

e-Kehadiran: A Web Based Tools for Controlling and Monitoring Student's Absence Misconduct Using Open Source Technology

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Abstract;

The problem of school absenteeism is a phenomenon of student's misbehaviour that is becoming increase among primary, secondary and higher institution. Manual recording system implemented in school resulted in late analysis of attendance record which in the end contributes in difficulty to enforce appropriate actions. Thus an open source based system is proposed and developed to overcome the problem is called e-Kehadiran. This e-Kehadiran involves all school management such as District Education Department (PPD), Parent and Teacher Association (PIBG), State Education Department (JPN), Ministry of Education Malaysia (KPM) and parents in monitoring and controlling student's attendance via online.

Keywords: *Open Source Technology, Student's Misbehavior, Web Based Application and Discipline.*

I. INTRODUCTION

What is *e-Kehadiran*? It is a system designed to assist accurately in student's attendance record. The system will record daily attendance for the current financial year. Maybe some of us will question whether this kind of system really needed in our school?. Thus we will brief on several management issues which are still exist in school. The issue is more related to disciplinary cases unit and student's affair unit. According to national newscaster, Berita Harian and Harian Metro dated 28th Dec 2010, the percentage of wrong doing or misbehaviour cases in 2010 are still under controlled that is below 3%. The source of this information is obtained from an online *e-Disiplin* system and *Sistem Salah Laku Murid* (SSDM). Among the misbehaviour and misconduct cases, the top case goes to 'ponteng' or *play hookey* which is 19,545 cases from the total of 5 million students. As a result, starting by early 2011, Majlis Aspirasi Pemangkin Nasional (MAPAN) has initiated the motivation campaign on the importance of school attendance [1][2].

The difficulty in recognizing those disciplinary cases is actually caused by the lack of direct access to the current system. Thus this paper is proposed to implement an online access pertaining to student's attendance record. Through online, class teacher, disciplinary teacher, student affair (HEM), principal or headmaster, student management committee and district, student management committee and state or daily school management unit, KPM, PIBG and parent are all can access at anyhow, anytime and anywhere.

II. CURRENT SYSTEM

Manual attendance record book will result in late compilation of attendance data because of collecting and compiling process needs to be done by each mandated class teacher. Then the total attendance record has to be entered into a computerized system by using MS Excel. Then it will be compiled and collected by officer in charge before it is handed over to PPD in electronic email or by sending in softcopy

or hardcopy. Later on, PPD will compile all the information based on school which controlled under that particular PPD. Once finished compiling, it will be sent to JPN by electronic email or also by sending softcopy or hardcopy. JPN will then analyze those recorded data and the new information will be sent to KPM. Then KPM will conduct an overall analysis before the overall statistics is obtained which in fact is done in 3 to 6 months time [3].

The problem of late processing and analyzing on student's attendance will contribute to more and more chain problems which in fact that those attendance analysis could be obtained at the earlier stage. Below are several types of problems which are faced in every day, week, month or even years:

1. *Difficulties to get student's attendance summary every day.*
2. *Difficulties to detect the student's current status i.e. school transfer, quit or being terminated.*
3. *Difficulties to get overall student's enrolment everyday*
4. *Difficulties to get student's attendance enrolment everyday*
5. *Difficulties to get student's absenteeism enrolment everyday*
6. *Difficulties to get student's absenteeism list everyday*
7. *Difficulties to get total student's attendance everyday*
8. *Difficulties to detect enrolment, statistics and play hooky list everyday*
9. *Difficulties to detect enrolment, statistics and student's late attendance list everyday*
10. *Difficulties to obtain student's being expelled from school list*
11. *Late to close student's attendance book*
12. *Data recorded in SMM is not synchronized with the total number of students in school*
13. *Accuracy in student's profile record is in doubt*

In truth, there's a lot more problems faced by school management. It is more burden to those accountable person like principal, vice principal, data teacher, discipline teacher, media teacher and counselling teacher to access the preferred data and later on to be reported to the respective parties [4].

When it is difficult to obtain required data by which at the same time those data need to be given the report in urgent basis, thus the school management will try every possible way to achieve those data. In practice, we are enforced to trace back on the student's attendance record book, student's personal file and many other resources to fulfil whatever our superior's requirement. Once the burden getting increase, the respective person will be in stress whereas the submission dateline is approaching. As a result, those data given basically will be in vague [5]. Then the 'vague' data is sent to PPD/PPB, JPN and KPM upon reaching cabinet level. The issue is that the data reported is accurate? Is the data presenting the real situation? Will KPM plan a detailed action to overcome the issue? What about the allocated budget in every Malaysia Plan and National Budget?

III. APPROACHES IN HANDLING STUDENT'S ATTENDANCE

A. System Development via Web Technology

In Malaysia, internet has a great impact to social lifestyle, email system, chat channel, blogs and group discussion are some of the famous application used among the internet users. Many has been exposed to web technology in their daily routine. The basic internet and web concept must be well understood before web technology can be adopted in the information communication technology infrastructure [6].

B. Objectives of e-Kehadiran System Development

The objectives of *e-Kehadiran* is to strengthen overall student's attendance management. Detailed explanation are :

1. To conduct survey and analysis for the current manual system application.
2. To design and develop *e-Kehadiran* system model.
3. To develop *e-Kehadiran* system according to proposed system model.
4. To implement and test proposed *e-Kehadiran* system
5. To document the developed *e-Kehadiran* system

C. System Design of e-Kehadiran

In designing the system, data and database are the most important component. Data is a facts about thing, people, entity or event. Whereas database is a collection of related data shared by several category of user to fulfill many organizational requirement. The database is a part an information system. Information system involves the activity of collecting, keeping and retrieving data and processing and managing data.

Database system management (DBMS) is an application software to enable user to create, update, alter, maintain and manage data other than providing control access to the required data and information. Data on student's disciplinary cases are stored based on unique code [7].

Requirement to Integrate WEB-DBMS of e-Kehadiran

The *e-Kehadiran* system is based on 3-tier architecture. Client is accountable only at the client interface and operates on several simple logical processes such as input validation. Application for logical process is located at a different tier. Physically, this architecture is connected to client and database server through Local Area Network (LAN) or Wide Area Network (WAN). The advantages of 3-tier architecture are depicted as below :

- (a) Maintenance application is centralized with a transmission of logical task to many end users in a typical service application.
- (b) Additional and modification facility contributes to ease of modifying and replacing without affecting other tier.
- (c) Additional balancing is done easily by segregating logical task from its database function.

The illustration of 3-tier architectures in Figure 1 is very much relates to web environment by which the web browser will act as a client and web service will act as the application service. Furthermore the architecture can be added until the nth-tier that makes the architecture more flexible [8]. For example, the middle tier can be clustered into 2 with one tier for web service and another two tier are for application service.

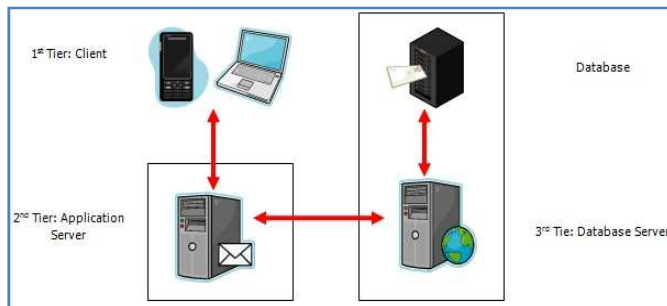


Figure 1 : Client-server 3-tier architecture

The advantages of web-SPPD are as below :

- (1) **Graphical Interface** – the feature enables easy access to database.
- (2) **Standard** – HTML is the client-server friendly standard by which HTML document can be read by client at any machine with internet facility.
- (3) **Multi platform independent** – Web browser is obtained through any computer platform. This feature enables user from different platform and operating system to access database from different places which makes the information is accessed in 'split second'.
- (4) **Network access transparency** – The great benefit of web is the network access transparency which contributes to easy access, reduced in requirement for the more expensive network software and easy communication with other platform.
- (5) **Innovation** – With the internet platform, it enables the organization to create new services and looking for a new customer through online application. The great potential in innovation is according to product sales and services through web.

Approaches in Integrating Web-DBMS for e-Kehadiran

In this section, student's attendance database will be integrated in web environment as below :

- (a) PHP (Preprocessor Hypertext) → the script language
- (b) MySQL → the database application
- (c) Apache → the web browser

The above list of software application are all freeware. Figure 2 depicted on Pre-Hypertext Processor (PHP) implementation in the 3-tier architecture [8].

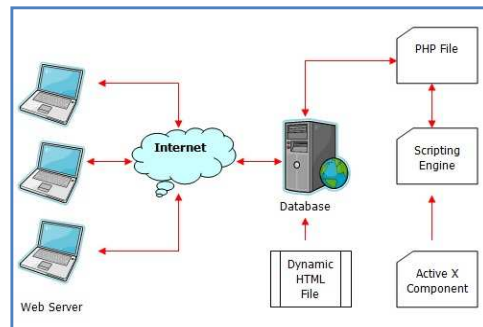


Figure 2 : PHP implementation architecture

Overall Architecture of e-Kehadiran

Figure 3 illustrates on overall development of *e-Kehadiran*. The modules in the system are using object oriented software and tools with optimum security assurance. On the other hand, the database access is done either through internet and intranet.

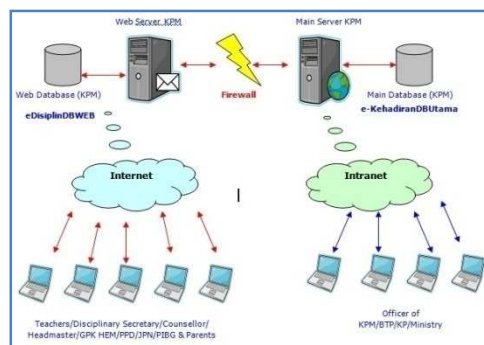


Figure 3. : Illustration of *e-Kehadiran* system

D. Proposed System Component for *e-Kehadiran*

Different groups of user for *e-Kehadiran* are as below;

1. School teacher
2. Parent
3. Counselling and guidance teacher
4. Secretary of Discipline unit
5. Headmaster/Principal/Supervisor/GPK HEM
6. District and State Department Officer
7. Kementerian Muridan Malaysia
8. System Administrator

The proposed modules in *e-Kehadiran* system that will be developed in the open source platform are as follows:

1. **System Access Module** – This module acts as a basis and important in web system development. Access Control List (ACL) is controlled automatically with the unique design of password. It also provides user with public access through simple query system. The access is done through web page. Public and client access is 'selective' whereby the level or access category will be determined by the security password provided.
2. **Data Entry Module** - This module provides facility for end user such as teacher, coordinator, discipline teacher which can access through web main server (**e-KehadiranDBWEB**) to enter data or to record on student's attendance.
3. **Attendance Record Module** – This module provides facility for system administrator to update related information on previous or new attendance list. The update process includes add, delete or modify approved attendance record by the appropriate committee meeting. The module also serves as a room to announce and publish any counselling activities.
4. **Update Module** – This module provides user to update information which is already stored in main database (**e-KehadiranDBUtama**) with input given by end user. The update process to all input data either is done in 'one lump sum' or according to detail clustering by the end user.
5. **Analysis & Report Generation Module** – This module serves as a tool to generate report and analysis based on merit system. The standard value in this merit system is already approved by KPM. Warning letter and data analysis is generated automatically according to the needed category by user subject to the access control to attendance database.
6. **Information Transfer & Backup Module** – This module allows user to transfer information from **e-KehadiranDBUtama** database to **e-KehadiranDBWEB** database for public or client access in the web server environment.

All of *e-Kehadiran* modules are illustrated in Figure 4 :

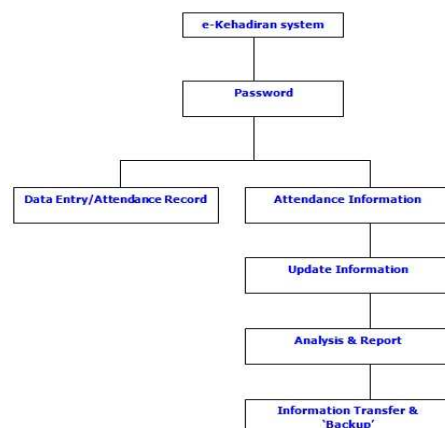


Figure 4 : Hierarchical modules in e-Kehadiran system

E. Work Flow of e-Kehadiran System

The process and work flow for e-Kehadiran system which to be developed is in Figure 5. The procedure to charge or grant any punishment to student depend upon the attendance input entered through the system which is validated by Student Attendance Committee Member. The members of this committee include Discipline Secretary, Principal/GPK HEM/Supervisor and Counseling Teacher. The e-Kehadiran system will issue printing or updating of student’s attendance record automatically.

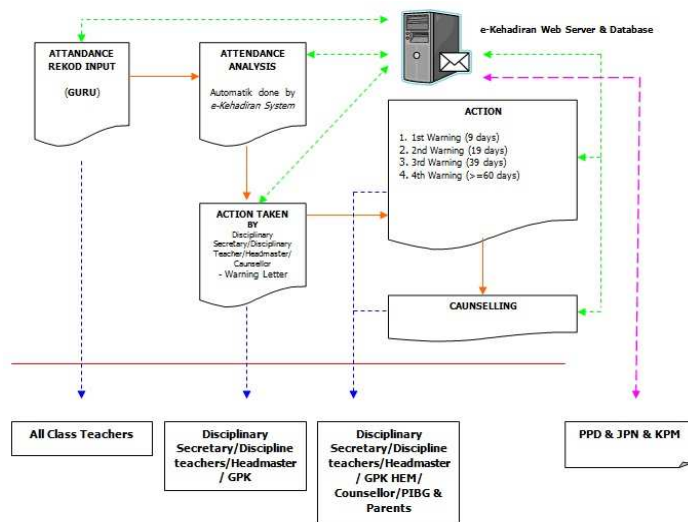


Figure 5 : e-Kehadiran process and work flow

F. Web Server Environment for e-Kehadiran System

The use of open source software tools can reduce cost as well as flexible and easy maintenance. The web browser software is Apache and web page development and processing engine is using PHP scripting language while the web database is MySQL.

IV. e-Kehadiran SYSTEM INTERFACES

Figure 6 to figure 11 depict on several interfaces of e-Kehadiran system.

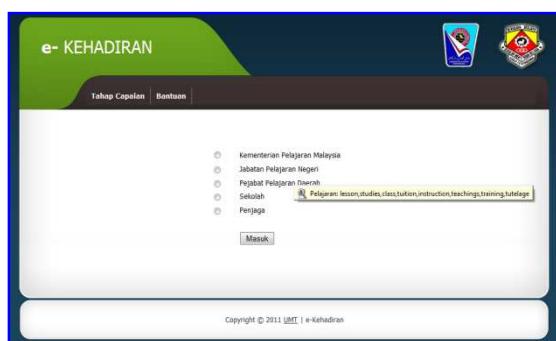


Figure 6: Main Menu



Figure 7 : Login & Password

ID	Nama/No. ID	Hadir	Kehadiran	Status
1	ABDUL MUJIB BIN AHMAD	0	0	0
2	ABDUL MUJIB BIN AHMAD	0	0	0
3	ABDUL MUJIB BIN AHMAD	0	0	0
4	ABDUL MUJIB BIN AHMAD	0	0	0
5	ABDUL MUJIB BIN AHMAD	0	0	0

Figure 8: Attendance record Input

ID	Nama/No. ID	Hadir	Kehadiran	Status
1	ABDUL MUJIB BIN AHMAD	0	0	0
2	ABDUL MUJIB BIN AHMAD	0	0	0
3	ABDUL MUJIB BIN AHMAD	0	0	0
4	ABDUL MUJIB BIN AHMAD	0	0	0
5	ABDUL MUJIB BIN AHMAD	0	0	0

Figure 9: Attendance Record Update

ID	Nama/No. ID	Senin	Selasa	Rabu	Kamis	Jum	Sab	Ahad
1	ABDUL MUJIB BIN AHMAD							
2	ABDUL MUJIB BIN AHMAD							
3	ABDUL MUJIB BIN AHMAD							
4	ABDUL MUJIB BIN AHMAD							
5	ABDUL MUJIB BIN AHMAD							

Figure 10: Current Attendance List



Figure 11 : Current Report Analysis

V. CONCLUSION

As a summary, the responsibility in educating society is a good effort and will be granted a big 'return' by God. Thus parent with school management should have played an important role in educating their descendants. The human touch with all three (3) main mechanism i.e. auditory, visual or kinestatic should have been imposed to our young or even mature generation in order to develop a 'bright and shiny' human capital. The system and technology is just as a 'backbone' and 'catalyst' to fasten and smoothen the whole process of human capital development. The proposed system is hoped to be used by all parties to handle the problem in student's attendance before the more severe issues in discipline can be triggered.

References :

- Harian Metro. Masalah disiplin pelajar masih terkawal. http://www.hmetro.com.my/myMetro/articles/Masalahdisiplinpelajarmasihterkawal/Article/index_html. 28 December 2010.
- Berita Harian. Masalah Salah Laku disiplin masih Terkawal. <http://www.bharian.com.my/.../Masalahsalahlakudisiplinpelajarmasihterkawal/Article/>. 28 December 2010.
- Man M., Saman M.Y.M., Hassan M.N., Zaki F.A.M, Noor N.M.M. (2008). e-Disiplin: Penyelidikan dan Pembangunan Sistem Pemantauan dan Pengawasan Disiplin Pelajar Berasaskan Teknologi Web. Proceeding of National Student Development Conferences (NASDEC2008). 22-23 October 2008.
- Arshad. Ponteng Antara Masalah Disiplin Pelajar Sekolah. <http://blog.azhad.com/2008/02/ponteng-antara-masalah-disiplin-pelajar.html>. 2008.
- Rahman, A.N.A. Faktor-faktor yang mendorong pelajar Felda ponteng sekolah: satu kajian di sekolah menengah di Air Tawar, Kota Tinggi, Johor. Master Thesis, Universiti Teknologi Malaysia. Mac, 2004.
- Elmasri R. And Navathe S. Fundamentals of Database Systems. 4th edition Addison-Wesley. 2007.
- Tsantis L., & Castellani J., Enhancing learning environments through solution-based knowledge discovery tools: Forecasting of self-perpetuating systemic reform, Journal Special Education Technology, 16 (4), 2001.
- Man M., Saman M.Y.M., Bakar W.A.W.A, (2007). SmartChecker: real Time Monitoring and Tracking Students Class Attendance Using Wireless PDA. Proceeding of Mobile Online Learning Technology and Application 2007 (MoLTA'07, New Zealand). Pg. 86 – 93. 19-20 February 2007.