SKIBIDI TOILET: SMART KEYED INTERACTIVE BATHROOM IDENTIFICATION AND DIGITAL INTEGRATION

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Chapter 1

INTRODUCTION

Background of the Study

Monitoring student behavior during restroom use is a significant challenge in schools. Traditional lavatory pass systems often fail to confirm whether students are actually in the restroom or are misusing the pass to roam the hallways or visit the canteen. The Smart Lavatory Pass System addresses this issue by integrating technology to improve student monitoring and accountability. The system provides students with a pass to carry when they need to use the restroom, allowing teachers to more effectively track their movements.

Globally, many educational systems have adopted advanced technologies, such as biometric data collection and Radio Frequency Identification (RFID) tracking, to manage student movements and improve efficiency in activities like lunch lines and campus navigation. Over 1,000 school districts in the U.S. and schools in various countries have integrated these systems to enhance student safety and accountability. However, the adoption of these technologies has raised concerns about privacy and data security. Critics argue that biometric data and RFID tracking could lead to potential misuse, posing risks to student privacy (Schropp, 2015).

In the Philippines, Radio Frequency Identification (RFID) technology is already widely adopted in industries such as toll collection on expressways, reducing congestion and improving efficiency (Satyasrikanth et al., 2016). In

educational settings, RFID has been integrated into school operations such as libraries and canteens, enhancing services for both students and staff. As RFID is linked to a unique ID, it also strengthens student security by ensuring accurate tracking and identification (Nsengumuremyu et al., 2018).

Restrooms in schools are essential but also points of contention, often becoming sites of misbehavior, threats, and even violence. These complex issues converge in the public-school restroom, creating significant challenges for student safety and accountability. Bathroom breaks in secondary schools are tightly controlled, with teachers remaining in their classrooms while students transition between classes. With passing periods as short as four minutes, students struggle to find enough time to use the restroom, while teachers face difficulty ensuring that students are actually using the restroom and not misusing their passes to roam the hallways or skip class (McGregor, 2021). Traditional bathroom pass systems fail to address these issues effectively, as they cannot track students' whereabouts with the necessary accuracy. Hence, there is a clear need for a more effective system that not only improves student accountability but also enhances safety and monitoring during bathroom breaks.

Objectives of the Study

This study aimed to develop a Smart Lavatory Pass System specifically designed to improve student accountability, enhance safety, and support teacher oversight in the classroom setting. The system used an RFID card to track when students left the classroom for the restroom, allowing teachers to be aware of their movements and ensuring that they were held accountable for their whereabouts. The study also assessed users' perceptions and experiences with the system, including those of students, teachers, and staff. Through this system, the research sought to explore how it could contribute to a safer, more organized, and efficient school environment.

Scope and Limitations of the Study

This study focused on the implementation of the Smart Lavatory Pass System at Notre Dame of Kidapawan College-IBED. It aimed to improve how the school tracked and managed students' restroom use by employing technologies such as RFID, barcodes, and wireless sensors. The system's primary objective was to address the limitations of traditional restroom passes by enabling staff to monitor restroom visits accurately. The data gathering was conducted once the study was developed, and the participants included teachers and students studying at Notre Dame of Kidapawan-IBED.

The study was limited to restroom monitoring within one section of grade 12 students at Notre Dame of Kidapawan College—IBED—and did not extend to other areas of student behavior or supervision. Its findings might not have been

applicable to other educational institutions, workplaces, or universities. Challenges included the potential for technological malfunctions, such as RFID interference or sensor failures, and the reliance on participants. Privacy concerns and the availability of reliable technology in other schools also posed limitations to the system's broader applicability and effectiveness.

Research Problem

This study aimed to develop a smart lavatory pass system designed to enhance accountability and safety in educational settings. It sought to address the following questions:

1. How can a smart lavatory pass system be developed?
2. How do users perceive the system in terms of:

    2.1. Usefulness;

    2.2. Ease of Use;

    2.3. Attitude; and

    2.4. Behavioral Intention?

Chapter 2

REVIEW OF RELATED LITERATURE

Safety Concerns in School Bathrooms

It has been demonstrated that retaining pee increases the chance of urinary incontinence, which affects one in three women throughout their lives. Teenagers are particularly vulnerable to withholding behaviors because of their psychological maturation stage and fear of unfavorable peer interactions. Adolescent women's perceptions and experiences with high school restrooms, including their fear of bullying, environmental factors, and school regulations, are poorly understood. In order to better understand early lifetime behaviors that may contribute to the development of urine incontinence in the future, this dissertation research aims to investigate teenage women's experiences using the restroom in high school (Low, 2018).

Despite the fact that all public schools in the US are required to provide for the restroom requirements of their employees and students, little research has been done on the actual restrooms. At the same time, school restrooms hold a unique position in society. According to news accounts, schools are debating policies over who should use which restroom space, and children in underfunded schools must contend with facilities that are broken and locked. While administrations remove bathroom stall doors and debate the benefits of adding surveillance cameras in the most private of places, schools are closed and students are suspended for writing violent threats on lavatory walls. More

research is required on the historical purposes of schools as well as the evidence that implies school restrooms are disciplinary locations that enforce the normalization of specific cultural norms restrooms as well as their function in modern classrooms. (McGregor, 2021)

Smart Lavatory Pass System

According to AHS Newspaper (2023), the implementation of SmartPass, tracks how long students are out of class for, essentially functioning as a digital hall pass. SmartPass reduces classroom disruptions by allowing students to leave without interrupting lessons, enhances safety by preventing certain students from being in the halls simultaneously, and offers anonymity for reporting issues such as vaping. It also promotes environmental sustainability by eliminating paper-based hall passes. However, concerns include potential privacy issues, as some students feel monitored, and the system's inflexibility, which may not accommodate students with unique health or mental health needs. Additionally, skepticism remains about its effectiveness in addressing underlying issues like vaping. This analysis highlights the mixed reception of SmartPass, emphasizing both its innovative features and areas for improvement in fostering a supportive school environment.

In the educational setting, the integration of information and communication technologies (ICT) significantly enhances the monitoring of classroom activities and resource allocation. ICT facilitates systematic tracking and phased assessment, enabling real-time adjustments to support efficiency. A

study by Admin (2019) explored an innovative high school bathroom pass policy aimed at improving classroom management and reducing disruptions. The system emphasizes student accountability through structured procedures, such as requiring students to take a designated bathroom pass, adhering to a six-minute time limit, signing out and back in with timestamps, and avoiding breaks during critical instructional periods like lectures or the beginning and end of class. Additionally, students are prohibited from making unnecessary stops during their break. The implementation of this policy has resulted in fewer interruptions and a more efficient learning environment while fostering student responsibility and autonomy. The policy also provides teachers with a clear record of student behavior, supporting effective monitoring and classroom management. This approach highlights the potential for structured policies to enhance both student accountability and overall classroom dynamics.classroom management. This approach ensures that educational institutions can maintain structured and organized environments, optimizing the use of time, space, and materials within the classroom. Through these innovations, ICT provides a foundation for modernized education systems that align with contemporary institutional demands (Barinova et al., 2018).

Accountability in Educational Settings

Accountability in educational settings has transitioned from traditional bureaucratic models to performance-based approaches, emphasizing standardized assessments and measurable outcomes (Lingard et al., 2017). While these mechanisms aim to improve transparency and educational quality,

research highlights potential downsides, such as elevated stress among educators and a narrowed curriculum focus, prioritizing test scores over holistic learning (Skedsmo & Huber, 2019). Scholars suggest integrating accountability with teacher empowerment to ensure both responsibility for outcomes and professional growth support (Lingard et al., 2017).

Moreover, structured democratic participation and trust are integral to effective accountability systems (Springer & Gardner, 2019). Collaborative efforts between educators, administrators, and policymakers foster a sense of legitimacy and fairness in accountability practices, enhancing motivation and commitment to shared educational objectives (Springer & Gardner, 2019). Such participatory approaches ensure a balanced and supportive environment conducive to achieving broader educational goals.

Technological Solutions for Accountability

Smart technologies highlight the necessity of a thorough strategy to successfully deploy these technologies, taking into account the interrelated elements, especially those that affect schools' digital transformation. In order to improve teaching, learning, and administrative procedures, smart technologies are being incorporated into educational settings more and more. These technologies include a variety of tools such as virtual reality (VR), augmented reality (AR), the Internet of Things (IoT), and artificial intelligence (AI). It has been demonstrated that integrating digital technology into the classroom affects more than just student achievement. This kind of integration impacts teaching

and professional practices, social integration and equality, and the school ecosystem's many stakeholders. (Timotheous et al., 2022).

Due to their ability to increase accountability and streamline procedures, smart technologies are becoming more and more significant in schools. Digital tools, such as biometric systems, can precisely track student attendance, for instance, minimizing errors or abuse. Schedules, grades, and other information are centralized with the aid of school administration software, which facilitates management and evaluation (Osazevbaru, 2023).

The successful application of smart technologies and technological solutions for accountability have been thoroughly investigated. The suggested solution makes sure that any log manipulation is immediately identifiable by using a binary hash tree construction based on timestamps. This approach is scalable for large-scale applications since it allows for efficient proof creation and maintains a consistent storage overhead. By ensuring the accuracy of device interaction logs while preserving dependability and efficiency, the method increases responsibility (Koisser and Sadeghi, 2023).

Enhanced Safety Measures

Security is a prime concern in our daily lives, influencing how we engage in activities and interact with our surroundings. Enhanced safety measures, such as those proposed by Kavitha (2022) in the development of technology for safety, effectively improve accountability and safety in various settings.

Schools serve as a crucial second home for students when their parents are not present, and they are expected to provide a secure environment (Delos Reyes, 2019). They are intended to be sanctuaries of peace, where the safety and welfare of students, teachers, and staff take precedence (DepEd, 2014). To uphold this ideal, it is essential to establish safe school environments that incorporate effective safety measures (Glariana et al., 2015).

Advancements in technology, such as the Industrial Internet of Things (IIoT), artificial intelligence (AI), and automation, are fundamentally transforming industrial processes. As per a study by Srinivasan et al. (2019) and Ojha et al. (2015), it is essential to evaluate the impact of these technologies on process safety to ensure that safety protocols evolve accordingly. Digitalization has emerged as a significant transformative force across various industries, and, according to Lee et al. (2019) and Khan et al. (2021), integrating it into process safety practices can greatly enhance safety performance.

The IoT facilitates the connectivity of devices, sensors, and systems, allowing for real-time data collection and analysis. As noted by Madakam and Uchiya (2019) and Javaid et al. (2021), this connectivity enables efficient communication among different components of industrial processes, leading to improved monitoring, control, and safety measures. By leveraging these technologies, industries can proactively identify potential hazards, streamline their operations, and create a safer working environment.

Schools are enhancing their technology security by implementing IoT-based systems that offer real-time monitoring and alerts. Badshah et al. (2019) propose a Smart Security Framework specifically designed for educational institutions, utilizing sensors to monitor various safety factors and enabling quick responses to emergencies. By integrating IoT, schools can effectively address safety concerns, creating a smarter and safer environment for students and staff, as Badshah emphasizes, ultimately transforming the overall educational experience.

Chapter 3

METHODOLOGY

Methods Used

The research will employ an experimental approach to evaluate the effectiveness of the SKIBIDI Toilet in improving student accountability, enhancing safety, and supporting teacher oversight. Experimental study is to comprehend human behavior and learning processes. (Ross & Morrison, 2013). To gather data, the research implemented a descriptive and research survey approach.

The system will be implemented in classrooms, collecting real-time data on student restroom usage and movements, with teachers monitoring its impact on behavior and providing feedback to assess its influence on accountability and safety. The collected data were tabulated, and the statistical treatment used was the weighted mean. Weighted mean is an average where each data point is assigned a specific weight based on its significance; this method ensures that more relevant or influential data points contribute proportionally to the final average (Ahmadianfar et a.,2022).

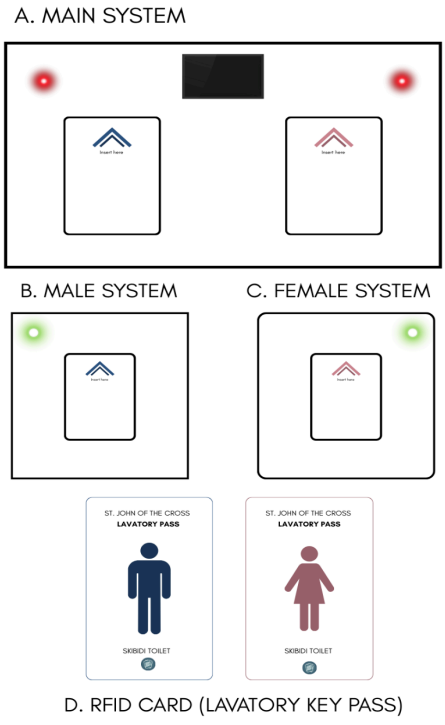
Project Design

Data analysis will determine whether the system meets its intended objectives. The project requires various supplies and equipment, with the Arduino Type C serving as the primary microcontroller. A 13.56 MHz RFID reader will scan RFID cards for user authentication, while an expansion board

will connect all components.

An alarm buzzer will provide audio alerts for unauthorized access or notifications, an LCD I2C display will present messages and system information, and an RGB module will indicate the system's state through color signals. The system will be developed and tested in the school lab, requiring internet access for research and testing. Computers will be used for programming the Arduino and touchscreen, while school-provided tools such as soldering equipment and multimeters will assist with component testing and assembly. If any necessary tools or components are unavailable at the school, they may need to be sourced externally.

Figure 1: SKIBIDI Toilet System Design



Research Hypothesis

The hypothesis of this study is that the smart lavatory pass system will enhance accountability, improve oversight, and increase safety for users in educational settings. However, its effectiveness may be limited by privacy concerns and technological challenges, such as RFID interference.

Resources

The sources required to complete this project were needed for the study. In this project, we used an Arduino Type C as the main microcontroller to manage system operations. Secondly, we utilized an expansion board that connected all the components efficiently. The RFID reader served as the primary tool for scanning RFID cards, which operated at 13.56 MHz, for user authentication. An alarm buzzer provided audio alerts for unauthorized access or system notifications. An RGB module was included to indicate system statuses using different colors. An LCD I2C display was used to show relevant messages and system information. Additionally, an HMI DWIN acted as a touchscreen interface for easier interaction with the system.

In this project, we needed access to the school laboratory to build and test the system. We also required access to data or the internet for research and testing. Computers were necessary to program the Arduino and touchscreen. Tools like soldering equipment and multimeters from the school helped us connect and test the parts. If some tools or parts were not available at school, we needed to obtain them from outside sources.

Description of the Final Product

The Smart Lavatory Pass System is a technology-driven solution designed to enhance accountability and safety in educational settings by addressing the limitations of traditional restroom pass systems. Using RFID-based authentication, classroom sections are provided with unique cards to ensure authorized restroom access, while real-time monitoring enables teachers to track movements and receive instant notifications. The system features a user-friendly HMI interface, visual and audio alerts, and data logging for comprehensive reporting. By ensuring organized restroom management, the Smart Lavatory Pass System contributes to a safer and more efficient school environment.

General Features:

1. **Card Usage Detection**: Utilizes a sensor to detect when a card is removed from the card slot, confirming its use.
2. **Gender-Specific Cards**: Implements distinct cards for male and female students to enhance organization and tracking.
3. **Time Monitoring**: Tracks the time of card removal and return, allowing for accurate monitoring of restroom duration.
4. **Alert System**: Features an alarm that notifies teachers if a student has not returned within 8 minutes, improving classroom management and safety.
5. **Unique Codes for Each Section**: Assigns specific codes to different restroom sections to facilitate accurate tracking and data collection.

6. **Check-In System at Restroom**: Installs a system at the restroom entrance/exit to ensure that the lavatory pass is actively used within the restroom, preventing misuse.

Expected Budget

The budget has been designed to cover all critical components for the system's implementation, ensuring feasibility and efficiency. Adjustments may be made based on supplier availability and unforeseen requirements during the development phase.

MATERIALS:	**PRICE:**
Arduino Type C Microcontroller	₱150.00
Expansion Board	₱100.00
RFID Reader Operating	₱150.00
RFID Cards	₱135.00
Alarm buzzer	₱100.00
RGB Led	₱200.00
LCD I2C Display	₱230.00
Construction supplies for the base	₱1,000.00
Additional costs for miscellaneous items	₱1,000.00
TOTAL	**₱3,065.00**

Timeline

For the timeline of the project, the researchers held regular meetings with their research adviser to ensure effective communication and guidance throughout the study. The first task involved consultations to define project requirements, followed by discussions to refine the proposal based on the adviser's feedback. As the project progressed, the team focused on finalizing the design of the materials needed for the Smart Lavatory Pass System. Some materials were ordered online to ensure timely delivery, which was crucial for maintaining the project schedule.

The next phase involved the implementation and programming of the system, followed by a testing phase to assess its functionality and effectiveness. Finally, the researchers compiled their results and prepared the final deliverables for presentation.

Tasks	Jan 5-11	Jan 12-31	Feb 2-8	Feb 9-15	Feb 16-21	Feb 24-28	Mar 1-7	Venue
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	
Consultation of project requirements								NKDC College Faculty
Writing of chapters 1-3								Respective Houses
Final Consultation for Proposal								NKDC College Faculty
Proposal Defense								NKDC SHS Building
Procurement Of materials								Kidapawan City
Final Design Discussion and								NKDC SHS Building

Layout Planning								& School Laboratory
Fabrication and Programming								School Laboratory
Final Testing Phase								School Laboratory
Survey								Classroom
Completion of final papers								NKDC SHS Building
Final consultation for the project defense.								NKDC College Faculty

To facilitate these tasks, the researchers had weekly meetings scheduled as follows: every Tuesday and Thursday at 10:30 AM, and every Friday at 2:30 PM, all held in the NKDC College Faculty. These regular meetings allowed the team to monitor progress on each task and ensured the project stayed on track.

Weekly Meetings	**Time**	**Venue**
Tuesday and Thursday	10:30AM	NKDC College Faculty
Friday	2:30PM	NKDC College Faculty

Chapter 4

RESULTS AND DISCUSSIONS

Development of Smart Lavatory Pass

The Smart Lavatory Pass System is an advanced technology solution used for exit passes and restroom passes aimed at improving advanced technological systems for fast accountability for students and teachers. Traditional exits and restroom pass systems often lack efficiency and accountability, leading to misuse and difficulty in tracking students' whereabouts. This system integrates RFID authentication, real-time monitoring, and data logging to enhance security and organization for access for school institutions.

System Development and Functionality

The system uses a variety of software as well as hardware components to accomplish its goals. The Arduino Type C is the main microcontroller used in this project; it controls all system functions and makes sure that all components communicate with one another. A 13.56 MHz RFID reader scans each student's unique RFID card to facilitate user authentication. It used a unique card; traceability is guaranteed, approved exits, and restroom use is permitted.

In order to connect all the parts and enable effective data transfer, the expansion board is the main body. An alarm buzzer that sounds when someone enters without permission or uses the exits and restroom pass for an extended period of time is part of the audio notifications. An LCD I2C display gives users a

visual connection by displaying pertinent data and system messages, and a pixel display OLED streamlines user contact, enabling seamless restroom usage confirmation and check-in for students.

Testing and Implementation of SKIBIDI

The system is assembled and tested in our restroom and classroom, providing a controlled environment for evaluation and improvement. We utilize school-provided tools such as multimeters and soldering equipment to build and test the system. Firmware updates, troubleshooting, and microcontroller programming (Arduino) require internet access. When essential components or equipment are unavailable, they are sourced externally to ensure continuous development.

Data Analysis and Effectiveness

The effectiveness of the Smart Lavatory Pass System is evaluated through data analysis. By collecting and testing information of students and teachers such as restroom usage times, frequency, and duration, the system helps identify patterns and potential misuse. Real-time data tracking ensures teachers can monitor restrooms and exits, enhancing student accountability and safety of students. Furthermore, analyzing alert logs helps determine whether the 8-minute time limit effectively minimizes restroom misuse without causing unnecessary restrictions.

Users Perception of the System

The questionnaire assessed the "SKIBIDI Toilet" system's effectiveness and acceptance across four key areas—Perceived Usefulness, Perceived Ease of Use, Attitude, and Behavioral Intention—revealing a highly positive reception.

Table 1. Perception of Users

Component	Mean	Interpretation
Perceived Usefulness (PU)	4.55	Very High
Perceived Ease of Use (PEU)	4.66	Very High
Attitude (AT)	4.64	Very High
Behavioral Intention (BI)	4.54	Very High

Legend:

Scale Range	Interpretation
4.21-5.00	Very High
3.41-4.20	High
2.61-3.40	Moderate
1.81-2.60	Low
1.00-1.80	Very Low

Perceived Usefulness

With an average rating of 4.55, the "SKIBIDI Toilet" system is perceived as highly useful by respondents, indicating that they find it effective in enhancing student accountability, safety, and teacher oversight. This positive assessment suggests that the system successfully fulfills its intended purpose, reinforcing the idea that a structured lavatory pass system can improve school restroom management.

According to a study by Admin (2019) explored an innovative high school bathroom pass policy aimed at improving classroom management and reducing disruptions. The system emphasizes student accountability through structured procedures, such as requiring students to take a designated bathroom pass, signing out and back in with timestamps, and avoiding breaks during critical instructional periods like lectures or the beginning and end of class.

Additionally, according to AHS Newspaper (2023), SmartPass reduces classroom disruptions by allowing students to leave without interrupting lessons, enhances safety by preventing certain students from being in the halls simultaneously, and offers anonymity for reporting issues such as vaping. It also promotes environmental sustainability by eliminating paper-based hall passes.

Perceived Ease of Use

Component	Mean	Interpretation
Perceived Usefulness (PU)	4.55	Very High
Perceived Ease of Use (PEU)	4.66	Very High
Attitude (AT)	4.64	Very High
Behavioral Intention (BI)	4.54	Very High

The highest rating of 4.66 in Perceived Ease of Use suggests that users find the system intuitive and simple to operate. A high PEU score indicates that minimal effort is required to understand and use the system, which is crucial for

ensuring widespread adoption and consistent implementation among students and teachers. This ease of use likely contributes to its overall acceptance and effectiveness.

In the educational setting, the integration of ICT significantly enhances the monitoring of classroom activities and resource allocation by providing systematic tracking, phased assessment, and real-time adjustments, ensuring efficient classroom management (Barinova et al., 2018). The ease of use of ICT in this context depends on its accessibility, automation, and user-friendliness. When ICT tools feature intuitive interfaces and automated reporting, educators can efficiently track student progress and resource utilization without extensive technical expertise. Real-time feedback mechanisms allow immediate modifications, optimizing time, space, and materials within the classroom. Furthermore, well-integrated ICT systems minimize administrative workload, enabling teachers to focus on instructional delivery. The modernization of education through ICT relies on institutional support and training, ensuring that users can effectively operate these systems with minimal effort, thereby fostering structured and organized learning environments.

Attitude

A rating of 4.64 in Attitude reflects a strong positive perception of the system, with users expressing a favorable opinion toward its implementation. This suggests that the majority of respondents are open to using the system

regularly and view it as a beneficial addition to their school environment. A positive attitude is essential for long-term success, as it influences continued engagement and compliance.

Admin (2019) explored an innovative high school bathroom pass policy aimed at improving classroom management and reducing disruptions, highlighting its positive impact on student accountability and learning efficiency. The structured system requires students to use a designated bathroom pass, adhere to a six-minute time limit, sign in and out with timestamps, and avoid unnecessary breaks during critical instructional periods. The study found that implementing these procedures resulted in fewer classroom interruptions, fostering a more efficient learning environment while promoting student responsibility and autonomy. Additionally, the policy provided teachers with a clear record of student behavior, aiding in effective monitoring and classroom management. These findings suggest that structured policies can enhance both student accountability and overall classroom dynamics, supporting their implementation as a means of improving school discipline and educational outcomes.

Behavioral

With a rating of 4.54, Behavioral Intention to Use indicates that respondents are highly willing to adopt and continue using the "SKIBIDI Toilet" system. This score suggests that users not only recognize its usefulness and

ease of use but are also inclined to integrate it into their daily routines. A strong BI score reinforces the system's potential for sustained effectiveness in improving restroom management.

According to Admin (2019), a high school bathroom pass policy was introduced to improve classroom management and minimize disruptions, emphasizing a structured approach to student accountability. The study found that the use of designated passes, time limits, and sign-in procedures not only reduced interruptions but also fostered student responsibility and independence. More importantly, the findings highlight that both students and teachers have successfully adapted to the policy, demonstrating a clear willingness to comply with its procedures. Additionally, the system provided teachers with an effective way to monitor student behavior, further supporting classroom oversight. The study also emphasizes that structured policies enhance student accountability and classroom interactions, contributing to a more organized and productive learning environment. This suggests that respondents acknowledge the system's advantages and are open to its continued implementation in daily school routines.

Chapter 5

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

This study explored the integration of technology into traditional lavatory passes to enhance safety and accountability among students. Its primary objective was to develop a Smart Lavatory Pass System called “SKIBIDI Toilet” aimed at improving student responsibility, enhancing safety, and supporting teacher oversight in the classroom. Additionally, the study assessed users' perceptions and experiences with the system.

To gather data on user perceptions, a descriptive and survey research approach was employed. A selected group of Grade 12 students from Notre Dame of Kidapawan College-IBED served as the respondents. The collected data were tabulated according to the statements of the problem, and the statistical treatment used was the weighted mean.

The findings indicate that users perceive the system as both highly useful and easy to use. The perceived ease of use suggests that the system requires minimal effort to operate, with its intuitive design allowing for smooth navigation and efficient task completion. In terms of perceived usefulness, users find the system significantly enhances their productivity, with its features being highly relevant and beneficial to their needs. This positive experience contributes to a favorable attitude toward the system, as users express satisfaction and

confidence in its performance. Furthermore, the results show a strong behavioral intention to use, with users indicating a high likelihood of continuing to use the system both now and in the future, as well as a willingness to explore its additional features.

Conclusion

After much exploration, the Smart Lavatory Pass System, called "SKIBIDI Toilet," shows great promise in improving student accountability and safety in schools. By using RFID technology for real-time tracking, this system helps prevent misuse of restroom passes and ensures that students are properly monitored.

Users have provided positive feedback, highlighting that the system is easy to use and understand, with many appreciating its effectiveness in keeping track of restroom visits. Specifically, students and teachers noted that the system reduces the chances of students wandering the halls and helps maintain classroom order. The high ratings in perceived usefulness and ease of use suggest that it can fit well into everyday school routines.

In conclusion, the SKIBIDI Toilet system offers a modern solution to common problems in schools. It not only helps manage restroom visits better but also creates a safer and more organized environment for students and teachers. This project opens the door for more technological improvements in education, encouraging further innovation in student safety and monitoring.

Recommendations

To enhance the system and provide benefits for future researchers, several key recommendations are proposed. First, the design should incorporate an increased number of card slots, particularly in schools with high restroom usage. This enhancement would better accommodate the needs of students and staff, leading to a more efficient and user-friendly experience. Additionally, implementing a larger display would significantly improve visibility for teachers, ensuring that information is clearer and more accessible.

To further assess the system's effectiveness, conducting a month-long testing period across various classrooms and restrooms is essential. This survey would yield valuable insights, helping to identify any additional issues that may need to be addressed. By prioritizing these technical improvements and thorough evaluation, the system can be optimized for better functionality and user satisfaction.

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