

E-Management: A Proposed Practice in Traditional and Electronic Educational Environment

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Abstract

School Management Systems (SMSs) provides a single database design and broad set of functionalities that benefit all education stakeholders: administrators, teachers, students and their parents in a secure and authenticated manner. It automates classroom activities and administrative tasks, and establishes a communication link between school administration on one side and students and their parents on the other side. This paper describes the features of the School e-Management System (SeMS) developed for the benefit of the Al-Ain Model School. The main goal of the system was to provide e-services and communication facilities for all the beneficiaries of the school. It provides access to the system by different users such as administrators, teachers, students and their parents. Access privileges and functionalities differ for each group of users. All day-to-day school business are converted to electronic version and made available online.

Abstrak

Sistem Pengurusan Sekolah (SPS) memberikan suatu rekaan pangkalan data tunggal dan suatu set lebar fungsi-fungsi yang bermanfaat kepada kesemua pemegang amanah pendidikan: pentadbir, guru, pelajar dan ibu-bapa di dalam suatu tatacara yang kemas dan sah. Ia mengautomasikan aktiviti bilik darjah dan tugas pentadbiran, dan mengadakan suatu pautan komunikasi antara pentadbiran sekolah di sebelah pihak dan para pelajar dengan ibu-bapa mereka di sebelah pihak yang lain. Artikel ini memperihalkan ciri-ciri Sistem e-Pengurusan Sekolah yang dikembangkan untuk manfaat Sekolah Model Al-Ain. Tujuan utama sistem ialah untuk menyediakan e-khidmat dan fasiliti komunikasi kepada kesemua warga sekolah. Ia juga menyediakan akses kepada sistem oleh pelbagai pengguna seperti pentadbir, guru, pelajar dan ibu-bapa mereka. Fungsi dan keistimewaan akses berbeza untuk setiap kumpulan pengguna. Kesemua urusan harian sekolah ditukarkan kepada versi elektronik dan dapat dicapai secara *online*.

Introduction

The Internet seems to be a virtually perfect instrument of education that offers the utmost convenience to students while offering endless possibilities for innovative teaching (Sharma & Maleyeff, 2003; Applebom, 1999). The Internet reaches non-traditional students, provides interactions with industry experts and seems to provide the panacea of a self-paced, convenient learning environment (Siegal, 1996).

Schools worldwide encourage their teachers to interact with the parents of their students. The common name for this type of interaction is Parent-Teacher Association. As educational programs are becoming more sophisticated and complicated, the need for interaction between teachers and parents becomes more essential in the process of education. Similar to other organizations and businesses, educational institutions became more interested in deploying Internet technologies towards enhancing their educational programs, their administration systems, and the interaction of their teachers with the parents of their students (Harmain & Radaideh, 2003; National system; Michigan system; Texas system).

Today, more and more schools are either planning or expanding their school computer facilities. Some school offer Internet access to enable educators and students to access online material. However, most of today's schools are still lack of smart solutions for their administration systems. By smart solutions we mean that information technology should not be regarded as a means to deliver massive amount of information, but to also help users to fulfill their mission in the workplace (Radaideh, Horani & Harmain, 2004; Han & Gilbert, 2000).

In today's technology world, many companies and organizations are moving towards creating optimal electronic school administration solutions. These systems are mostly web-based and may use Internet applications such as online forums, FTP, emails and variety of computer applications such as databases. The web simply provides the familiar interface by which school members can access and use these applications (McCormack & Jones, 1998).

E-School Administration Systems (E-SAS) integrate the Internet computer applications to the many functions of the school system and improve communication between its parties. An ESAS is a new trend that utilizes the Internet towards aiding the process of school administration. It can be best defined as virtual online classrooms that attempt to serve the purpose of a real-life school (Han & Gilbert, 2000).

There are many commercial E-SAS systems available commercially. However, it is not of the scope of this paper to evaluate and compare these systems. For more details about these systems and a comparison between them, see Radaideh et al. (Radaideh, Horani & Harmain, 2004). A few available system were received, viz.,

Smart e-School - It is an electronic learning system developed by the UCLA Center for Digital Innovation (UCLA, 2004). It is a new approach that uses recent digital technology to teach primary and secondary students. The system is an integrated and self-contained approach to instruction designed to suit students with various learning styles. As a result Smart e-School can help each student achieve his or her individual academic potential. It integrates coordination efforts from parents, teachers, students and administrators. It encompasses features that use a digital technology approach to stimulate students' curiosity and engage their strong participation.

Digitronics Software Complete School - This system is an educational administration software (Digitronics Software, 2004). California School Disitrcets have used Complete School to submit state reports through the California School Information Services (CSIS) since 2002. Since then, Complete School has been expanded extensively to meet other requirements and desires including web-based teacher, parent, and student access. It has modules for students, teachers, libraries, personnel and business.

EdSoft Software (Administration) - This system provides the capability for definition, management and reporting of administrative and demographic data (EdSoft, 2004).

Limitless School Space - It is a complete school and district information management solution (Limitless, 2004).

RobinSoft's GradPro - This is a college administrative solution for tracking prospects and managing student and financial records (RobinSoft, 2004). It is an integrated information management system to track prospects and applicants and manage student academic and financial records. Recruiting, admissions, the registrar, advisors, teachers, and business offices enjoy the customizable features and integration of this campus management software.

SchoolPro's SchoolPro 2000 - It is a school administrative solution. Available modules are Administration, Registrar, Development and Payroll (SchoolPro, 2004).

Netschool Group's Conductor for Schools - Conductor is an integrated web based (NET) management system specifically designed for educational institutions (NetsGroup,2004). Conductor for K-12 addresses the needs of private schools, public school districts and schools, and charter schools.

Apple Power School - It is a Web-based student information system for K-12 schools and school districts (Apple PowerSchool, 2004) - It simplifies data-driven decision making by providing real-time information to all stakeholders - over the Internet.

Jenzabar Internet Campus Solution CX - It provides components for students, financial, institutional advancement, HR, finance and management reporting (Jenzabar, 2004). Jenzabar's Internet Campus Solution delivers the benefits of an integrated, intelligent, internet-based system to the educational campus.

Management Information Group SIRS-3 - It is a complete student Information Record System (Management, 2004). It provides the building blocks to meet any specific record-keeping needs. Each software module is developed with specific standards and features that provide common utility and consistency of operation throughout the entire system. Modules may be purchased as a part of a bundled solution or as add-ons to the foundation of our cost-effective Open Database (ODBC) system.

This paper presents a new proposed student's educational information management system called School e-Management System (SeMS) designed and developed by the authors to the benefit of the Al-Ain Model School, UAE. It provides different levels of users' access, specifically, administrators, teachers, students and parents. All day-to-day school business are converted to electronic version and made available online. The system requirements, design, development, services and functionalities are described in subsequent sections.

System Requirements

A comprehensive electronic school management system that covers all school every-day activities is required. The system is an online system that enables easy access and efficient communication to all the school stakeholders. Those stakeholders are classified as: administrators, teachers and students and their parents. Each of these categories will have predefined access rights and privileges and will be able to see and/or modify classified information. Web-based user interface must be well defined and simple to use. On-line immediate assistance must be provided. This will be in a form of pop-up windows that appear automatically whenever appropriate. When a user selects a field, the pop-up window will show all the possible entries to choose from. This will serve in two ways, first it allows the entry of only accepted information and second it makes the system faster by avoiding the need for messages like "invalid data, try again". In the following sections, we will identify the main requirements for each of the three categories of users.

Administrator Access

The administrator would have the full access to all the following sub-categories: Employees, Courses, Students, Schedules, Grades, Comments, Exam Schedules, and School Events.

Teacher Access

The teacher would have a different set subcategories, these are: Class schedule, Attendance, Homework, Grades, Comments, Exam Schedule, and School Activities.

Student Access

The student/parent would have yet another different set of functional access. These are: Class schedule, Homework, Grades, Comments, Exam schedule, and School activities. A student/parent has to have access to information regarding his/her class section only. To do that, a student/parent has enter his/her own name, ID, class level and section number.

Reports

The system would generate a variety of dedicated reports that would include employees, students, and courses.

System Design and Implementation

The system was carefully designed to fulfill all system requirements. Oracle database and design tools were used to implement the system. The conceptual and physical data models are shown in Figure 1. The user interface was designed for easy use. Users do not need real training to use the system as it was made self-explanatory with built in help. The system contains a large number of different screens that cover all the activities and meet the system requirements. However, it is out of the scope of this paper to describe all these screens, instead, samples of snapshots of some screens are given in Figures 2 to 5.

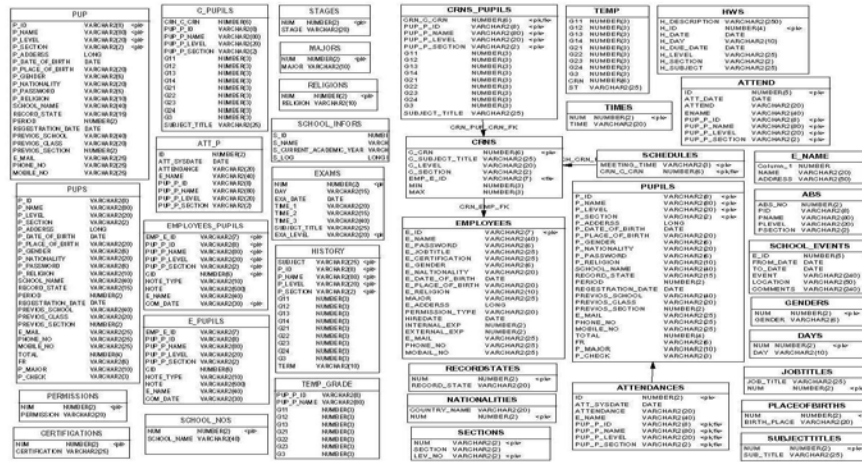


Figure 1 The Physical Data Model

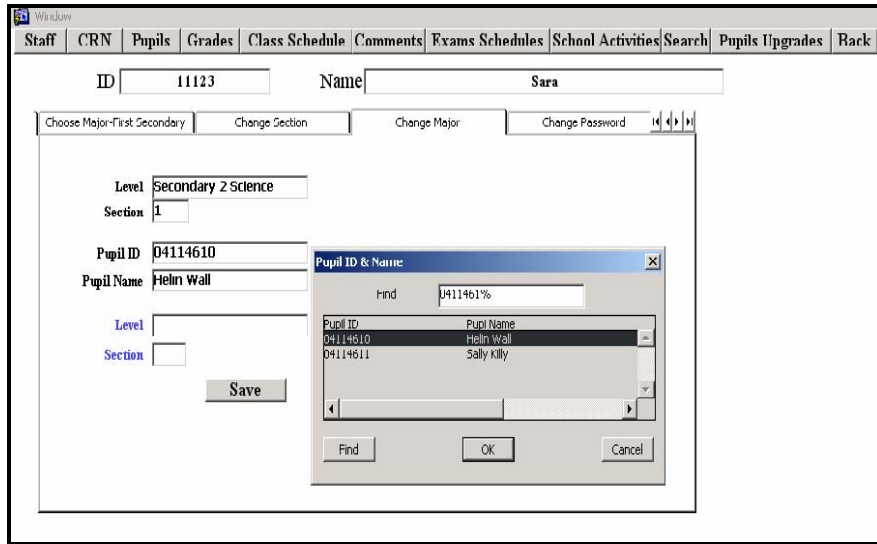


Figure 2 A screen from the student category for administrator

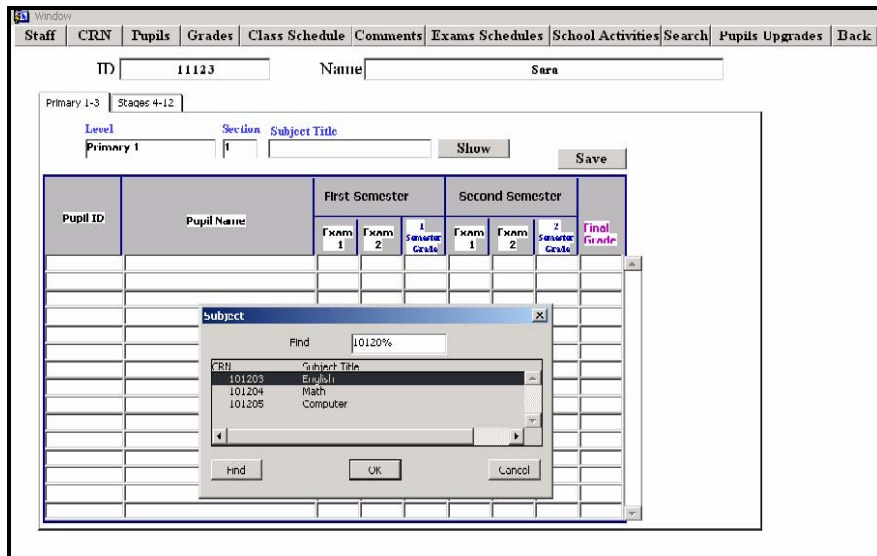


Figure 3 A screen from the exams schedule for administrator

| Classes Schedule | Homeworks | Grades | Comments | Exams Schedule | School Activities | Rank | | |
|--------------------------|-----------|--------------------------|-----------|----------------|-------------------|---------|-----------|-----------|
| Pupil ID: 04114608 | | Pupil Name: Matelda Dany | | | | | | |
| Level: Secondary 1 | | Section: 1 | | | | | | |
| Classes Schedule | | | | | | | | |
| Pupil Name: Matelda Dany | | Show | | | | | | |
| | First | Second | Third | Fourth | Fifth | Sixth | Seventh | Eighth |
| Saturday | Chemistry | History | | History | | Science | Math | Chemistry |
| Sunday | | Science | Chemistry | | History | | Math | History |
| Monday | Math | | Science | History | Math | | Chemistry | Math |
| Thursday | | History | Chemistry | Math | Science | | History | |
| Wednesday | | History | Science | Math | Chemistry | | | Math |
| | Skills 1 | Comon | Skills 2 | Activity | | | | |
| Saturday | | Math | | Science | | | | |
| Sunday | | Science | | | | | | |
| Monday | | | Science | | | | | |
| Thursday | | Math | | | | | | |

Figure 4 A student schedule

| | | | | | |
|--------------------|---------|----------------------|-----------------|----------------|---------|
| CRN | 101201 | | | | |
| Level | Level 1 | Section | 1 | Subject | English |
| Employee ID | 12 | Employee Name | Khalid Mohammed | | |
| CRN | 101202 | | | | |
| Level | level 1 | Section | 1 | Subject | Arabic |
| Employee ID | 12 | Employee Name | Khalid Mohammed | | |
| CRN | 101203 | | | | |
| Level | Level 1 | Section | 1 | Subject | Science |
| Employee ID | 12 | Employee Name | Khalid Mohammed | | |
| CRN | 101204 | | | | |
| Level | Level 1 | Section | 1 | Subject | Math |
| Employee ID | 12 | Employee Name | Khalid Mohammed | | |

Figure 5 A sample report

Conclusion

School e-Management System (SeMS) is an e-service system paying attention on the students educational records management that serves Al-Ain Model School. It provides a comprehensive set of electronic online services that cover almost all of the every-day business of the school. It also facilitates the communication between students and their parents on one side and the school's teachers and administrators on the other. With SeMS, functions such as student attendance, grading, discipline can be efficiently managed. Data is entered only once by authorized personnel and will instantly be available in customized report formats, which in turn simplifies teachers and administrative tasks.

Students and their parents can view absences, grades, class schedule, exams schedules and teachers' notes as well as school forthcoming events. Student activities monitoring system provides a single and secure database structure that organizes, stores and retrieves real time information. SeMS provides a flexible modular structure that can be further developed with minor changes. It also accelerates and simplifies communication between teachers, administrators, students, and parents. SeMS is designed with friendly user interfaces that can be easily used by all parties to connect to the school's electronic system.

SeMS is undergoing a trial period in Al-Ain Model School in parallel with the traditional system. Once it passes this period successfully, it can be customized and used in other schools in the UAE with little efforts. Oracle database was used to implement this system. The entity relationship diagram, the logical and physical tables and the 'use case' models were not shown here as authors' main intention is to describe the system features rather than its design.

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