

RF ID BASED ATTENDANCE AND RANDOMIZED SITTING ARRANGEMENT SYSTEM

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Abstract:

Attendance management is important to every single organization; it can decide whether or not an organization such as educational institutions, public or private sectors will be successful in the future. Organizations will have to keep a track of people within the organization such as employees and students to maximize their performance. Managing student attendance during lecture periods has become a difficult challenge. The ability to compute the attendance percentage becomes a major task as manual computation produces errors, and wastes a lot of time. For the stated reason, an efficient Web-based application for attendance management system is designed to track student's activity in the class. This application takes attendance electronically and the records of the attendance are storing in a database. This article examines the contribution of classroom students' seating positions to learning gains. Data were gathered from a sample of 1907 students who sat for the same seat twice over an interval of about 10 months. They were drawn from a random selection of 72 low and high performing primary schools. Results of a multi-level regression show that seating in the front row in a classroom led to higher learning gains of between 5 percent and 27 percent compared to seating in other rows that are farther away from the chalkboard. The policy implication to education is that student's seating position can be manipulated in a way that it optimizes learning gains for slow learners.

Keywords: *Arduino, Radio frequency Identification Card Reader, Real time clock.*

I. INTRODUCTION

Attendance automation requires little to no effort from the teacher, which means a reduced workload on the teacher^[1]. All that the students have to do is punch-in or flash the Radio Frequency Identification (RFID) card in front of the device, in case of biometric or RFID attendance. Whereas attendance marked with an app merely requires 60 seconds from the teacher. No paperwork, no manual attendance, and no wastage of time lead to reduced hassle and enables the already overburdened teacher to concentrate more on teaching in a school, college or university can save up to thousands of rupees monthly by automating student attendance. If a teacher has 7 lectures a day and requires 10 minutes to mark attendance for each lecture then nearly 70 minutes are consumed in marking attendance. If there are 50 teachers in the institution then each day 58 hours are required for the mundane task of marking attendance. The 58 hours can easily be reduced to 1 hour, and the considerable amount of teachers' time saved can be utilized towards improving student outcomes^[1].

Since the attendance is automated, you can be sure that the data is accurate and error-free. Once the attendance is marked, the captured data gets stored in the student attendance management system, from where anyone having the rights can view the attendance details. This feature is especially useful while locating a particular student or while analyzing trends. Student attendance records are required by compliance & accreditation agencies such as The National Board of Accreditation (NBA) and National Assessment and

Accreditation Council (NAAC), which can be tedious to calculate manually. The online attendance management system simplifies & streamlines everything. The capability to analyse student performance using attendance data is, perhaps, the most significant reason why you need an attendance monitoring system. The educational ERP provides you with BI tools in the form of dashboards. The dashboards give you accurate graphical data about anything and everything, instantly^{[1][2]}.

Using the attendance data dashboard, you can determine the attendance trends of your institution, a particular class, a specific subject or even a particular student. Consider tracking attendance of a class of students for a period of one month. You can see the graph and instantly identify if the attendance is increasing, decreasing or is almost the same. Based on the results of the analysis, you can make timely decisions, and even check whether the corrective measures are effective or not. This enables you to constantly monitor student performance and improve student outcomes.

II.LITERATURE SURVEY

The National Policy of Children, 1974, declared children as "Supreme National Asset"^[2]. A student becomes a school's responsibility the moment they enter the premises. Guaranteeing the safety of its students not only brings peace of mind to the school management and parents, but also builds the institution's goodwill in the market as well improves school-parent relationships^[2]. When you know that a particular school is proactively concerned about the safety of its students, more parents would be willing to enroll their children into that institution. Moreover, they also act as an access control system, ensuring that only authorized personnel with valid biometric credentials/RFID cards can gain access, thereby creating a fully secured school campus. Both classroom settings and workplaces, attendance may be mandatory. Poor attendance by a student in a class may affect their grades or other evaluations. Poor attendance may also reflect problems in a student's personal situation, and is an indicator that "students are not developing the knowledge and skills needed for later

success". For students in elementary school and high school, laws may require compulsory attendance, while students at higher levels of education may be penalized by professors or the institution for lack of attendance and both classroom settings and workplaces, attendance may be mandatory. Poor attendance by a student in a class may affect their grades or other evaluations. Poor attendance may also reflect problems in a student's personal situation, and is an indicator that "students are not developing the knowledge and skills needed for later success". For students in elementary school and high school, laws may require compulsory attendance, while students at higher levels of education may be penalized by professors or the institution for lack of attendance. Attendance management is the act of managing attendance or presence in a work setting to minimize loss due to employee downtime. Attendance control has traditionally been approached using time clocks, timesheets, and time tracking software, but attendance management goes beyond this to provide a working environment which maximizes and motivates employee attendance. Recently it has become possible to collect attendance data automatically through using real-time location systems, which also allow for cross-linking between attendance data and performance. Attendance management takes place in all educational campuses be they university, college or school^{[3][4]}.

Time and attendance systems (TNA) are used to track and monitor when employees start and stop work. A time and attendance system enables an employer to monitor their employees working hours and late arrivals, early departures, time taken on breaks and absenteeism^[5]. It also helps to control labor costs by reducing over-payments, which are often caused by paying employees for time that are not working, and eliminates transcription error, interpretation error and intentional error. TNA systems can also be used to ensure compliance with labor regulations regarding proof of attendance^[6]. Traditionally manual systems were used that rely on paper cards which have times stamped onto them using a time stamping machine. Such machines were used for over a century but have since been phased out and replaced with cheaper automated systems

which eliminate the Modern automated time and attendance systems require employees to touch or swipe to identify themselves and record their working hours as they enter or leave the work area. Originally this consisted of using a RFID electronic tag or a barcode badge but these have been replaced by biometrics (vein reader, hand geometry, fingerprint, or facial recognition), and touch screens devices^{[6][7]}.

The latest technology allows the use of app (Application software) based Geofence capabilities. Allowing an employee to clock in & out only when they are within an Internet geolocation. Facial recognition systems are also available with these app based software technologies, eliminating the need of Fingerprint scanners^{[8][9]}.

A student information system (SIS), student management system, school administration software or student administration system is a management information system for education sector establishments used to manage student data. It integrates students, parents, teachers and the administration. Student information systems provide capabilities for registering students in courses; documenting grading, transcripts of academic achievement and co-curricular activities, and the results of student assessment scores; forming student schedules; tracking student attendance; generating reports and managing other student-related data needs in an educational institution^{[8][9]}.

Information security is a concern, as universities house an array of sensitive personal information, making them potentially attractive targets for security breaches, such as those experienced by retail corporations or healthcare providers. Teaching is a profession that requires specialized skills and knowledge to impact significantly on student learning. One factor associated with improved achievement among learners is the position at which they sit in a classroom. For example, several studies (Levine, O'Neal, Garwood, & McDonald, 1980; Marx, Fuhrer, & Hartig, 2006; Siang, 1991; [10] Tagliacollo, Volpato, & Pereira Jr., 2010) have shown that those pupils who sit in the front tend

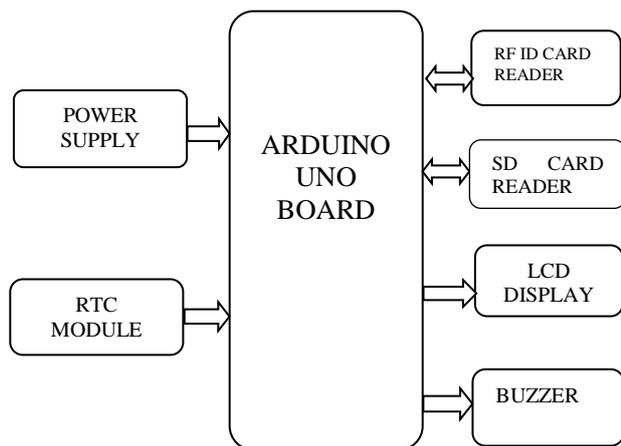
to be more active and have higher achievement scores. These learners, therefore, have better interaction with teachers and gain more from each lesson than those who sit at the back of the classroom and are somewhat "hidden" from the teacher (Marx et al., 2006). However, as the debate on quality of education and opportunity to learn is becoming the primary focus for many Sub-Sahara Africa (SSA) countries that have made significant improvement on access to schooling, there is the need to revisit this classroom seating position advantage. Most studies on seat position in the classroom and how it influences learner achievement are to be found outside Africa. But in spite of the limited literature on seat position in the classroom in SSA, many countries have initiated Universal Primary Education (UPE) programs that have led to improved access to schooling, and in some cases to overcrowded classrooms. In an overcrowded classroom, seat position is critical as it determines access to the learning resources and opportunities inside the classroom. Available literature shows that students who sit near the chalkboard have better school performance compared to those who sit far away from the chalkboard [11,12,13&14] (Benedict & Hoag, 2004; Perkins & Wieman, 2005). Teachers' instructional space is near the chalkboard and hence those seated in the front are more likely to interact with their teachers. Seating at the back of the class has been associated with problem behavior as well as low grades (Perkins & Wieman, 2005). Earlier studies show that teachers tend to direct more questions to students seated in the front rows of the classroom (Juhary, 2012; Moore & Glynn, 1984). Students seated at the back interact more with each other, in a disruptive way, thus minimizing their opportunity to learn (Granstrom, 1996). However, other studies have found no detrimental effects of sitting at the back on learning achievement (see for example Kalinowski, & Taper, 2007). According to Tagliacollo et al. (2010), achievement has led teachers to move students closer to the chalkboard with a view toward raising their grades, but that outcome may not always be realized. Tagliacollo et al., (2010) posit that motivation to learn is the mediating factor between seat position and student academic achievement, and hence there

exists no direct effect of seat position on student academic performance. Taglioacollo et al. concluded that students' motivation to learn is the main determinant of seat position.

high performing primary schools. Results of a multi-level regression show that seating in the front row in a classroom led to higher learning gains of between 5 percent and 27 percent compared to seating in other rows that are farther away from the chalkboard. The policy implication to education is that student's seating position can be manipulated in a way that it optimizes learning gains for slow learners.

III. PROPOSED MODEL

BLOCK DIAGRAM:



Here, we have designed RFID Based Attendance System using Arduino. EM-18 RFID Reader is a very simple yet effective module. It is an RFID module and is used for scanning RFID cards. It's a new technology and is expanding day by day. Nowadays it is extensively used in offices where employees are issued an RFID card and their attendance is marked when they touch their card to the RFID reader. We have seen it in many movies that when someone places one's card over some machine then the door opens or closes. In short, its a new emerging technology which is quite useful.

we have interfaced RFID EM-18 Module with Arduino, RTC Module DS3231, and 16*2 LCD display. RFID Based Attendance System is a wonderful project for final year electronics & electrical students.

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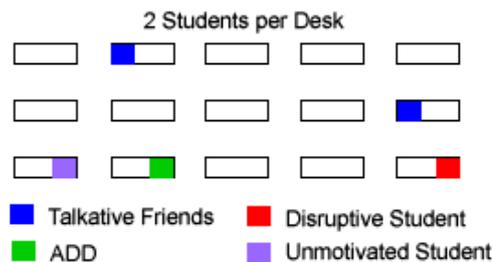


Figure:1 Randomized sitting arrangement

FEATURES OF PROPOSED METHODE:

1. Simple system
2. Low power consumption
3. Knowledge sharing between students
4. Improve the regularity in students and good relations

OPERATION:

In this project whenever the student tap the RF id card on RF id card reader then microcontroller read his attendance if he/her in right time and allot a set number for a week (7days) and complete data of student attendance is stored in memory/ cloud. If any student come after timing, system shows YOU ARE LATE and doesn't store the attendance data of that day.

WORKING:

This is an RF ID-based smart attendance system that we are making using an Arduino UNO microcontroller board. You can read the full project on our website as well. The students can enroll themselves by just placing the smart card on the reader module. The system is capable enough to record the attendance on the serial monitor screen. Later on, you can extract the information from it.

This system works on radio frequency identification that is RFID. The smart card that we use here is per-coded with the roll numbers of the students. Whenever someone uses a card whose information is not registered in the memory of the system the red LED will go on and the buzzer starts beeping. When the system is on it will ask you to put the smart card on the reader module. For displaying the contents we are using a 16×2 LCD with an I2C module.

When the RFID reads the card that is coded with the correct details of the student the Green LED will glow. You can add as many students as you want and also change their names by modifying the code.

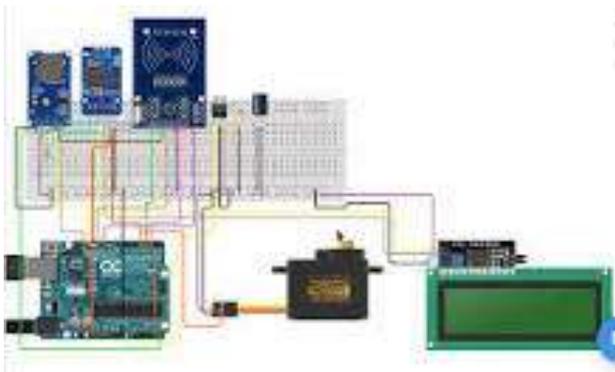


Fig:2 RF ID based attendance system

IV. HARDWARE DESCRIPTION

OPERATION:

Here whenever the student tap the RF id card on RF id card reader then microcontroller read his attendance if he/her in right time and allot a set number for a week (7days) and complete data of student attendance is stored in memory/ cloud. If any student come after timing, system shows YOU ARE LATE and doesn't store the attendance data of that day

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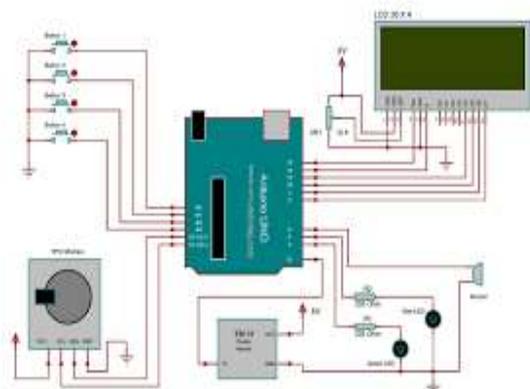


Figure: 3 Circuit diagram

IV. RESULTS & DISCUSSION



Figure 4 Hardware Model



Figure 5 Hardware Model

V. CONCLUSION:

Hence by implementing this system the regularity in students will improve along with that the knowledge transfer will happen between all the students from rich to poor in knowledge and good human relations are established.

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