AIYURA NATIONAL HIGH SCHOOL STUDENT ATTENDACNE MONITORING SYSTEM

Nelson Buka_14013011 (nelsonbuka12@gmail.com@gmail.com)
UNIKOM

ABSTRACT *Aiyura National High School is located in the Eastern Highlands Province of Papua New Guinea (PNG). It was one of the original four National High Schools in PNG enrolling many from the 1970s onwards. Recently the school name has changed to School of Excellence.*

In most cases, students are subjected to absences due to some reasons which resulted in poor academic performance because attendance is very important in every student in which a single absent is a big difference in a school. The way of informing the parents about this is the traditional way which is they inviting the parents through telling the students that the parents need to come to school and communicate with the teacher about the absenteeism of the student. This takes a long process and sometimes parents are not able to come because of some reasons that the parents are busy at work; they are away from the school and have an important matter to take care of.

In order to facilitate and simplify these actions one of the major tool is to have automated school management system in place for Aiyura National High School. The Web-based Student Attendance Monitoring System (SAMS) of Aiyura National High School proposed by researcher is basically to monitor student absenteeism and behavior of the student in the school. This system is a web-based system build on the platform of object-oriented and using the unified modeling language (UML).

The expectation of this system is to allow stakeholders such as; administration, parents and school community to view online the attendance report of the prospective student using Web-browser to enable them to make a most informed decisions.

Keywords: School Management System, Web-Based Student Attendance Monitoring System, Traditional/Manual System.

BACKGROUND

1.1 Background

Information technology (IT) has opened a new era of information for today's organization (it might be business, non-profit, educational, research etc.) and has enabled it to gather and communicate information and thus function in a

more effective way. On the other hand decision-making capability of the computers has changed the pattern of authority and responsibility within the organization.

Automation is the utilization of technology to replace human with a machine that can perform more quickly and more continuously. However, Aiyura National High School system is not yet automated and cannot handle problems that aroused relating to absenteeism.

1.2. Problem Identification and Formulation

1.2.1. Identifying the Problem

The problems can be identified as:

1. Do not facilitate register student and parent as a parent of a student by the Administration offline.
2. Do not facilitate attendance record keeping by the home room teacher.
3. Do not sufficiently produce the required attendance reports to allow parents to view attendance of the students to help them participate in disciplinary measures and decision making.

1.3. Problem Formulation.

Formulation of problems can be listed as:

1. How to analyze the System.
2. How to Design the System.
3. How to Evaluate and Test the System.
4. How to Implement the System.

1.4. Research Objectives

1.4.1. Research Purposes

1. The study is focused on the Student Attendance Monitoring System in the school through the design and development of a system providing a means of information on generating the student's attendance report, attendance record keeping and register someone as student of a school and parents as a parent of the student offline.
2. The study main reason of existence is to enable parents to view status of the students to help them participate in disciplinary measures and decision making.

1.4.2. The Purpose of This Research

The purpose of this research is stated as follows:

1. A system that will register student and a parent as a parent of a student and keeping record of student's attendance.
2. A system that has a web browser feature that will replicate the inputted data in stand-alone system.
3. A system that will allow parents to view status of the students to help them participate in disciplinary measures and decision making.
4. A web-based system that will print results.

1.5. Research Benefits

1.5.1. Practical Uses (School)

This research has limited users practically.

1. *Administration*

Administration is a person who is responsible for register a student and a parent as a parent of a student and can manage classes of a student.

2. *Home Room Teacher*

A Home Room Teacher is a teacher assigned by the school director to each class of students to follow the students closely. He/She has the responsibility of recording attendance of student and submitting.

3. *Parent*

A parent is a person who is registered as a parent of a student by the admin after registering his/her children and responsible to follow the student in close contact with the school. He/She can view the attendance of the student in school online.

1.5.2. Education System

In education system, this research can be of great help in the following areas:

1. Displacing of the manual school system with automated system can improve the quality of education and learning progress of students.

2. The implementation of a fast, easy and systematic way of managing student/staff profiling, registration processes, generating transcript, report, timetable and attendance record keeping can greatly influence a school's progress in a more positive way and this may contribute towards meeting the general objectives and goals of the education system.

1.5.3. Academic Purpose

Other researchers may use this project as a reference to improve and design a more effective system related to this project or can be of reference to any other research done later.

1.6. Limitations

1.6.1. Limited Users

1. *Administration*

Provide a simple and fast access to verify that the student is eligible for registration; manage classes and giving principals better tools to make their best, most informed decisions.

2. *Home Room Teacher*

Provide an easy access to record attendance in each school day. A home room teacher must log in as the home room teacher to record attendance.

3. *Parent*

Provide fast and easy access to view the attendance of a student online. A parent must be recorded in a system as a parent of the student in order to view their children attendance report in school online.

1.6.2. Online

It is an online school system in which clients or users can access through using internet and browsers.

THEORETICAL

2.1. Understanding Information

Information is simply a data that is (1) accurate and timely, (2) specific and organized for a purpose, (3) presented within a context that gives it meaning and relevance, and (4) can lead to an increase in understanding and decrease in uncertainty.

2.2 Understanding System

A system is a group of elements that are integrated with the common purpose of achieving an objective. Organization having common goal for the achievement are functionally interactive units. All systems have inputs, outputs, and feedback, and maintain a basic level of equilibrium. For example, in the human body the heart function to support the circulatory system, which is vital to the survival of the entire body.

2.3. Understanding Information Systems

An information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization. In addition to supporting decision making, coordination and control of information systems may also help managers and workers analyze problems, visualize complex subjects and create new products.

2.4. Students Attendance Monitoring System

Individual Schools and Department have System in place to monitor attendance during academic year. Unauthorized absences are reported to Student Administration and recorded as appropriate. Where students are absent without authorization, to the point that is not possible to continue, Student Administration will write to the student stating they will be deemed to have withdrawn from the school and their student record will be amended to show that they have withdrawn.

2.4.1. Students Attendance

Student attendance is a better predictor of dropping out of school than test scores. This predictor is not limited to chronically truant students. Excused

absences and unexcused absences have similar impact on student academic performance.

OBJECT AND METHODS

3.1. Research Object

The object of the research is Aiyura National High School located in kainantu, Eastern Highlands Province of Papua New Guinea. The research mainly focuses on its student attendance monitoring system and was carried out at Indonesian Computer University (UNIKOM), Bandung, West Java, Indonesia.

3.1.1. History of the Company

Aiyura National High School is located in the Eastern Highlands Province of Papua New Guinea (PNG). It was one of the original four National High Schools in PNG enrolling many from the 1970s onwards. Recently the school name has changed to School of Excellence.

3.1.2. Organizational Structure of Aiyura National High School System

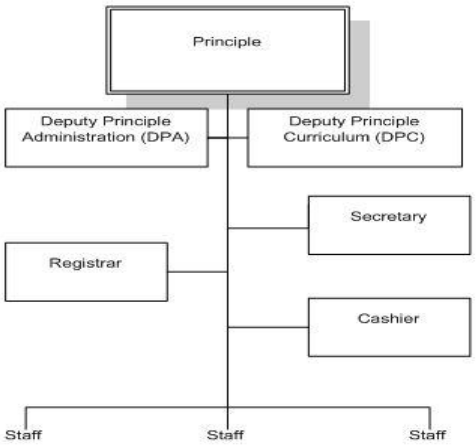


Figure 3.1 Organizational Structure (Source: Aiyura National High School)

3.2. Research Methods

A research method is simply a technique for collecting data. It can involve a specific instrument, such as a self-completion questionnaire or structured

interview schedule, participant observation whereby the researcher listen to and watches others.

3.2.1. Research Design

A research design provides a framework for the collection and analysis of data.

3.2.2. Types and Data Collection Methods

Data collection refers to the gathering of set of observations about variables and it is the starting point of research methods. Basically, there are two types of data which are: primary data and secondary data. Primary data is recieved from first hand sources such as: direct observation, interview, survey, and questionnaire etc. Secondary data is the data that have been collected and recorded by someone else and readily available from other sources.

3.2.2.1. Collecting Primary Data

1. **The Observational Method**

This is a method of primary data collection in which researcher collect data based on their personal observation. In this manner, the researcher examined the problems faced in Aiyura National High School.

2. **Personal Interview Method**

This is a method of primary data collection in which questionnaire is used as a data collection tool. Here, the researcher interview School staff, student and the parent of the student of Aiyura National High School through social net works in which the valid data has been collected.

3. **Telephone Interview Method**

This is one of the most significant primary data colection methods. The significant features of the telephone interview are: selecting telephone numbers, call timing, call outcomes and call report. Telephone interview is known as dominant and cost-effective method because of the following reasons:

Higher chance to reach the respondents at any place (geography).

Saving travel time and cost.

Low overal interview conducting time of sample as compared to other methods.

Higher changes of random selection of units among the population having telephone connections.

3.2.2.2. Collecting Secondary Data

Secondary data is the data that have been collected and recorded by someone else and readily available from other sources etc. . In this research, the researcher collected data from previous research, web information, and historical data and information about Aiyura national high school.

3.2.3. Method and System Development Approach

In this section, it explains about the systems approach, the development of systems, methods of analysis and design analysis tools. Following is the description of the approach and system development.

3.2.3.1. Systems Approach Method

The method the researcher used in system approach is the Object-Oriented Systems Approach and is visualized with UML (Unified Modeling Language) diagrams such as Use Case Diagrams, Activity Diagrams, Sequence Diagrams, Class Diagrams, Collaboration Diagrams, Component Diagrams, and Deployment Diagrams.

3.2.3.2. Systems Development Method

The system development method used in the research is the Prototype Model. The Software Prototying refers to building software application protype whcih displays the functionality of the product underdevelopment but may not actually hold the exact logic of the original software.

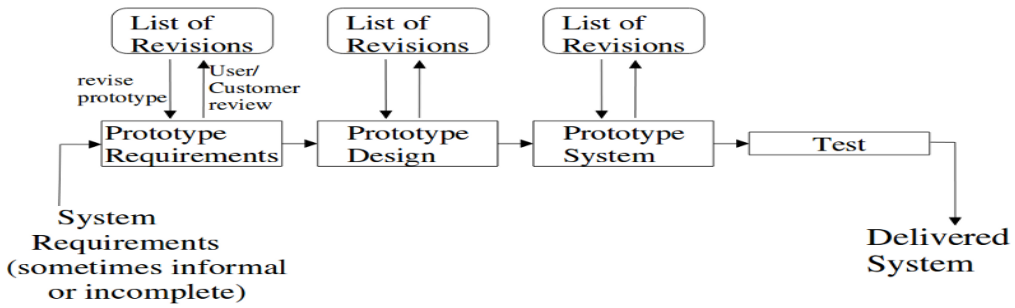


Figure 3.2 Prototype Model (Source:Learnwithkamal.press.com)

Following is the approach taken to design Aiyura National High School student monitoring System's software prototype:

1. *Prototype Requirements:* This step involves understanding the very basics system requirements of Aiyura National High School system especially in terms of user interface. The more intericate details of the internal design and external aspects like performance and security were ignored at this stage.
2. *Prototype Desing:* The Prototype Design specifies the kind of objects to create using a prototypical instance. Prototypes of new products are often built prior to full production, but in this example, the prototype is passive and does not participate in copying itself. The mitotic division of a cell - resulting in two identical cells - is an example of a prototype that plays an active role in copying itself and thus, demonstrates the Prototype pattern. When a cell splits, two cells of identical genotype result. In other words, the cell clones itself.
3. *Prototype System:* In the System Development Life Cycle (SDLC) prototyping model, a basic version of a system is built, tested and tha reworked as necessary until an acceptable prototype is finally achieved from which the complete system or product can now be developed.
4. *Prototype Test:* Prototype Testing is conducted with the intent of finding defects before the website goes live. Online Prototype Testing allows seamlessly collecting quantitative, qualitative, and behavioral data while evaluating the user experience.

3.2.3.3. Analysis and Design Tools

With a systems approach that is object-oriented, the researcher used is a modeling language called the Unified Modeling Language (UML). According to IBM (ibm.com website), UML is a visual language for specifying, constructing, and documenting the artifacts of systems. Here the developing system is visualized by the following UML diagrams:

3.2.4. Testing Software

There is a lot of testing techniques that can be used to test a software, including: Black Box Testing and White Box Testing. For software testing that is done in this project is the Black Box Testing.

RESULT AND DISCUSSIONS

4.1. System Design

System design is the process of defining the components, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development.

4.1.1. System Design Objective

1. The application of the web-based Aiyura National High School Student Attendance Monitoring System that can facilitate register student and a parent as a parent of a student.
2. The web-based system that can produce attendance report of student in less time involving less manpower accurately and efficiently.
3. The new system that could facilitate attendance record keeping by home room teacher adequately.
4. The web-based system that will facilitate parent to view their children's attendance report online.

4.1.2. Proposed System Overview

The proposed system for Aiyura national high school student attendance monitoring system is particulary a web-based system that uses the concept of client-server, in which the client uses a browser while PHP and MySql are used as the server. The clients can access these applications through using the internet.

4.4. Testing

4.4.2. Cases and Test Results

Here is the case to test the software that has been designed using the method which is based on the blackbox testing plans tables above.

1. Login admin

Tabel 4.9 Cases and Test Results for Admin section

No	Menu	Test Cases	Test ItemScenario	Expected Results	Testing Results
1	Admin	Display user Login	Choosing a login form to the user	When opening the application, the login form will be displayed to the user	[**X**] Accepted [ ] Denied
2	Administrative Menu	Display Manage Student	Selecting a Form to add Student	When choosing Add, the form will displayed to add student	[**X**] Accepted [ ] Denied
		Display Manage Class	Choosing a form to add Classes for student	When selecting the Add option, a form will be shown to add class	[**X**] Accepted [ ] Denied
		Display Manage Subject Teacher	Select a form to add Subject Teacher	When selecting the option Add, a form will be displayed to add subject teacher.	[**X**] Accepted [ ] Denied
		Display Attendance	Select a form to view attendance	When selecting the option View, a form will be displayed to attendance.	[**X**] Accepted [ ] Denied

2. Login Home Room Teacher

Tabel 4.10 Cases and Test Results for Home Room Teacher section

No	Menu	Test Cases	Test ItemScenario	Expected Results	Testing Results

1	Home Room Teacher	Display user Login	Choosing a login form to the user	When opening the application, a user login form will be shown	[**X**] Accepted [ ] Denied
2	Home Rome Teacher Menu	Display Add Attendance	Selecting a form to add attendance	When selecting the option Add, the add attendance form displayed to add attendance	[**X**] Accepted [ ] Denied
		Display View Attendance	Selecting View to view attendance of a student	When choosing School Year, Teacher, Class and Subject, a form will be displayed to view attendance	[**X**] Accepted [ ] Denied

3. Login Parent

Tabel 4.11 Cases and Test Results for Parent section

No	Menu	Test Cases	Test ItemScenario	Expected Results	Testing Results
1	Parent	Display user Login	Choosing a login form to the user	When opening the application, a user login form will be shown	[**X**] Accepted [ ] Denied
2	Parent Menu	Display view Attendance	Selecting a form to view attendance	When choosing School Year, Teacher, Class and Subject, a form will be displayed to view attendance	[**X**] Accepted [ ] Denied

4.4.3. Conclusion of Testing Results

Based on the test results with sample test cases above, it can be concluded that this software is free of syntax errors and can functionally produce the results as expected by the different users.

CONCLUSSIONS AND SUGGESTIONS

5.1. Conclusions

The conclusion of this research titled “Aiyura National High School Student Attendance Monitoring System" is as follows:

1. The application can manage student and parent (register someone as a student of a school and parent as a parent of a student) offline, manage classes of student, facilitate record keeping of student’s attendance daily and can allow parents to view attendance of their student’s online if the parent is recorded by the system as a parent of the student.
2. This application can enables an effective record keeping of student attendance in a well-organized manner.
3. This application will facilitate parents to view the attendance of their children online whenever they wish to in order to keep track of their children attendance in school. This may allow parents to apply some disciplinary measures and well informed decision to make regarding their children.

5.2. Suggestions

This Student Attendance Monitoring system still needs to be improved and may have many short-comings. Therefore, it can be reviewed and re-developed further to add more features or functions to the current application. Here are some suggestions of features or functions that can be added to this application:

1. Online registration for both student and parent will be added to enable student and parent to register online.
2. The application can be improved to add generate transcript, class timetable, report card and add latest notice of the school.

3. The application can be improved to facilitate parent, teacher and administration to communicate via online.

BIBLIOGRAPHY

[1] “Paul Smith, (23 oct 2013), great benefits of technology in education” [online] 2015, available: http://edtechreview.in/news/705-benefits-of-technology-in-education.

[2] “Machlup, (1983, 642), Understanding Information” [online]2015, available: https://www.google.co.id/search?

[3] Jeffrey A. Hoffer, V. Ramesh and Heikki Topi. 2011. Modern database Management. Tenth Edition. Pearson Education.

[4] Mike O’Docherty. 2005. Object Oriented Analysis and Design: Understanding System Development with UML 2.0. John Wiley & Sons, Ltd.

[5] “Liberty Dhliway, (MIS 2011/2012), Understanding system information”[online]2015’available: https https://www.google.co.id/search?

[6] Wahana Komputer. 2011. Mastering CMS Programming with PHP & My SQL. Penerbit ANDI, Yogyakarta.

[7] Whitten and Bentley. 2007. Systems Analysis and Design Methods. Seventh Edition. McGraw-Hill.