

Enhancing Attendance Tracking Efficiency and Effectiveness through the Implementation of a QR Code-Based System

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ABSTRACT

This action research aims to strike a balance between technological efficiency and traditional rapport-building between instructors and students by examining the advantages and difficulties of utilizing QR code technology for attendance tracking at Abas National High School. A survey was completed by 124 people, including Faculty and staff, and students. The sample included 48 male pupils from various grade levels, spanning from 7th to 12th grade. There were thirteen teachers, five of whom were men. Furthermore, there are 55 female students representing a range of grade levels ensure a balanced representation of female students in all grades.

There are eight female faculty members who offer a varied viewpoint within the teaching group. This distribution guarantees that the study's findings are reflective of the total population by enabling a thorough knowledge of the viewpoints and experiences of the ANHS community.

According to the results, participants perceptions of the efficiency (mean rating of 3.19) and satisfaction (mean rating of 3.11) of the existing attendance tracking system are indifferent. Though its influence on minimizing errors is considered more neutrally (mean rating of 3.53), the introduction of QR code technology is generally recognized as a benefit, particularly in speeding up the process (mean rating of 3.66).

The improved accuracy (mean rating of 3.75) and convenience (mean rating of 3.77) of the QR code system are recognized as positive effects. Notwithstanding, obstacles like technological problems (mean rating of 3.35) and adaption problems (mean rating of 3.40), while acknowledged, are not thought to be very harmful. Participants expressed cautious optimism about the possibility of combining traditional and modern approaches, stating that a hybrid strategy would be advantageous (mean rating of 3.56) and practicable (mean rating of 3.66).

Overall, the research shows that QR code technology for tracking attendance is well received, with people acknowledging its accuracy and efficiency while also highlighting areas for development and the necessity of a well-balanced integration with conventional methods.

CONTEXT AND RATIONALE

Abas National High School (ANHS) is an educational institution with a long-standing commitment to providing quality education to its students. Like many schools, ANHS has relied on traditional manual methods to track student attendance for many years. This involves teachers practicing calling names or using paper registration forms when taking daily attendance. This approach has a number of limitations that are becoming increasingly apparent in the modern educational and technological landscape. Challenges to traditional attendance tracking methods includes; waste of time, error prone, missing real-time data, and administrative burden. First and common limitation of manually taking attendance can be time-consuming, especially in large classes or schools with a large number of students. Human errors, such as mispronouncing names or recording attendance incorrectly, can result in inaccurate attendance records. Traditional methods do not provide real-time data on student attendance, making it difficult to quickly identify and resolve attendance problems. Teachers and administrative staff must spend valuable time manually recording and managing attendance data. Because of such limitations the researcher aims to explore the benefits of QR code technology into the ANHS attendance

tracking system. This is motivated by a number of compelling reasons including: Effectiveness, Accuracy, Real time data, and reducing administrative burden. QR code technology is known for its efficiency. It allows students to register by simply scanning a personalized QR code upon arrival on campus. This process significantly reduces the time needed for acquisition, leaving more time for educational activities. This technology also virtually eliminates the possibility of human error in tracking attendance. Each student's QR code is unique, ensuring that attendance records are very accurate. The new system will allow real-time attendance monitoring. School administrators and teachers will have immediate access to attendance data, allowing them to quickly identify absentees and take necessary action. Implementing QR code technology will streamline administrative tasks related to attendance tracking. Teachers can focus more on teaching and administrative staff can redirect their efforts to other important tasks. Finally, tracking attendance with QR codes promotes student accountability. They are responsible for ensuring that they are checked every day, encouraging punctuality and regular attendance. However, it is important to recognize that some aspects of the traditional ANHS attendance tracking method have value beyond simple record keeping. The personal interaction between teachers and students during sessions fosters a sense of belonging and community. This action research then does not only explore the benefits of QR technology in attendance tracking but also aims to find a balance by integrating QR code technology while preserving the positive aspects of these interactions. Therefore, the application of QR code technology to track attendance at ANHS is a progressive step in line with the school's commitment to providing quality education. This action research aims to validate the benefits of QR code technology in attendance tracking and find a balance of coping up with technology and maintaining a positive relation with students of Abas National High School.

Research Questions

This research aims to explore the benefits of QR code technology in attendance tracking. It also tries to preserve the values of traditional attendance tracking specifically the building of rapport among teachers and students. By doing so, the researchers try to strike a balance between traditional and contemporary way of attendance tracking. With this in mind, the researchers then ask the following questions.

1. What is the current attendance tracking practice of Abas National High School?
2. How does the introduction of QR code technology improve efficiency in attendance tracking system?
3. What are the positive impacts of QR code technology after the introduction of the said project/innovation?
4. What are the challenges encountered after the implementation of the said program?
5. How to integrate traditional and contemporary attendance tracking?

Innovation, Intervention, and Strategy

Improving Abas National High School (ANHS) attendance tracking accuracy and efficiency is the initiative's main objective. This is accomplished via a number of targeted goals meant to enhance different facets of attendance control. First off, the goal of implementing a QR code attendance monitoring system is to achieve a 95% accuracy rate in attendance recording, which will eliminate errors associated with manual techniques, and cut down on the amount of time spent taking attendance in classes by at least 50% during the first semester.

Prioritization is also given to real-time monitoring and reporting, which makes it possible to quickly identify and address attendance problems by providing administrators and teachers with easily available attendance data as well as thorough attendance analytics. Additionally, the program seeks to encourage students to be responsible and punctual by lowering tardiness by 20% in the first year and promoting regular check-ins. Furthermore, administrative procedures are automated in an effort to minimize the administrative load and raise data accuracy to less than 2% in the first year.

The program is significant because it aims to keep the beneficial qualities of ancient customs while advancing technology. This means that community and interpersonal relationships are preserved. Periodic feedback sessions help maintain this balance by evaluating the impact on school culture and making the required

modifications. Adopting technology promotes a contemporary learning environment and strengthens ANHS's standing as a school that welcomes innovation to improve student learning.

The program also places a strong emphasis on school reporting and accountability, guaranteeing adherence to regulations pertaining to attendance reporting and enhancing the timeliness and accuracy of data pertaining to attendance. Last but not least, a feedback system and continuing assessment are used to prioritize continuous improvement and adaptation in order to improve the QR code attendance monitoring system in light of user feedback and technical advancements.

In order to meet the stated goals of increasing the effectiveness and precision of the attendance tracking system at Abas National High School (ANHS), a thorough intervention and strategy are suggested. First, a mechanism for recording attendance using QR codes will be put into place. Each student will receive a unique QR code as part of this system, which they will scan to gain access to classes. Teachers will scan these codes with mobile devices or specialized apps to automate the process of tracking attendance. Teachers and students will participate in training sessions to familiarize themselves with the benefits and usage of the QR code system in order to ensure the successful implementation of this technology.

A staged strategy will be used to accomplish the goal of cutting the amount of time spent taking attendance by at least 50% during the first semester. The system will first be piloted in a small number of classrooms or grade levels in order to detect and resolve any implementation issues. Before expanding to include the full school, iterative improvements based on feedback from these pilots will be implemented. To support the smooth operation of the QR code system, additional technological infrastructure improvements, such as dependable internet access and sufficient hardware resources, will be given priority.

Accompanying the deployment of the QR code system, steps will be taken to guarantee a 95% accuracy rate in the recording of attendance. The integrity of attendance data collected via the QR code system will be confirmed by routine audits and quality checks. In addition, automated notifications will be set up to indicate any anomalies or differences in attendance records, allowing for prompt adjustments.

There will be an introduction of a rewards-based system to encourage student accountability and timeliness. Pupils who regularly use their QR codes to check in and show up on time may be able to get rewards like praise, recognition certificates, or special treatment inside the school. Additionally, through a variety of media, including assemblies, posters, and social media platforms, awareness campaigns highlighting the value of consistent attendance as well as the advantages of the QR code system will be carried out.

Ongoing monitoring and evaluation will be carried out to assist the intervention's successful adoption and sustainability. To evaluate the efficacy of the QR code system, key performance metrics including accuracy levels, time savings, and attendance rates will be monitored on a regular basis. Surveys and focus groups will be used as feedback tools to get input from stakeholders and pinpoint areas that need work. The ANHS will continuously improve its attendance tracking procedures by iteratively improving the intervention plan in light of these findings.

ACTION RESEARCH METHODS

Research Design

The study will employ a descriptive research design using a survey questionnaire to gather data on student attendance using QR code Technology. The researchers will be using descriptive method as an appropriate tool to describe the existing distribution of variables in the study. This aims to collect detailed information about the attendance patterns of students on attendance tracking. By doing so, the researchers may be able generate a general picture of the attendance patterns and attitudes of students at Abas National High School (ANHS).

Participants/or other Sources of Data and Information

The Abas National High School (ANHS) instructors, staff, and students are involved in this project. Every kid

will have a QR code embedded into their school ID. Their counselors will monitor their attendance through the SAMS application. At the conclusion of the academic year, this system will be assessed to track student accountability and timeliness. To differentiate the concepts clearly, faculty refers to the members of the teaching staff, such as academic instructors and teachers, who are in charge of imparting knowledge to students and directing their learning. Staff refers to all non-teaching staff members, including administrative, support, and other staff members who help the school run smoothly but do not have direct teaching responsibilities.

The faculty, staff and students of Abas National High School will be provided with survey questionnaires on the benefit of the said innovation. This will provide the necessary data if teachers indeed benefited from the said program especially in the reduction of their administrative burdens associated with manual attendance tracking including access to real-time attendance data, allowing them to address attendance issues promptly and focus more on instructional activities.

Among the 180 pupils and teachers in the population, or around 68.9% of the total, 124 respondents were chosen at random to form a simple random sample. In order to ensure that the study contains a varied variety of participants from various positions, the sample size was determined based on practicality, cost-effectiveness, and representativeness. Among the 180 pupils and teachers in the population, a simple random sample of 124 respondents was chosen, accounting for roughly 68.9% of the total. In order to ensure that the study contains a varied variety of participants from various positions, the sample size was determined based on practicality, cost-effectiveness, and representativeness. In the sample technique, participants were chosen at random from the sampling frame, which consists of the student body, professors, staff, administrative personnel, head of school, and parents/guardians of ANHS.

A survey questionnaire will be used to gather data for this investigation and will be given to the participants in the chosen sample.

The sample included the following:

48 male pupils from various grade levels, spanning from 7th to 12th grade.

Faculty: There were thirteen teachers, five of whom were men.

More information about the contestants is as follows:

55 female students representing a range of grade levels ensure a balanced representation of female students in all grades.

There are eight female faculty members who offer a varied viewpoint within the teaching group. This distribution guarantees that the study's findings are reflective of the total population by enabling a thorough knowledge of the viewpoints and experiences of the ANHS community.

Data Gathering Method

Survey questionnaires was the main data gathering tool for this study. Focus group discussion will also be conducted among teachers and staff of Abas National High school to further validate the result of the survey questionnaires given to them. The survey gathering tool is composed of two parts. The first part of the data is on improve efficiency of attendance tracking system using QR codes. The second part of the survey questionnaire is on the positive impact of QR code Technology. Survey questionnaires and interview questions will be validated by a group of experts on the given field.

Data Analysis

The statistical tools in the treatment of data which is used in the study are frequency counts, ranking and weighted mean. Frequency count was used in determining the number of responses/perceptions in each indicator. The weighted mean will be used to determine the numerical equivalence of the responses of the respondents along with the indicators in the problem raised in the study.

The following are the statistical limits, and descriptive equivalence of the Likert Scale use in describing the data of the study.

Numerical Values	Statistical Limits	Improve efficiency in attendance tracking system	Positive impact of QR code Technology
5	4.21-5.00	Highly Efficient	Highly Positive
4	3.41-4.20	Very Efficient	Very Positive
3	2.61-3.40	Efficient	Positive
2	1.81-2.60	Moderately Efficient	Moderately Positive
1	1.00-1.80	Not Efficient	Not Positive

Ethical Issues

Ethical considerations regarding data privacy and security will be paramount, requiring careful attention to ensure the protection of sensitive information collected during the study. Participants will be fully informed about the collection, storage, and use of their data in the study in order to guarantee openness and informed consent. Participants' express consent will be sought, and data practices will be made transparent and easily accessible. Additionally, participants will be informed of their freedom to revoke consent at any moment.

The study will only gather the bare minimum of personal data required to meet its goals in order to reduce the chance of data breaches. The researchers will steer clear of collecting excessive or needless data that puts your privacy at unwarranted risk. When feasible, data will be pseudonymized or anonymized to safeguard individual identity. To prevent breaches, unauthorized access, or misuse of participant data, robust security measures will be put in place. This covers data breach response plans, encryption, access limits, and routine security audits.

An internal review board or ethics committee will supervise the study's data procedures to guarantee compliance with ethical norms and legislation. Clear roles and duties for data governance will be established. Researchers will be held responsible for any breaches in data security. Additionally, the study will examine its procedures for gathering and analyzing data for any biases that can provide unfair or biased results. We'll work to make sure the study's conclusions don't worsen already-existing disparities.

DISCUSSION OF RESULTS AND REFLECTION

This study has gathered responses from teachers and students on how they feel on the introduction of a QR code-based attendance tracking system in a learning environment. Through the latter the presentation of on the evaluation on the effectiveness of the existing system for tracking attendance, the effects of implementing QR code technology, the advantages of the new system, the difficulties faced, and the possibility of combining traditional and modern attendance tracking techniques is presented on this chapter.

Participants

The participants of this project are the students, faculty, and staff of Abas National High School (ANHS).

1. **Faculty** refers to the teaching staff involved in educating students.
2. **Staff** refers to the non-teaching personnel who support the school's operations.

QR Code Integration and Attendance Tracking

QR codes will be integrated into the school IDs of each student at ANHS. Their attendance will be tracked using

the SAMs application by their advisers. This will be evaluated at the end of the school year to monitor accountability and punctuality among students.

Survey Data and Analysis

This study gathered responses from teachers and students regarding the introduction of a QR code-based attendance tracking system in a learning environment. The study presents an evaluation of the current attendance tracking system's effectiveness, the impact of implementing QR code technology, the advantages and challenges of the new system, and the potential for combining traditional and modern attendance tracking methods.

Survey Summary

A survey was conducted with 124 participants, and the results are presented in tables. Each question's mean score, descriptive equivalency, numerical values, and statistical bounds are included. The tables evaluate the benefits of QR code technology and its impact on the attendance tracking system's effectiveness.

Table 1: Overall Survey Results

Questions	Mean Score	Descriptive Equivalent	Numerical Value	Statistical Limits	Impact on Efficiency	Impact on Satisfaction
How efficient do you find the current attendance tracking system?	3.19	Neutral	3	2.61-3.40	Efficient	Positive
How satisfied are you with the current attendance tracking practice?	3.11	Neutral	3	2.61-3.40	Efficient	Positive
The introduction of QR code technology has made attendance tracking faster.	3.66	Agree	4	3.41-4.20	Very Efficient	Very Positive
The QR code technology reduces errors in attendance records.	3.53	Neutral	3	2.61-3.40	Efficient	Positive
QR code technology has improved the accuracy of attendance tracking.	3.75	Agree	4	3.41-4.20	Very Efficient	Very Positive
The use of QR codes has made the attendance process more convenient for students and teachers.	3.77	Agree	4	3.41-4.20	Very Efficient	Very Positive
QR code technology has positively impacted overall school management and record-keeping.	3.65	Agree	4	3.41-4.20	Very Efficient	Very Positive
There have been technical difficulties with the QR	3.35	Neutral	3	2.61-3.40	Efficient	Positive

code system.						
Students and teachers have found it difficult to adapt to the new QR code system.	3.40	Neutral	3	2.61-3.40	Efficient	Positive
The QR code system has caused disruptions in the regular attendance process.	3.31	Neutral	3	2.61-3.40	Efficient	Positive
A hybrid system combining QR code technology and traditional methods would enhance the attendance tracking process.	3.56	Neutral	3	2.61-3.40	Efficient	Positive
Using both QR code technology and traditional methods would help maintain rapport between teachers and students.	3.52	Neutral	3	2.61-3.40	Efficient	Positive
The integration of both systems is feasible and would not overcomplicate the attendance process.	3.66	Agree	4	3.41-4.20	Very Efficient	Very Positive

Principal Results

1. **Efficiency:** With a mean score of 3.19, respondents generally perceive the current attendance tracking system as efficient.
2. **Satisfaction:** With a mean score of 3.11, respondents are largely satisfied with the current attendance tracking practice.
3. **Impact of QR Code Technology:** QR code technology significantly enhances the efficiency and accuracy of attendance tracking, with mean scores ranging from 3.66 to 3.75.
4. **Convenience:** The use of QR codes has made the attendance process more convenient for both teachers and students, with a mean score of 3.77.
5. **Technological Difficulties:** There have been occasional technical issues, but they have not significantly impacted overall effectiveness or user satisfaction.
6. **Adaptation:** Teachers and students have found it relatively easy to adapt to the new QR code system, with a mean score of 3.40.
7. **Hybrid System:** A hybrid system combining traditional methods with QR code technology is perceived as enhancing the attendance tracking process, with a mean score of 3.56.
8. **Integration:** The integration of both systems is deemed feasible and not overly complicated, with a mean score of 3.66.

Detailed Data Breakdown

Table 2.1: Current Attendance Tracking System Evaluation

Question	1 (Very Inefficient/Dissatisfied)	2 (Inefficient/Dissatisfied)	3 (Neutral)	4 (Efficient/Satisfied)	5 (Very Efficient/Satisfied)	Total
How efficient do you find the current attendance tracking system?	12	25	35	32	20	124
How satisfied are you with the current attendance tracking practice?	15	22	40	28	19	124

Principal Results

- Efficiency:** 28% of respondents rated the current system as neutral, 26% as efficient, and 16% as very efficient. However, 10% found it very inefficient, and 20% found it inefficient.
- Satisfaction:** 32% of respondents were neutral about their satisfaction, 23% were satisfied, and 15% were very satisfied. However, 18% were dissatisfied, and 12% were very dissatisfied.

Interpretation

The survey results indicate a general perception of the current system as effective and satisfactory, but with significant room for improvement. Addressing the issues raised by dissatisfied respondents can enhance the overall experience.

Table 2.2: QR Code Technology Impact on Attendance Tracking Efficiency and Accuracy

Question	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)	Total
The introduction of QR code technology has made attendance tracking faster.	6	14	28	44	32	124
The QR code technology reduces errors in attendance records.	8	17	30	39	30	124

Principal Results

- Faster Attendance Tracking:** 35% of respondents agree that QR code technology has sped up attendance tracking, while only 5% strongly disagree.
- Error Reduction:** 31% agree that QR code technology reduces errors, with only 6% strongly disagreeing.

Interpretation

QR code technology is generally perceived as improving the speed and accuracy of attendance tracking. While

a small percentage of respondents are initially resistant, the overall benefits are recognized.

Table 2.3: Impact of QR Code Technology on Attendance Tracking and School Management

Question	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)	Total
QR code technology has improved the accuracy of attendance tracking.	5	10	26	53	30	124
The use of QR codes has made the attendance process more convenient for students and teachers.	4	12	24	52	32	124
QR code technology has positively impacted overall school management and record-keeping.	1	3	30	60	30	124

Principal Results

- Increased Accuracy:** 43% of respondents agree that QR code technology has improved accuracy, with 24% strongly agreeing.
- Convenience:** 42% agree that QR codes have made the process more convenient, with 26% strongly agreeing.
- Positive Impact on School Management:** 48% agree that QR codes positively impact school management, with 24% strongly agreeing.

Interpretation

QR code technology is widely seen as enhancing accuracy, convenience, and overall school management. While some respondents have reservations, the majority recognize the benefits.

Table 2.4: Challenges and Adaptation

Question	1 (Very Inefficient/Dissatisfied)	2 (Inefficient/Dissatisfied)	3 (Neutral)	4 (Efficient/Satisfied)	5 (Very Efficient/Satisfied)	Total
There have been technical difficulties with the QR code system.	11	20	35	31	27	124
Students and teachers have found it difficult to adapt to the new QR code system.	9	18	32	33	32	124

Principal Results

- Technical Difficulties:** 28% of respondents remain neutral, 25% find the system efficient, and 22% very

efficient. However, 9% find it very inefficient, and 16% find it inefficient.

2. **Adaptation:** 32% of respondents remain neutral, 27% find the system efficient, and 26% very efficient. However, 7% find it very inefficient, and 15% find it inefficient.

Interpretation

Some technical difficulties have been encountered, but most respondents feel they are manageable. Adaptation to the new system has been relatively smooth, with a majority of respondents finding it efficient or very efficient.

Table 2.5: Evaluation of Hybrid Attendance Tracking System Combining QR Code Technology and Traditional Methods

Question	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)	Total
A hybrid system combining QR code technology and traditional methods would enhance the attendance tracking process.	5	8	23	45	43	124
Using both QR code technology and traditional methods would help maintain rapport between teachers and students.	3	7	30	49	35	124
The integration of both systems is feasible and would not overcomplicate the attendance process.	4	9	18	45	48	124

Principal Results

1. **Hybrid System Enhancement:** 36% of respondents agree that a hybrid system would enhance the attendance tracking process, with 35% strongly agreeing.
2. **Maintaining Rapport:** 39% agree that using both systems would maintain rapport, with 28% strongly agreeing.
3. **Feasibility of Integration:** 36% agree that integrating both systems is feasible, with 39% strongly agreeing.

Interpretation

There is strong support for a hybrid system, with respondents recognizing its potential to enhance attendance tracking and maintain teacher-student rapport. Integration is viewed as feasible and beneficial.

CONCLUSIONS AND RECOMMENDATION

The survey indicates positive feedback towards the introduction of QR code technology for attendance tracking at Abas National High School. While there are some challenges, the benefits in terms of efficiency, accuracy, and convenience are significant. The potential for a hybrid system combining traditional methods with QR code technology is also recognized as a valuable approach.

Based on the presentation of results and discussion the study sheds light on certain information's about how teachers and students view and interact with the introduction of a QR code-based attendance tracking system in a learning environment. The results suggest that while the current attendance tracking practice is generally viewed as neutral in terms of efficiency and satisfaction, the introduction of QR code technology has had a positive impact on various aspects of the attendance tracking process. The researchers agree that the respondent's response may be attributed to the introduction of QR system which is new to the school's system.

Another noticeable output from the survey was on difficulties in putting the QR code concept into practice. A sizable portion of respondents complained about system errors and delays and said it was hard to get used to the new technology. Additionally, some respondents said that the regular attendance routine has been disrupted by the QR code technology.

Notwithstanding these obstacles, the findings imply that a hybrid system fusing conventional techniques with QR code technology might improve the process of tracking attendance and support the preservation of goodwill between educators and students. Most respondents concurred that it is possible to integrate both systems and that doing so wouldn't make the attendance process unduly complex.

The study's findings, taken together, indicate that QR code technology has the potential to increase the precision and efficiency of attendance tracking while simultaneously highlighting the difficulties in putting it into practice. The findings imply that improving the process of tracking attendance and resolving teacher and student issues may best be accomplished with a well-rounded strategy that includes both conventional techniques and QR code technology.

Through the result of the study, the researchers would recommend using a QR code-based attendance system for the following reasons:

Attendance systems that rely on QR codes have a number of benefits over conventional techniques. First of all, they eliminate the possibility of errors and inconsistencies in record-keeping and are more accurate and efficient. This is due to the fact that QR codes are quick and simple to read, which cuts down on the time and effort needed to manually perform attendance tasks. Furthermore, QR code-based systems are incredibly economical because all that's needed to use them is a smartphone or a specialized QR code scanner, which is far less expensive and more accessible than more sophisticated hardware like RFID readers or biometric scanners.

The simplicity and convenience of usage of QR code-based attendance systems is another important advantage. With a mobile device, scanning a QR code is an easy and uncomplicated operation that allows users to track attendance without any effort. Additionally, contactless QR code-based systems are advantageous, especially given the current climate when halting the transmission of infectious diseases is a top issue. This lowers the possibility of mistakes and does away with the requirement for physical contact.

Additionally, QR codes are simple to integrate with a wide range of digital systems, such as applications for tracking attendance. This removes the need for human data entry by enabling data to flow straight from the QR codes and scanning device to other systems. Additionally, this integration offers a wide range of customizable options, including the ability to play films, display photographs, and link to other resources. For participants in events, staff members, or students, this can assist generate individualized experiences.

Finally, paper lists and attendance forms are no longer necessary with QR code attendance monitoring, which is a fully digital solution that reduces waste and supports green initiatives. For businesses wishing to lessen their carbon footprint, this makes it a sustainable choice. All things considered, QR code-based attendance systems have a number of advantages that make them a desirable choice for businesses trying to optimize their attendance monitoring procedures.

Overall, implementing a QR code-based attendance system can provide numerous benefits in terms of efficiency, cost-effectiveness, convenience, hygiene, and integration with digital systems. It is a reliable and effective solution for tracking attendance in various settings, including schools, workplaces, and events.

Action Plan

Objective	Strategies/Plan of Action	Timeline	Persons Involved	Resources	Success Indicators
Enhance System Efficiency and Accuracy	Implement system updates and optimizations to improve speed, reliability, and accuracy of QR code scanning and data recording processes.	July 2024	IT team, System developers	Software updates, technical documentation	Increased efficiency and accuracy demonstrated through performance metrics.
Expand Integration and Compatibility	Explore opportunities to integrate QR code system with existing school databases, attendance management software, and student information systems.	August-November 2024	IT team, School administrators	Integration tools, compatibility testing resources	Successful integration with existing systems and seamless data exchange established.
Enhance User Experience and Engagement	Gather feedback from users and identify areas for improvement in user interface, accessibility, and overall user experience. Implement enhancements based on feedback.	December-January, 2025	IT team, Users (teachers, staff, students)	Feedback collection tools, UX/UI design resources	Improved user satisfaction and engagement with the QR code system.
Implement Advanced Analytics and Reporting	Develop advanced analytics capabilities to generate actionable insights from attendance data, including trends analysis, predictive modeling, and performance metrics tracking.	February-March, 2025	IT team, Data analysts	Analytics software, reporting tools	Implementation of advanced analytics features and generation of insightful reports.
Strengthen Data Security	Enhance security measures to protect sensitive attendance data, including	April-May, 2025	IT team, Data privacy officer	Security protocols, encryption tools	Enhanced data security and compliance with

and Privacy	encryption protocols, access controls, and regular security audits.				privacy regulations.
Foster Continuous Improvement and Innovation	Establish a system for soliciting ongoing feedback and ideas for improvement from stakeholders. Foster a culture of innovation and continuous improvement.	Ongoing	IT team, School administrators, Users	Feedback channels, innovation framework	Implementation of user-generated ideas and continuous enhancement of the system.

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APPENDICES

Appendix A

SURVEY QUESTIONS



Abas National High School

Abas, Sallapadan, Abra

1. What is the current attendance tracking practice of Abas National High School?
 - 1.1 How efficient do you find the current attendance tracking system at Abas National High School?
 - 1 (Very Inefficient)
 - 2 (Inefficient)
 - 3 (Neutral)
 - 4 (Efficient)
 - 5 (Very Efficient)
 - 1.2 How satisfied are you with the current attendance tracking practice?
 - 1 (Very Dissatisfied)
 - 2 (Dissatisfied)
 - 3 (Neutral)
 - 4 (Satisfied)
 - 5 (Very Satisfied)
2. How does the introduction of QR code technology improve efficiency in the attendance tracking system?
 - 2.1 The introduction of QR code technology has made attendance tracking faster.
 - 1 (Strongly Disagree)
 - 2 (Disagree)
 - 3 (Neutral)

4 (Agree)

5 (Strongly Agree)

2.2 The QR code technology reduces errors in attendance records.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

3. What are the positive impacts of QR code technology after the introduction of the said project/innovation?

3.1 QR code technology has improved the accuracy of attendance tracking.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

3.2 The use of QR codes has made the attendance process more convenient for students and teachers.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

3.3 QR code technology has positively impacted overall school management and record-keeping.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

4. What are the challenges encountered after the implementation of the said program?

4.1 There have been technical difficulties with the QR code system.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

4.2 Students and teachers have found it difficult to adapt to the new QR code system.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

4.3 The QR code system has caused disruptions in the regular attendance process.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

5. How to integrate traditional and contemporary attendance tracking?

5.1 A hybrid system combining QR code technology and traditional methods would enhance the attendance tracking process.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

5.2 Using both QR code technology and traditional methods would help maintain rapport between teachers and students.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

5.3 The integration of both systems is feasible and would not overcomplicate the attendance process.

1 (Strongly Disagree)

2 (Disagree)

3 (Neutral)

4 (Agree)

5 (Strongly Agree)

Appendix B

LETTER TO THE SCHOOL PRINCIPAL



Abas National High School

Abas, Sallapadan, Abra

Date: May 23, 2024

Marvin V. Beroña

Head Teacher I

Abas, National High School

Abas, Sallapadan, Abra

Sir/Madam:

Greetings!

We plan to conduct research with the title, “Improving Attendance Tracking Efficiency and Effectiveness through the Implementation of a QR Code-Based System”. This basic research seeks to analyze the experiences of Teachers in Technology Enhance Assessments for the School Year 2023-2024.

We would like permission to conduct this study at the school, with a particular emphasis on Teachers as participants. Participants will be interviewed on the challenges and experiences on the latter. Rest assured that the collection of information will be kept confidential at all times.

We look forward to hearing back from you favorably on this matter. Infinite appreciation goes out to you.

Respectfully yours,

Allan B. Benesa

Teacher II/Researcher

Rio Merina A. Tubice

Teacher II/Researcher

Excelsis Deo T. Tubice

Teacher III/Researcher

Appendix C**LETTER TO PARTICIPANTS**



Abas National High School

Abas, Sallapadan, Abra

Date: January 23, 2024

Dear Respondents,

Greetings!

We plan to conduct research with the title “Improving Attendance Tracking Efficiency and Effectiveness through the Implementation of a QR Code-Based System”. This basic research seeks to analyze the experiences of Teachers in Technology Enhance Assessments for the School Year 2023-2024.

WE would like to ask for your cooperation in being the subjects of my study. You will be ask to share your experiences, knowledge, and practices on Attendance Tracking Efficiency and Effectiveness through the Implementation of a QR Code-Based System at Abas National High School. Please be informed that you will also undertake an intervention procedure so that the researcher may demonstrate the intervention's success using particular methodologies. You may be sure that your responses will aid this research and that they will be handled in complete confidence.

We hope to have you participate in the research. I truly appreciate it.

Sincerely,

Allan B. Benesa

Teacher II/Researcher

Rio Merina A. Tubice

Teacher II/Researcher

Excelsis Deo T. Tubice

Teacher III/Researcher

Appendix D

LEARNER AND PARENT'S CONSENT FORM



Abas National High School

Abas, Sallapadan, Abra

RESEARCH INFORMED PARENTAL CONSENT FORM

Allan B. Benesa et al, a Teacher II at Abas National High School, who teaches ICT in the Abas National High School, invites you and your child to participate in a research study she is conducting as part of his research innovation project.

The study, as well as your rights as a participant, are described below.

Description:

The study with a title, "Improving Attendance Tracking Efficiency and Effectiveness through the Implementation of a QR Code-Based System", seeks to determine the experiences of Grade 7-12 learners in Abas National High School for the School Year 2023-2024.

Your child's identity will not be revealed to anyone without permission and necessity.

Confidentiality/Animosity:

Children's answers will not be associated with their name. Rather, the pretest post test results of each child will be given an identification number on the tabulation sheet. They will not be identified in any of the data records.

I agree to the researchers using my child in this research and any publications the results from the research.

I agree to include my child in all research processes during this study. I understand this will only be used for the purposes of research (e.g. analysis of responses, transcriptions of responses, etc.) and will not be available to anyone aside from the researcher:

Signature

Risks & Benefits:

There are no risks to your child's safety. You may opt to watch your child during sessions. The implementation raises no sensitive or controversial issues and does not contain elements typically frightening to children. Nevertheless, the research proposal has been reviewed and approved by the research committee approved and

the tools to be used have been validated. Because the proposed innovation and intervention with specific strategies engage children in a deeper learning, there are potential benefits to your child’s proficiency level or learning outcomes.

Freedom to Withdraw or Refuse Participation:

I understand that my child has the right to stop or to refuse to attend the sessions without prejudice from the researcher. There are no penalties or threats if my child chooses to stop taking part in the study at any time.

Grievance Procedure:

If I have any concerns or am dissatisfied with any aspect of this study, I may report my grievances anonymously if desired to the Schools Division Research Committee or to the school administrators.

Should there be questions, please feel free to ask the researcher any questions before signing the consent form or at any time during or after the study.

Researcher: **Allan B. Benesa et al,**

Teacher II/Researcher

Contact #: 09612627785

Email Address: allanbenesa@deped.gov.ph

INFORMED CONSENT STATEMENT OF PARENT

I, _____, give permission for my child, _____, Grade ____ learner, to participate in the research project entitled, “_____”. The study has been explained to me and my questions answered to my satisfaction. I understand that my child’s right to withdraw from participating or refuse to participate will be respected and that his/her responses and identity will be kept confidential. I give this consent voluntarily.

Parent/Guardian’s Name and Signature:

Date

Researcher’s Name and Signature:

Date:

INFORMED CONSENT STATEMENT OF LEARNER

I, _____, a Grade ____ learner, express my willingness to participate in the research project entitled, “_____”. The study has been explained to me and my questions answered to my satisfaction. I understand that I have the right to withdraw from participating or refuse to participate will be respected and that my responses and identity will be kept confidential. I give this consent voluntarily.

Learner’s Name and Signature:

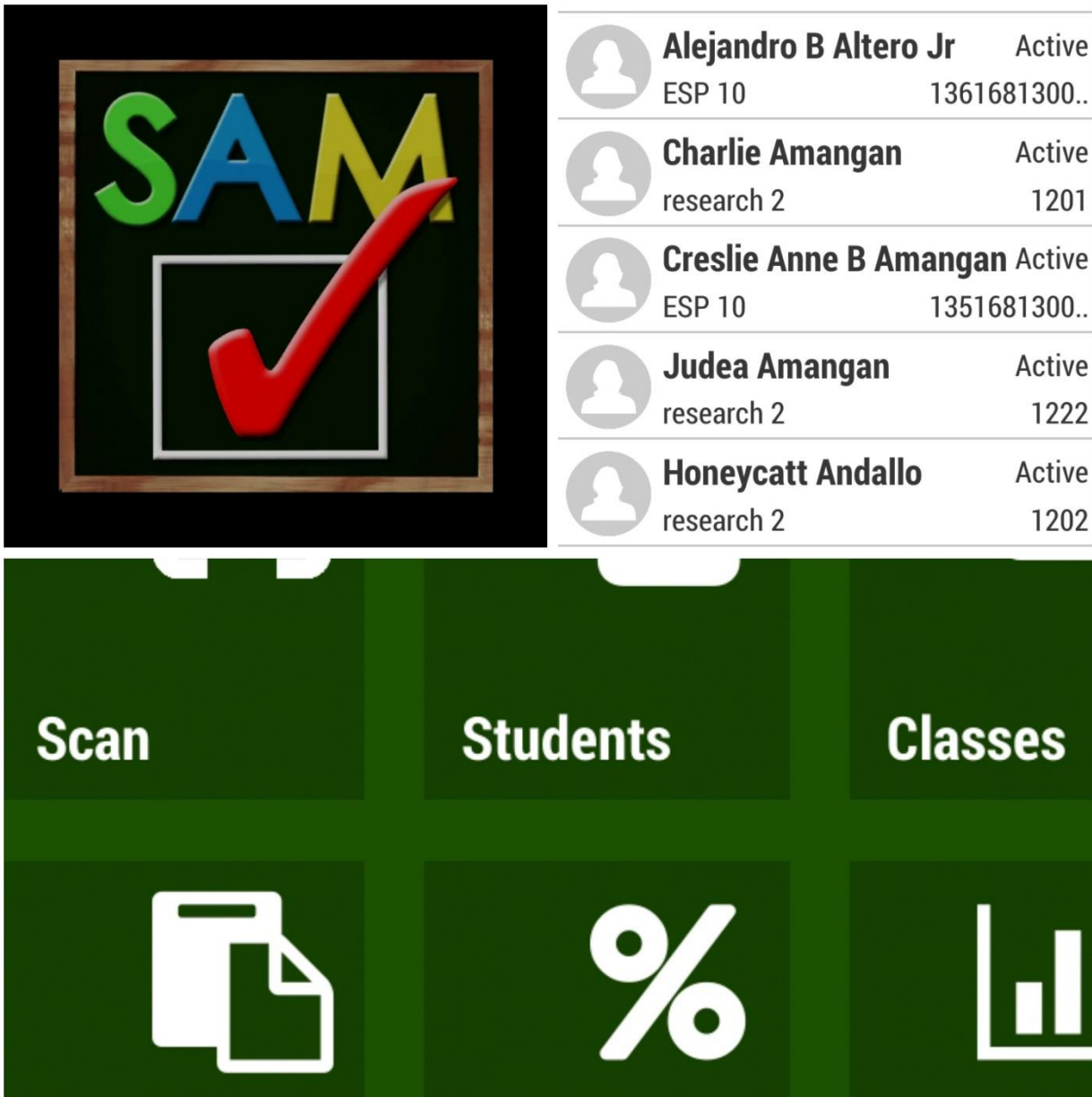
Date






Researcher's Name and Signature: _____

Date: _____

Photo Documentations

SAM application use for scanning student ID's



	Alejandro B Altero Jr	Active
	ESP 10	1361681300..
	Charlie Amangan	Active
	research 2	1201
	Creslie Anne B Amangan	Active
	ESP 10	1351681300..
	Judea Amangan	Active
	research 2	1222
	Honeycatt Andallo	Active
	research 2	1202

Financial Report

SUPPLIES AND MATERIALS					
	Item	Unit	Quantity	Estimated Cost	Total
Preparation of Research Papers, Instructional	A4 Bond paper	Ream	3	210.00	630.00
	A4 folder Tag board with Fastener	Piece	10	10.00	100.00

Materials/Worksheets and other documents	A4 Folder	Piece	10	10.00	100.00
	Printer Ink - Black	Bottle	1	400.00	400.00
DOMESTIC TRAVEL EXPENSES					
Submission of Research Proposal to DO	School to DO	Back and forth	2	700.00	700.00
Reproduction/Printing and Binding Cost					
Survey Questionnaires	A4 Bond paper	Ream	1	210.00	210.00
COMMUNICATION EXPENSES					
During Implementation and Preparation of Research Papers and other documents	Cell phone load		3	300.00	900.00
	Internet Load		3	300.00	900.00
Total Amount					3,751.00