

Android Based Academic Performance Monitoring System for Parents/Guardians

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Abstract- This paper is focused on the development of an Android web-based application for parents/guardians to be able to monitor and follow the academic performance of their wards. The authors deployed prototyping method as the design methodology. The software tools used are Java Script, jQuery, HTML, PHP, Android Studio and MYSQL database which resulted to this powerful and user-friendly mobile monitoring application for teachers and parents/guardians. The application gives the parents/guardians accurate and up-to-date information about the academic performance, fee payments and other activities of their wards. The resultant effect of this research would give parents/guardians reports on their ward's academic performance at a glance.

Indexed Terms- Student monitoring, Academic Result, parents, Android, Performance

I. INTRODUCTION

Academic Performance monitoring involves assessments which serve a vital role in providing information that is geared to help students, teachers, administrators, and policy makers take decisions. The changing factors in contemporary education has led to the quest to effectively and efficiently monitor student performance in educational institutions, which is now moving away from the traditional measurement and evaluation techniques to the use of Mobile Monitoring Application which employs various intrusive data penetration and investigation methods to isolate vital implicit or hidden information. Due to the fact that several new technologies have contributed and generated huge explicit knowledge, causing implicit knowledge to be unobserved and stacked away within huge amounts of data. The main objective of the Mobile Monitoring Application is to provide accurate performance result to both the teachers and parents

alike thereby contributing to predicting trends of outcomes by profiling performance attributes that supports effective decisions making.

This paper deploys theory and practice of mobile based academic performance monitoring system as it relates to student performance and monitoring in a federal polytechnic in Nigeria.

Academic performance monitoring in various educational institutions is carried out to guide instructors and teachers. Early intervention and response to intervention, keeping on track for adequate yearly progress is very important. Students are discrepant from expectations where they are divided into various stages and their performance carefully monitored including various activities and events [1]. The various forms of stages are classroom interventions, non-classroom monitoring, intervene assistance team, data collection on non-academic range and special education evaluation. Early student performance monitoring system focus on only academic (curriculum) based performance evaluation. This study majorly focuses on curriculum-based stages and performance evaluation among the standard and dynamic real-time data [2].

II. PROBLEM STATEMENT

The problem currently facing many schools is the management of students, and courses. Here, the teachers do their best to handle their workload, and sometimes the courses are not offered on time. The number of students who must study the course is not followed. Another problem is managing the teachers work and course scheduling.

Also, in the school the students are unable to know their exam scores, there are also no way of knowing when the students are present or absent from school

and the teacher have no way of knowing if the student's result has been seen by the parent/guardian. Parents/Guardians are also unable to know if their students have paid their tuition fee and other fees.

This study will provide the administrator, teachers, students and parents/guardians with information on their student activities, teachers activities, hostel activities, library activities, study materials, student scores, daily attendance, class routine, student class.

III. RELATED WORKS

Academic performance monitoring system, which can effectively monitor the students in educational institution, has been researched and developed continuously in the area of quality and efficient Education system. [3] opined that, "the use of computers in students' academic result processing and delivery will bring positive change to the academic sector." This paper tries to help and enhance the students' behaviour in their success path. It implements the latest technology in such a way, the parents, mentors, educational institutions and student all get immediate response to this system through School Management System [4]. They all even get tied together in this progress with the help of the application using client server methodology in android [5]. The different users are intimated with immediate response to the android based academic monitoring System within which they are connected.

Monitoring is seeing if you are doing what you said you would do and done in a systematic approach to overseeing planning, learning, and teaching. This is part of the evaluation that ensures that information is gathered so that judgments can be made and questions answered accordingly. Evaluating, on the other hand, is the measurements of success. This is done after there is a comparison between outcomes, aims, and objectives. This eventually leads to a summative assessment of current practices within the school, then informs on the future planning for both learning and teaching. School monitoring and evaluation help in providing a consolidated source of information showing the progress of the school [6].

Monitoring and evaluation give a basis for both questioning and testing assumptions. Monitoring and

evaluation should be an integral component of any particular school since it helps in planning. Schools should use technological tools available to help in gathering information. Also, it shows the mistakes and creates paths for both learning and improvements.

[7] carried out a research on the student management system based on the network environment. The paper discusses the method of the management information in higher education. On the basis of a comprehensive investigation and analysis on the student management in higher education, they establish the models of the college students' management information by adopting the advanced information technology and construct the student management information platform. Moreover, they analysed the characteristics of the information management in higher education and elaborate the methods to solve the difficulties in confronting student management in higher education. Finally, the key method and technology to carry out the information management platform are presented but no action was carried out to make the system accessible by parents/guardians.

Researchers [8] carried out their own research on Android-Based Attendance Management system. A method of taking attendance by employing an application running on the Android platform is proposed in this paper. This application, once installed can be used to download the students list from a designated web server. Based on the downloaded list of students, the device will then act like a scanner to scan each of the student cards one by one to confirm and verify the student's presence. The devices camera will be used as a sensor that will read the barcode printed on the student's cards. The updated attendance list is then uploaded to an online database and can also be saved as a file to be transferred to a PC later on. This system concentrated on taking attendance of the students and supplying the results to the teachers only. It was not designed to give information to the parents/guardians. Parents/guardians were not considered in this study.

Researchers [9] and [10] authored on the Design of student information management system based on B/S Structure. This paper uses the B/S (Bachelor of Sciences) structure to design the student information management system, and explains the system design

principle, system plan and structure, the function module of information system according to current university student information management needs. It provides an interactive students management platform for the information of a large number of students and the management of students. The research was not conducted to suit the needs of the parents/guardians whom have wards in A.I.F.P.U.

[10] and [11] were authors on the Research and Implementation of Web Services in Android Network Communication Framework. This paper includes combination of Web Services and mobile devices. It will promote the development of mobile applications. The Volley framework proposed has the advantages of convenient use and network request works faster, but it does not support Web Service Extension of Volley, to support the Web Services, which can facilitate the Web Services application development, but also can improve the access performance of Web Services. On the basis of analysis and research of the Volley, Ksoap2 and Java Web Services, through the implementation of the Http Stack interface and the expansion of JSON Object Request to realize support for Web Services. The scheme uses JSON format to transfer data, supports SSL/TLS protocol requests, custom parameter, sets or gets the request header. This scheme has good compatibility, easy to use, suitable for application on Android platform.

IV. DESIGN METHODOLOGY

Prototyping Model has been used to develop this application. The Prototyping model is a technique for quickly building a functioning but incomplete model of the information system. There are several kinds of prototypes but they all intend to reduce risk by building a quick and dirty replica or mock-up of the intended system. It can be used to demonstrate technical feasibility when the technical risk is high. It can also be used to better understand and elicit user requirements. In either case, the goal is to reduce risk and limit costs by increasing understanding of proposed solutions before committing more resources.

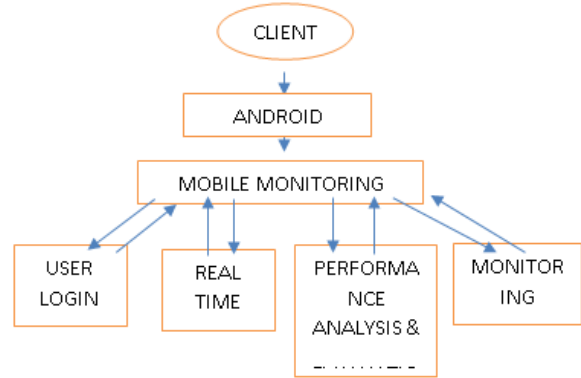


Fig. 1.: Diagram of the Design architecture.

Figure 1 shows a diagram of the design architecture of the academic performance monitoring system. The major part of the project development sector considers and fully survey all the required needs for developing the project. Once these things are satisfied and fully surveyed, the whole system has been implemented using Android Studio in Android Operating system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviours of the system.

Mobile Monitoring System, is an android application which offers parents a mobile app, which provides users with information at their fingertips.

The mobile monitoring App offers a simple intuitive web interface to manage the communication between users (Teachers, Parents/Guardians) and in so doing, the institution will always be in control of what parents receive on mobile monitoring app.

Because of the Challenges in School-Parent Communication today, parents expect to be involved and informed at real-time by the institution.

The institution will also be able to communicate effectively and timely with parents through the use of the in-built messenger, in-app notice, text messages and newsletters.

The researcher gathered all the data to come up with the appropriate program and database design of the prototype that is reliable, accurate and with a normalized database design to ensure data integrity. It

is composed of six (6) tables of users such as: administrator, teacher, parent, student, librarian and accountant.

From the data given on the statement of the problem, the authors focused on coming up with the solutions to the different problems such as faster and accurate data storage to ensure that retrieval and updating of records can be more systematic for the different users for both mobile and web-application.

V. SYSTEM DESIGN

• Input Design

The system maintains the same input fields as the existing system with few exceptions;

- The system can run on all web browsers, and on mobile.
- A mobile android application developed for the system can also be used to make input.
- It allows users to login to their respective portals using their mobile devices and tablets.
- The systems architecture makes it fluid thereby making it mobile friendly.
- Inputs can be made also with mobile devices and tablets.
- Students can also be admitted online using this mobile application.
- Students can communicate directly with their teachers.
- Parents can communicate directly with the students' teacher.

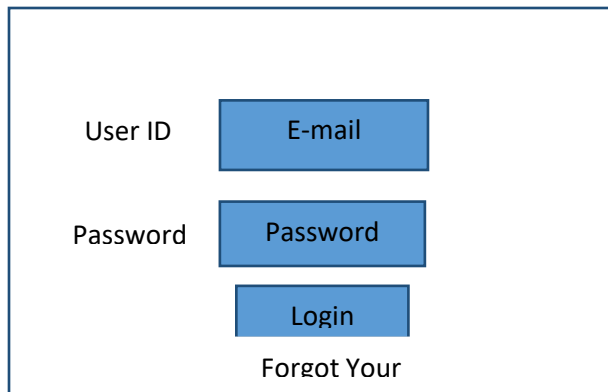


Fig 2: login form.

Fig. 2 is the login form design through which inputs could be made in the mobile monitoring system.

Parents/Guardians and Teachers gain access to the system after they've logged in successfully.

• Output Design

The major outputs of the system are the students study materials which are uploaded by the teachers for the students. Student examination results, Student's invoice of payment. Class routine can also be downloaded by the parents and students. Including other academic activities.

• Process Design

The process are the activities performed on the mobile monitoring App. These activities are: teacher marks attendance, teacher scores the students, teacher gives assignments, modifies/deletes marks, Parents make school fees payment online.

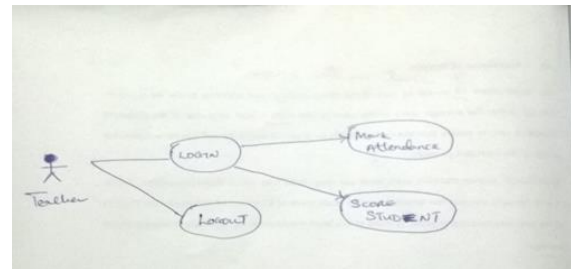


Fig. 3: Teachers use case diagram.

Fig 3 shows some activities of the teacher after login. The activities displayed are taking attendance, recording, modifying/deleting student marks.

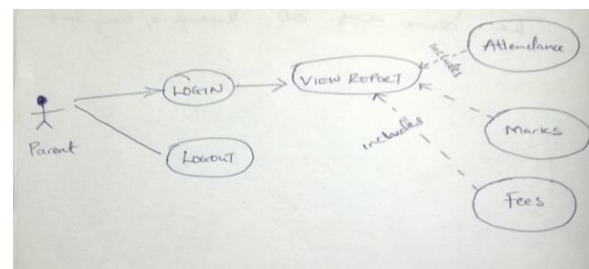


Fig. 4 Parent use case diagram.

Figure 4 shows what parents can do after login. The parent can view student report which includes the students attendance and marks obtained in assignments and tests.

VI. CHOICE OF PROGRAMMING LANGUAGE & IMPLEMENTATION

The development of the website starts with designing the website structure using HTML5, then the style of the website was designed using CSS3. After that, enhanced user interfaces and dynamic website were developed using JavaScript and jQuery. Later on, the website contents and databases were managed through the use of PHP7. Finally, the Android based Mobile Application was developed using android studio and incorporated in the website.

The implementation of the system was done using the programming tools listed above. See figures of implementation below:

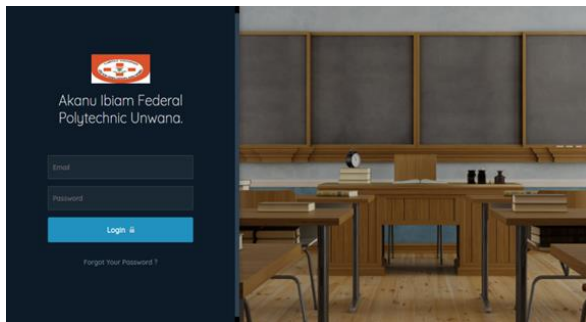


Fig 5 Login Page

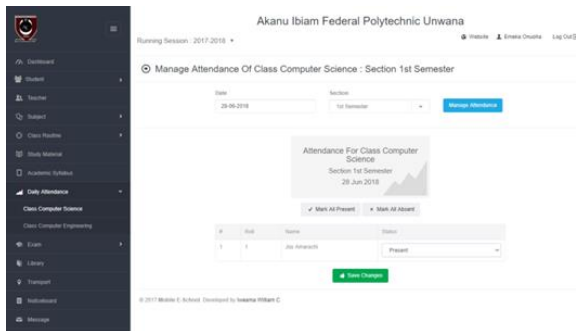


Fig 6 Attendance Management Page



Fig 7 Students' class routine report

CONCLUSION

This paper was carried out to give parents/guardians the ability to monitor the academic performance of their wards, reduce the intense manual effort being put into educational activities, and developing an android based academic performance monitoring system. The Mobile Monitoring App is a conceptual work in progress but has the capability to provide an excellent report with minimal constraint.

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