Implementation of Methodologies to Facilitate School Administration and Coalesce Distinct School Counterparts via Web Portal

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Abstract – Web 2.0 technologies have brought new ways of connecting people in social networks for collaboration in various on-line communities. Social network analysis deals with the interactions between individuals by considering them as nodes of a network (graph) whereas their relations are mapped as network edges. So we contemplated about employing the atavism of Socialism at school level. We have come with a prevailing concept of engendering online social platform for schools' administration which we term as "i-SCHOOL". i-School is comprised of multifarious actions imbibed with Social Networking where actors like Admins, Teachers, Parents and Students are linked with academic relations within an online social network. i-School prospect actually simplifies what's considered the most tedious task of administrating the academic activities and interacting with parents by allaying undesirable efforts. The i-School platform maintains information of student attendance, student results and feedback reports of staff. The above aim can be established by furnishing layout structure model i.e. admin, tutor, parent. Here the paper work is drastically curtailed as actors can share records, reports, assessments over network and get analyzed which is the economical dictation of project. This schoolism is exclusively optimized for actors' convenience by deliberately inheriting standard SDLC.

Index Terms – i-School, Web-Portal, Collaborative School Management, Integrated School Administration, Smart Chat.

1. INTRODUCTION

Today, computational advancements, web technologies and computer networks are at their pinnacle. Precisely, their versatility can be employed to bring about the collaboration of school administrative activities to tout cooperation among administrators, teachers, pupils and parents [2, 3]. The advantages of computer processing in terms of efficiency and simplicity is what encouraged proliferation of computer technology's utilization in operation and management of school institutes to buttress the office work and management activities and consequently ameliorate teaching, learning [4, 5]. Despite the abundance of electronic information systems used for distinct activities, the manual method of school management is still followed in secondary schools. Indeed this explicit methodology of administration is indecorous to implement and contains multifarious deficiencies like jotting down records on paper, travail of maintaining daily attendance, face to face direct miscommunication, delayed reporting and inadequate furnishing of information and to parents are really daunting.

World electronic administration systems are performing well exclusively as integrated system for learning either as for pure administrative issues and are articulated for specific activities suggested by university. These implementation was cumbersome, dispersive and one more remarkable difficulty was language – almost all projects are developed in English language which is not easily understood by Indians at primitive level. Therefore this innovative endeavour is not demonstrated at its optimum capacity and unnoticed by school administrators. So we encountered certain impediments viz. i) complexity of already implemented programs, ii) dearth of knowledge to teachers about these programs, iii) massive hardware requirements for the efficient execution of the programs over computers and hefty investment to commence it. In a try to spurn these hurdles, we have come up with approach which is characterized by easy to use mechanisms, user friendly interface with bunch of declarative figures though project is written in English. Also the simplicity is conserved so it will take just an informative user manual for teachers or

any user to confess this application with much reduced price.

2. LITERATURE REVIEW

A number of the existing works have been surveyed with a view to assessing the work already done. The literature survey has been done with the help of primary and secondary sources. The purpose of this study is to describe which aspects of course design and/or instruction are more effective and successful in the online environment than in the face-to-face (F2F) classroom and why and how they impact both students and instructors

2.1. History of Online Education

Web-mediated or online instruction is the fastest growing sector of distance education (U. S. Congressional Web-based Education Commission, 2000). The NCES reports that, "In the 12-month 2000–2001 academic year, there were an estimated 3,077,000 enrolments in all distance education courses offered by 2-year and 4-year institutions [9, 10]. There were an estimated 2,876,000 enrolments in college-level, credit-granting distance education courses, with 82% of these at the undergraduate level "(Waits & Lewis, 2003, p. 1). Additionally, Simonson et al. (2003) state that in 2002 "1,680 institutions offered over 54,000 online courses" (p. 8). One research report indicates those who expect to teach online up through 2011 predict that online courses will account for up to 73% of their teaching load (C. J. Bonk, 2001).

Jefferies and Hussein (1998) reported that teaching faculty construct web pages to help structure students gather data and to provide access to other resources. Students, on the other hand, use email to communicate with their peers and with their tutors. The researchers emphasized the fact that students preferred to email their tutors rather than have face-to-face meetings.[5]

Ojedokun and Owolabi, 2003: Applebee et al., 1997; Adele et al., 1995; Tillman and Ladner, 1992). Marklein (1997) indicates that the use of email by college students in the US is so common that for some of them, "It is like picking up a phone". In one study, researchers used survey data to extrapolate that 9.1 million college student use email regularly and 6.1 million use it almost daily. Some studies have revealed that academic staffs use the Internet in various ways to enhance teaching and learning [5, 6].

Apple Incorporation developed Apple Power School to accelerate teaching and learning through technology. This web-based solution is designed basically to furnish K-12 administrators, teachers, students and parents with secure, upto-the-minute information on student performance including grades, homework and attendance over the internet [1].

Twigg, C. (1999). Improving Learning and Reducing Costs: Redesigning Large-Enrollment Courses [Online]. The Pew Learning and Technology Program. Center for Academic Transformation at Rensselaer Polytechnic Institute. Available: http://www.center.rpi.edu/PewSym/mono1.pdf

3. PROBLEM DEFINITION

All ongoing manual management of school administration, teaching and other school activities might be encountered a number of irregularities. As disadvantages of this type of management we can count disinformation, missing a fair or accurate communication and meticulous miscommunications about grades, absences or behavior in general of the students at the school, whereas should be communicated to the parent / educator /charge of his child, not in time information on parental meetings and other school events. It is evident that the class teachers in high schools can misuse their positions and change confident data and grades in different subjects of other teachers/colleges for granting a bribe. The classical manual method of school management sometimes disables a good monitoring and evidence of students' performances, miss information on parental meetings and other school events.

The school administration officers are in charge for carrying out management tasks and they are using paper based documentation. The process of registering students, forming classes and assigning teachers and class teachers, is done manually by the register administrator where larger effort is needed and unreasonably time consumed. Also, the reports, transcripts and other report documents are produced manually by the class teachers or administration officer which is time consuming, effort requiring and difficult to find and gather all the needed data into the document. If the student is graduated couple of years ago it is difficult task for the administrator to produce reports and transcripts.

Attendance of students is recorded manually by each teacher keeping attendance sheets. The class teacher has to collect the attendance sheets and review and summarize absentees, which is time consuming process. Due to the inefficiency of the current manual management, the need to create a computerized management model arises in order to efficiently handle management tasks. Approach of using electronic school management, a web-services based electronic model that is proposed in this paper will try to prevent these irregularities. This e- model is aimed to be more efficient and easy to use and to enable easy and professional communication, compared to the manual paper based method. It is intended to enable the parents and students reliable and truthful information about their education, efficient and reliable communication of the class teacher to other teachers (colleagues), parents and students and having all their professional and organizational activities in school better reflected. Mainly, it aims an efficient and improved quality of school management.

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used if needed for special purposes.

4. FUNCTIONALITITES OF I-SCHOOL APPLICATION

The main objectives of this service are:

- To enable teachers, students as well as parents to open an account over unified web portal through school administrative officers.

- To hand over the control and privilege to admins to fixate at teachers and students account with additional facility meant for teachers to personally view students' and their respective parents' profile.

- To avail the platform for teachers to generate exams and to let students appear for these exams to examine their qualification.

- To allow teachers to engender electronics score and progress reports to dispatch them on the way to parents.

- To carry out communication among various factors of web portals and regularly keep abreast with the most updated information.

This project enables administrator to permit the authority to teachers, students and parents regarding their registered accounts so all legitimate accounts are maintained over portal. Teachers, students and parents are allowed to lodge a personal account. In addition to it, teachers are given privileges to monitor the registration process of students and parents. Any "non in-charge" user is debarred from interpolating the confident students' profile as it's strongly emphasized in most secured user policy articulated by administrative officers. The students are required to open an account. Students can communicate with their mentors via emails or messages within application only and will have access to all study materials and educational blogs, various articles and assignments. Teachers can prepare exams to consistently testify the academic progress of students, consequently it mandates pupils to appear for the exams periodically. Then teachers supervise those papers and generate reports and grades. These grades are further furnished electronically to their parents. Parents play vital role in students' education hence are direct participant in this network and demonstrate a passive role. His participation means a passive activity; he will be able to review the educational performance of his child (grades and discipline); will be timely, faithfully and correctly informed about the behavior and performance of his child via electronic mails and announcements on their child's profile; to contact the class teacher or any other teacher via email; without any mediation the parent will be notified and get up to date with the general situation and upcoming events in the school via email.

Additionally, i-School offers services such as marking attendance, forming classes, censoring the teachers', student's and parents' accounts. Teachers are able to view, modify, and verify personal profile along with students' profiles. Parents also glance into child's account to inform themselves with the educational performance and acknowledge to the queries from teachers and can impart feedbacks. School directorate are mediators who tract all activities and confirms security within the application.

5. SOFTWARE ENGINEERING DESCRIPTION OF I-SCHOOL MODEL

The system requirements are well analyzed and describe in order to design a correct, reliable and efficient system model. How the system work or how the actors of the system interact with each other to create the functionality of the system is described by use case diagrams. The class diagram show the objects in a system being modeled. Activity or sequence diagrams shows the operational workflow of any component in a system. Functional workflow of the defying i-school model imbibes following functionalities:

- Register/update the teacher
- Admit student
- Register the parents
- Monitor all school activities
- Arrange exams
- Generate reports and regularly furnish to parents
- Appear for the exams
- Demur about the subjective topics
- Ask for the reports/examine reports.

5.1. Use Case Diagram

The following use cases of the system are identified: "Add Student", "Add Parent" "Register /Update Teacher", "Mark Attendance", "Prepare Exams", "Prepare Reports", "Check Reports", "communication". The use case diagram is shown in the Fig 1.

1. THE ACTORS

The actors and their roles which are used in the Use Case

Diagram are:

- **Student**: who is purported to get admitted in school.

- **Teacher**: Class teacher who manages all class activity like attendance and exams

- **Admin**: Who controls all database management issue, maintenance and assign privileges to chat-box.

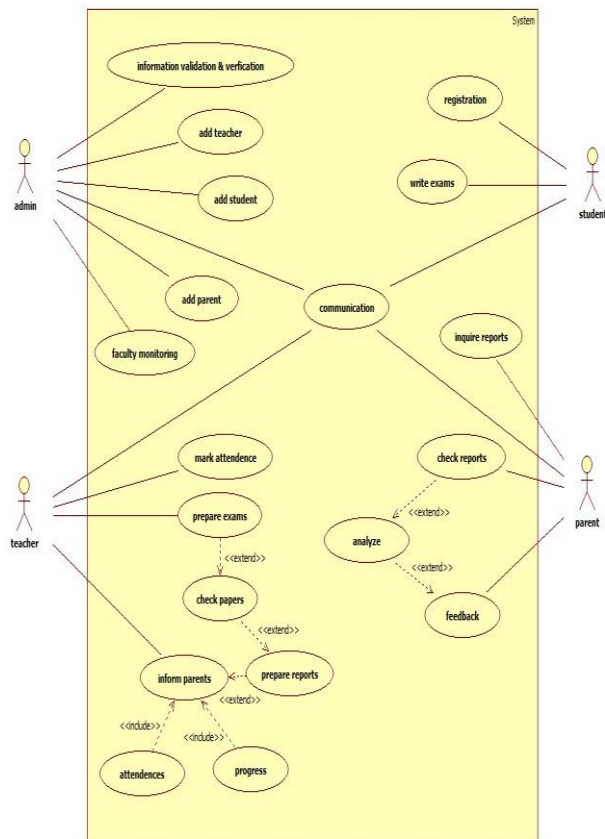- **Parent**: Parent of student who gives feedback to teacher.

Figure 1:[Use case diagram]

V.1.1 DEFINITIONS OF USE CASES

Following structures were developed for each actor and those use cases were accordingly demonstrated by all actors to reach to the conclusion:

a) **Add teacher:** Actor in this use case is school administrator who enrolls any new teacher to the web portals through keen validation and transparent handling of user data.

b) **Add Student:** Actor in this use case is school administrator who enrolls any novice aspirant to the web portals through keen validation and transparent handling of user data.

c) **Add parent:** Actor in this use case is school administrator who enrolls any new parent to the web portals through keen validation and transparent handling of user data.

d) **Faculty Monitoring:** Actor in this use case is Administrator who scans all the feedbacks, reports for any invalid all illicit sensitive information. Officer controls all activities at this stage.

e) **Information verification and validation:** Actor in this use case is Administrator and just prevent the account forgery or impersonation of any of the candidates, officer ensures the confidentiality of each submitted piece of data.

f) **Mark attendance:** Use case in this use case is teacher who notes down the students' attendance on daily basis. This collated information is then supplied to the admin or final database.

g) **Conduct Exam:** Actor in this use case is teacher who consistently designs and conducts exam just for the sake of testifying and assessing the student's progress. These exams are of written morph so they are needed to be checked.

h) **Evaluate papers/Generate Reports:** Actor in this use case is teacher who had conducted exam. His assigned task is to evaluate the papers submitted by students and these are measured in terms of grades. Well organized and meticulous reports are generated by the teacher. Reports are sent to students and parents' email and accounts.

i) **Negotiation:** Actor casted in this use case is student himself who studies about newly taught topics from study material, articles or references. And they are allowed to ask doubts about discursive section in their studies.

j) **Write Exams:** After studying, analyzing and then confessing the respective syllabus actor means student is now supposed to appear for the exams which are requisite for their progression in the further grades.

k) **Inquire Report:** Actor in this use case is parent who wishes to check his child's academic performance and behavioral status in the class. Parents inquire about it by logging on their accounts and requesting for the progress report.

l) **Check Reports:** Actor in this use case is parent again who has access to his account for updating the list reports incident from all previous exams. Therefore parent should go through all the reports and analyze the respective information.

m) **Analyze and Give feedback:** Actor in this use case is parent who is supposed to anticipate the feedbacks about their child's progress and any other questions or recommendations are welcome at this stage.

n) **Communication:** This the most fundamental and cardinal use case of this project where all the components of the system can interact with each other so they are communicated to ameliorate the social health. This platform is open to all counterparts and for any kind of information to share.

6. CONCLUSION

The developed i - School Management System is an integrated system for the organization of school management activities

and processes that serve most of the secondary schools in multiple provinces to replace the manual process of managing school activities. It provides a set of electronic online web services that envelop almost all of daily management issues of the school which are managed efficiently. A survey about functionality of the model and improvement of efficiency of the management by this model is conducted. The results are published in another paper. As a result, users find that e-SMS is capable of keeping track on students' profiles and performance; displaying, reviewing and searching student information, producing reports and transcripts. It also showed that promotes unity and reliability among students, parents, teachers, and school administrators, increases the collaboration and enables easy and professional communication between students and their parents, teachers and administrators and improves the quality of management. Teacher's and student's data is managed by only authorized officers and is available in electronic form and in a form of reports and transcripts. This facilitates administration officers' and teachers' job and saves time, effort and costs. Students and their parents can view grades, attendance, absences, notes and announcements, exams' schedules as well as school upcoming events and teacher's profiles. The electronic profiles provide more efficient management and operation with data, through electronic searching with in-real time automated feedback.

Also this project can be considered to deliver most advanced interaction and communication medium for facilitating school cooperation and to eradicate the paper work so consequently make it cost efficient. We still assert this project will be considered for further development on various platforms if we can manage to materialize the attempt to demonstrate it in inception.

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