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SMART EDU HUB

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Abstract - The manual system requires a lot of time, effort, and manpower. Here almost all the work is computerized. So accuracy is maintained. College Management System mainly deals with Students Profile, Account Management and Fee collection which can be managed by the Admin. To facilitate the management of student and teacher information in the college, a computerized college management system is developed. So that the college can access accurate information quickly and easily as and when required, improving its operational efficiency and effectiveness. As most of the work is done manually or based on paper work such as class attendance, notes, asking for documents etc. These all processes take time. If we include all the work based on online system, then it can reduce time and work. The college management system will work on the college area network. Under this system, we will include all the departments within a particular college. Through their valid registration id and password, their students can access all information, including billing for the finance department, class attendance, online notes, and notice board.

Keywords: ***Data mining in education, data mining technologies, technologies for teaching, trends in education.***

1. INTRODUCTION

Nowadays, with the advent of Internet technology and a diverse range of educational methods and content, teaching interaction is becoming increasingly prevalent. Mobile devices are increasingly being used as a part of the learning process. In evaluation theory and interactive teaching theory, both students and teachers are the subjects of evaluation. Moreover, students evaluation of their own learning achievements is mainly through mutual evaluation and self-evaluation, and students can also evaluate teachers' teaching behavior [1]. Such technical means can not only help students form better learning habits and strong learning interests but also enable teachers to more intuitively understand the learning situation of each student. In particular, this method is even more important when most teachers are still subjectively evaluating the learning behavior of students, making it possible to evaluate what was previously considered impossible[2].College Management System will work on college area network. Under this system it will include all the departments which comes a particular college. It will have billing system for finance department, class attendance, online notes and notice board so that their students can get all the information by using their valid registration id and password[1].

Teachers can schedule classes, their lectures time. Teachers can get information of any students under their particular class. Teachers can also make query by using grade, percentage, can see a list of students who come under the category of attendance shortage and many more under this one roof. For the student section, they can get any particular teacher's notes of a particular day. The student section will also include a learning section, so that students can prepare for their exams[3]

In a smart education environment, the learner should be autonomous and collaborative in addition to being an efficient technology user. Instructional design is important both in traditional education and smart education. Today, direct instruction is the predominant teaching method. However, in modern approaches, the facilitator role of the educator is becoming significant. One notable role of educators in smart education is technological support[4] The teachers/educators should also be able to provide technical support to students if needed. Note that just like learners, educators should be effective technology users. In a smart education environment, connectivity is an important distinguishing characteristic of educational technology supporting education[5].

2. LITERATURE REVIEW

mart education, a concept that describes learning in digital age, has gained increased attention. This paper discusses the definition of smart education and presents a conceptual framework [1]. A four-tier frame work of smart pedagogues and ten key features of smart learning environments are proposed for foster smart learners who need master knowledge and skills of the 21st century learning. The smart pedagogy framework includes class-based differentiated instruction, group-based collaborative learning, individual-based personalized learning and mass-based generative learning. Furthermore, a technological architecture of smart education, which emphasizes the role of smart computing, is proposed. The three-tier architecture and key functions are all presented. Finally, challenges of smart education are discussed. The most important step in software development process. Before developing the tool it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, ten next steps are to determine which operating system and language can be used for developing the tool. Once the programmers start building the tool the programmers need lot of external support. This support can be obtained from senior programmers, from book or from websites. Before building the system the above consideration are taken into account for developing the proposed system. Research framework of smart education, Springer Open[2].The concept of smart education in scientific research is considered as the most relevant and important stage of digitization of the educational sphere. In contrast to the previous stages (distance learning, e-learning, m-learning),smart education involves the provision of student-centered learning through interaction with learning materials using intelligent information systems, as well as the inclusion of non-formal learning opportunities and professional communities. Smart education involves a comprehensive modernization of all educational processes, as well as methods and technologies used into this process. The term "smart" is often associated with the technological aspect and the emergence of smart technologies in education, including smart board, smart screens, smart course , and a wide range of tools combined in the concept of “smart technologies” .

Ren yanhua,et.al.,[3]on construction of information system in college management based on team collaboration, IEEE Computer Society,2009.A research framework of smart education, including the definition and evolution of smart education, key features of smart learning environments, main smart educational technologies and opportunities of such technologies implementation in the educational sphere are proposed in a large number of papers over recent years. From the technological point of view, smart education can be considered as technology-enhanced learning. Technologies can play role of media or tools for accessing learning content , Communication and collaboration, construction, expression and evaluation.

With the development of smart technologies, learning platform got an opportunity to reacts to individual learner data and adapts educational resource based on cloud computing, artificial intelligent and learning analytics, and help to design of demanded curricula using big data. Moreover, the field of artificial intelligence in education (AID) has become the most challenging area in the last several years. It includes the disciplines: cognitive and social psychology, computer science, empirical psychology, intelligent software and knowledge engineering. The goal of the field is to deliver knowledge-based software which can be used in real teaching, learning and training situations. Using AI concepts theories and techniques, new forms of smart educational software can be created that allow the computer to act as a smart tutor.

3. AIMS AND OBJECTIVES

1. The main objective of the project on education management system is to manage the details of students, teachers and account etc.
2. It manages all the information about college, zoom meetings, information sharing among all students, attendance, account and fees collections.
3. The project is totally built at administrative end and thus only the administrative is guaranteed the access.
4. The purpose of the project is to build an web application program to reduce the manual work for managing the student, information sharing, attendance and fees management by account departments.

4. USED TECHNOLOGY

The Smart Education System is developed using a range of technologies to enable its various features and functionalities. Some of the key technologies used in the system are:

PHP: The system is developed using the PHP programming language, which is a popular language used for web development. PHP is used for server-side scripting and enables the system to interact with the database and other web technologies.

MySQL: The system uses MySQL as its database management system to store and manage all the data related to students, teachers, and fees. MySQL is a popular relational database system that is widely used for web applications.

HTML/CSS: The system's user interface is built using HTML and CSS, which are the standard languages used for creating

web pages. HTML is used to structure the content of the pages, while CSS is used to style and format the pages.

JavaScript: The system uses JavaScript to add interactivity and dynamic functionality to the web pages. JavaScript enables features such as pop-up windows, drop-down menus, and form validation.

Payment Gateway: The system integrates with a payment gateway to enable students to make secure online payments for their fees. The payment gateway technology used can vary depending on the specific system implementation.

Web Server: The system is hosted on a web server that enables it to be accessed over the internet. The specific web server used can vary depending on the specific system implementation.

5. SYSTEM ARCHITECTURE

The design of smart college applications is needed to transform the results of analysis into the modeling diagram form as a basis for creating smart college application codes. Smart system implementation.
college modeling design uses UML (Unified Modeling Language) to describe all user needs and services provided by the application.

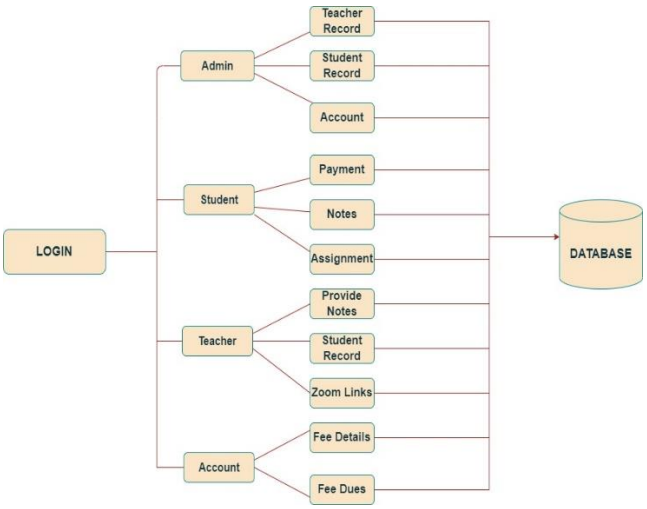


Fig.System Architecture Of Smart Education Model

Smart college modeling aims to describe the realization of the smart college system in the form of use case diagrams, activity diagrams, and database design.
Based on the data,we evaluate the smart education design and course/training effectiveness. Our evaluation may shed light on the areas we may need to revise or improve. Therefore, there are feedback loops in the smart education design approach. We are going to develop a smart education system in that by as system all information is stored like students info, teacher info etc. Also,there is separate dashboard for student and teacher. Student information is stored in system. Account department as well as teacher can easily access it. Teacher can easily update the students marks, attendance in student profile, also account department managed pending dues etc info in system.

Using the smart education design steps and the framework, we may develop smart education implementations for teaching various subjects. Next, we detail how the smart education design approach is used to develop various courses/lectures.

6. MATHEMATICALMODULE

The Smart Education System can be represented Mathematically using a set of equations and variables. Equations that can be used are:

StudentFeeEquation:

TotalFee=CourseFee+LateFee-PaidAmount

Where TotalFee is the total amount that a student owes for a course, CourseFee is the base fee for the course, LateFee is the additional amount charged if the student paysaftertheduedate,Total is any amount of total given to the student, and PaidAmount is the amount that the student has already paid.

AttendanceEquation:

AttendancePercentage = (TotalClassesAttended / TotalClassesScheduled) * 100

WhereAttendancePercentageisthepercentageofclasses that a student has attended, TotalClassesAttended is the totalnumber ofclassesthatthestudent hasattended, and TotalClassesScheduledisthetotalnumberofclassesthat were scheduled.

GradeEquation:

FinalGrade = (AttendancePercentage * AttendanceWeightage) + (ExamScore * ExamWeightage)

Where FinalGrade is the final grade received by a student in a course, AttendancePercentage is the percentage of classes attended by the student, AttendanceWeightage is the weightage given to attendance in the final grade calculation, ExamScore is the score received by the student in the course exam, and ExamWeightage is the weightage given to the exam in the final grade calculation.

These equations can be used to calculate various aspects of the Smart Education System, such as fees owed by students, attendance percentages, and final grades. They can also be used to optimize the system by identifying areas for improvement and implementing changes to increase efficiency and effectiveness.

7. WORKINGPRINCIPLE

The Smart Education System you described is designed to manage various aspects of a college's operations. The system consists of several modules such as students, teachers, account section, and student notification page.

The student module allows students to register for courses and view their schedules. The teacher module allows teachers to view their classes and provide notes and a notice to students.The account section module manages the fees of students and tracks their payments. The student notification page module enables teachers to send notifications to students regarding upcoming events, assignments, and other important information. Teachers can also view the status of student fees and update their records accordingly.
To implement the system, PHP is used as the programming language, and MySQL is used as the database to store all the data related to students, teachers, and fees. A payment gateway is integrated into the system to allow students to make payments for their fees. The working principle of the Smart Education System is that it provides a centralized platform for students, teachers, and administrators to manage and access all the necessary information related to their college. The system stores and processes all data securely and efficiently, ensuring that all stakeholders have access to the information they need. The payment gateway allows students to make secure payments, and the account section module ensures that all fees are tracked and managed properly.
Overall, the Smart Education System simplifies the college's administrative tasks, making it easier for students, teachers, and administrators to manage their day-to-day operations.

8. MODULES

1. Admin Module:

Admin module can manage student, teacher,
And account department. Admin can add students, teachers, and account department.

2. Student Module:

Student can get any particular teacher's notes of particular day, so that students can prepare for their exams. They can view their all details. Students are able to see their payment details. They also view notes, assignments, timetable, meeting links, and notes provided by the teacher.

3. Teacher Module:

Teacher can schedule classes, their lectures time. Teachers can get information of any students under their particular class. Teachers can also make query by using grade, percentage, can see list of students who comes under the category of attendance shortage and many more under this one roof.

Teacher can share files, notes, assignments, exam marks to students.

4. Account Module:

Collection of fees can be managed by account department. The account section module manages the fees of students and tracks their payments.

9. ADVANTAGES

SMART Education Model represents a new approach to teaching and learning that relies on technology to improve the educational experience.

- Handling college data using the SMART Education Model involves the integration of technology into the classroom to enhance the educational experience. This approach can automate many administrative tasks, such as grading and attendance tracking, freeing up educators to focus on teaching and engaging with students. Additionally ,the use of interactive whiteboards, digital resources, and other technological tools can create a more engaging and collaborative learning environment for students, allowing them to work together and access a wider range of educational materials.

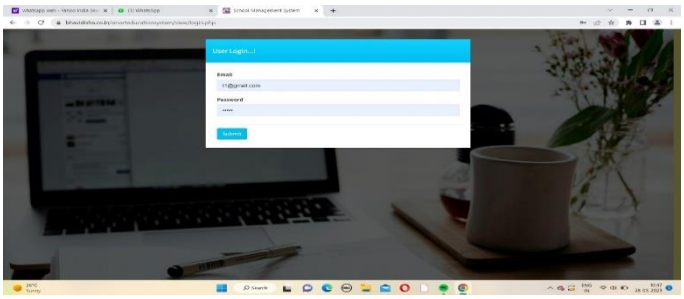
- One key advantage of handling college data using the SMART Education Model is that it can provide real-time access to data and insights, enabling educators to make data-driven decisions about how to improve the educational experience. This can help educators to identify areas where students may be struggling and develop targeted interventions to support them.

- In summary, handling college data using the SMART Education Model represents a new approach to teaching and learning that relies on technology to improve the educational experience. This approach can automate many administrative tasks, create a more engaging and collaborative learning environment, and provide real-time access to data and insights to support data-driven decision-making.

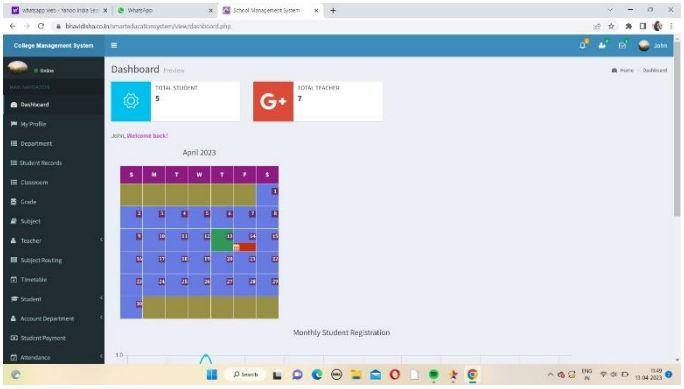
10. APPLICATION

1. Colleges
2. Universities
3. Private Institutes and coaching center

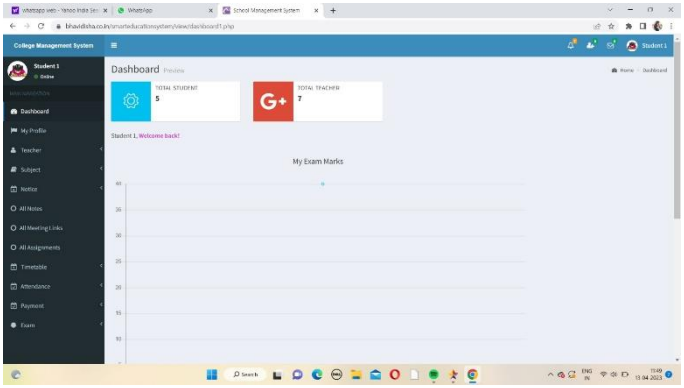
11. EXPERIMENTAL RESULTS:



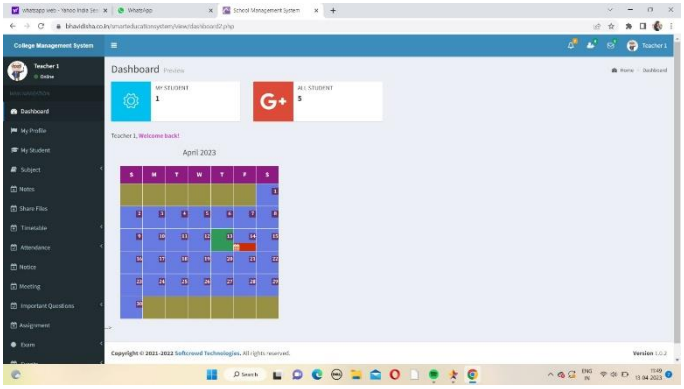
Fig(1).Login



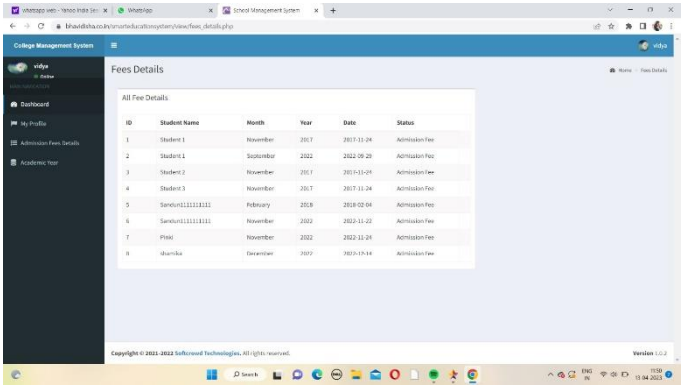
Fig(2).Admin



Fig(3).Student



Fig(4).Teacher



Fig(5).Account

12. CONCLUSION

The rapid development of information technology has had a great impact on the development of educational informatization, which makes the relevant departments of educational institutions produce more data and promotes the continuous growth of the amount of educational information data, so that the data in the database continue to accumulate and cannot be fully utilized over time. In this context, based on the theory of data mining. this study puts forward the education informatization framework, instantiates some functions of the framework, realizes the application of the data mining application platform based on cloud computing service mode in education, provides a scientific decision- making basis for the education department ,and becomes an indispensable part of the management decision support system.

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