two key advantages: first, they reduce input errors caused by human operators, and second, they accelerate the data entry process, thereby minimizing long queues (Jamaludin Malik, 2015: 2). At MA Assalafiyah, students are required to scan their student cards, which contain barcodes, before entering their classrooms. The data is then processed through a computerized system that allows both students and teachers to monitor punctuality or determine how many minutes late a student arrives. If a student is late, they receive negative points, which are automatically accumulated for

each violation. This system acts as a deterrent, encouraging students to avoid repeated infractions and fostering improved discipline related to attendance. According to Imam Musbikin (2021), discipline is defined as a mental attitude and behavior that reflects compliance with established rules and norms. It involves self-control, consistency, and commitment to adhering to prescribed guidelines. With discipline, individuals are expected to carry out their duties and responsibilities optimally and systematically to achieve specific goals. At MA Assalafiyah, discipline especially regarding student attendance is highly emphasized. Based on an initial study by the researcher, the barcode scanner-based attendance system has been in use at MA Assalafiyah Mlangi since 2020. The researcher is interested in investigating whether this system is effective in improving student discipline. Thus, the researcher intends to conduct a study titled *The Effectiveness of Barcode Scanner-Based Student Attendance in Improving Student Discipline at Madrasah Aliyah Assalafiyah Mlangi*.

Literature Study

There are several methods for recording student attendance, one of which is manual attendance, commonly used by many schools and madrasahs. According to Ali Akbar (2017), the use of manual attendance or attendance books presents challenges for schools in monitoring student discipline. Difficulties associated with manual attendance include maintaining all documents and marking attendance with a pen each day, which requires significant effort and time. Barcode scanners offer a promising alternative, as they can reduce the average time taken to record attendance from 25 seconds with a 20% error rate to just 10 seconds with zero errors. This improvement leads to a potential reduction in recording time of up to 60%, surpassing the target of a 50% time reduction while achieving the goal of zero errors (Brittany Briscoe et al., 2020: 41). A barcode, often referred to in Indonesian as "bar code," is defined by Teguh Wahyono (2010: 2) as a black-and-white line code composed of various sized combinations arranged according to specific rules, allowing it to be read by a scanner. The use of barcodes has two primary advantages: first, it reduces errors caused by operator mistakes; second, it accelerates the data entry process, minimizing long queues (Jamaludin Malik, 2015: 2). According to A. S. Moenir (2020: 96), indicators for measuring student discipline include compliance with time rules and behavioral discipline. One benefit of barcode-based attendance is its ability to simplify the process of recording, monitoring, and reporting student attendance by homeroom teachers or other staff. Additionally, this system enhances student discipline by efficiently recording and storing attendance and absence data, resulting in improved effectiveness, efficiency, and accuracy. In the era of Industry 4.0, the use of digital technology in education can have negative impacts if not implemented correctly. Therefore, it is crucial for educators to understand the principles and factors influencing its effectiveness (Putrawangsa & Hasanah, 2018). Furthermore, Harto (2018) emphasizes that educators must possess four competencies to utilize digital technology effectively. The Great Dictionary of the Indonesian Language states that "effectiveness" derives from the word "efektif," which means having a strong and successful impact (Hasan Alwi, 2015: 204). Effectiveness refers to the success in achieving desired results and encompasses a combination of human, material, and other factors (Afifatu, 2015: 18). Thus, effectiveness serves as a measure of the extent to which goals have been achieved and plays a role in positively changing individual behavior in accordance with their potential (Mansuri, 2014: 367).

Research Methods

The method used in this study is a quantitative approach. According to Sugiyono (2017:8), the quantitative research method is based on the philosophy of positivism, and is used to investigate specific populations or samples. Data is collected using research instruments, and analysis is conducted using quantitative or

statistical methods, with the aim of testing established hypotheses. In this study, the quantitative approach is employed by the researchers to measure the effectiveness of barcode scanner-based student attendance in improving student discipline. The sample used was 70 students from the entire population. The sampling technique uses simple random sampling. Data collection techniques use questionnaires interviews, and documentation. Validity testing was carried out using Pearson product moment with reliability testing values using Cronbach's Alpha (α). Data were analyzed using linear regression analysis using the SPSS 22.0 for Windows program.

Results

Based on the frequency distribution of respondents' answers, it was found that the barcode scanner-based attendance variable (X) had a value of 90% in the high category. This indicates that the barcode scanner is an effective tool for improving student attendance and discipline, as evidenced by the distribution of respondents' answers. The results of the study also show that the Asymp. Sig. (2-tailed) value is 0.932. Since the normality test considers data to be normally distributed if the significance value is greater than 0.05, this indicates that the data in this study are normally distributed. Furthermore, the homogeneity test reveals a significance value of 0.221, which is greater than 0.05, meaning the null hypothesis is accepted. Thus, it can be concluded that the initial score data for barcode scanner-based attendance and discipline from both population groups have homogeneous variances

Discussion

Based on the results of hypothesis testing, this study shows that barcode scanner-based attendance (X) has a positive and significant effect on student discipline (Y), as indicated by a t-value of 10.968 with a significance level of 0.000. The coefficient value of barcode scanner-based attendance is 0.923, which is close to one, demonstrating that this system has a substantial impact on student discipline at MA Assalafiyah Mlangi. The barcode scanner-based attendance system at Madrasah Aliyah Assalafiyah Mlangi involves recording student attendance by scanning a barcode that represents each student's data. The goal of this system is to improve student discipline by preventing data manipulation and fostering responsibility, as students must scan their student cards to mark their attendance. This process also allows the system to accurately track whether students arrive on time or are late.

Conclusion

After collecting, processing, and analyzing data from the research on the implementation of barcode-based attendance in improving student discipline at Madrasah Aliyah Assalafiyah Mlangi, the following conclusions can be drawn: (1) Barcode scanner-based attendance is effective in enhancing student discipline, achieving a high discipline percentage of 90%. (2) The use of barcode scanners significantly facilitates the attendance process for students, teachers, and staff at MA Assalafiyah

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