

## SMART EDUCATION MODEL

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**Abstract** -The framework conceptually structures the information technologies in a layered architecture. We developed a smart education design approach based on the framework. Furthermore, we show how to use the framework and design approach to develop a specific course or lecture design. To validate the smart education framework, we examined smart education systems reported in the literature. To identify smart education systems, we conducted a systematic literature search. The literature search results show that the smart education framework has the ability to describe smart education systems. This study contributes to the current literature with a smart education framework. The smart education framework will guide future smart education system designs. College Management System mainly deals with Students Profile, Account Management and Fee collection which can be managed by the Admin. Computerized college management system is developed to facilitate the general administration system to manage the various information of student and teachers involved in college. So, that college can access accurate information quickly and easily as and when required, thereby improving its operational efficiency and effectiveness. As most of the work is done manually or it is based on paper work such as class attendance, notes, asking for documents etc. These all process takes time. If we include all the work which will be based on online system, then it can reduce time and work.

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

### 1. INTRODUCTION

Today, when Internet information technology is becoming more and more mature, the concept of teaching interaction is becoming more and more abundant, which also makes the choice of learning methods and content more diversified. At present, it is

more and more common to use portable mobile devices to realize the teaching interaction of courses. 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].

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. For student section, they can get any particular teacher's notes of particular day. Student section will also include 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 the educational technology supporting education[5].

## 2. LITERATURE REVIEW

Kadir Alpaslan Demir,et.al.[1],Smart EducationFramework ,Springer Open,2021.Smart 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. A four-tier framework 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.

Zhi-Ting Zhu ,et.al.,[2] Research framework of smart education,Springer Open,2016.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. LIMITATIONS OF EXISTING SYSTEM

1. Some existing systems does not provide cloud storage.
2. They are not user friendly and complex to understanding for user.
3. They does not provide Zoom meeting links.
4. They are Expensive and Complex to implement.
5. All modules such as student section, account section , teacher section,etc are not in one existing system.

## 4. PROBLEM STATEMENT

This project is based on carrying out various tasks which goes under college management. It will control all activities for a particular college. To handle all the tasks, system has been divided into different modules and

presented on a single window, so that its user can handle it in eco-friendly manner.

### 5. 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.

### 6. EXISTING SYSTEM

In the Existing system Colleges have to manually maintain information regarding College buses and routes. Information relating to student details and bus passes have to be maintained separately. Provide a simpler method to store and access information related to buses and students. Provide a simple interface which will be easily used without much training. Reduce paperwork and make all related information accessible easily.

### 7. PROPOSED SYSTEM

We tried to implement a system which overcomes the limitations of the existing approach. Nowadays, business is starting to compete globally, not only in terms of satisfying customers and the best service but can also contribute to improve the intelligence of the nation through the world of education. The world of education means the availability of channels or facilities that can be used to deliver educational programs. Today's education world requires fast and accurate data access. With the campus internal portal system, we can control all activities at the campus through mobile devices, tablets, laptops, or PCs from home. As a result, the system will be integrated from the central database and the control system (automation system) can monitor the activities of lecturers and students. With this integration, campus leaders can control teaching and learning activities as well as educational information devices

#### Data Mining

Information systems at first focused on simple file structures in the process of data processing, while with the emergence of advanced database systems, data

warehouse was developed and the concept of data mining emerged. Data mining is an interdisciplinary area in which computer science, machine learning, management of databases, mathematical algorithms, and statistics are combined. Furthermore, data mining can be referred to as a technique of data analysis that helps to find the correlation between them by analyzing the relationships within a vast volume of data and allows hidden information within database systems to be retrieved. Data mining is not a solution on its own, but an instrument that assists the decision making process in reaching a solution and provides the knowledge required to solve the problem.

#### Data Mining in Education

In this part of the study, we presented in detail the use and related methods of data mining in the field of education. Data mining is used in many different fields of education. Data mining is used to analyze student data, identify the causes of student achievement and failure, increase student achievement, detect disruptions in educational environments, and create more effective educational environments as the application of conventional data mining techniques to the analysis of training data aimed at solving educational problems. data mining can be used for classifying and predicting students' performance, dropouts as well as teachers' performance. It can help educators to track academic progress to improve the teaching process, it can help students in course selection and educational management to be more efficient and effective

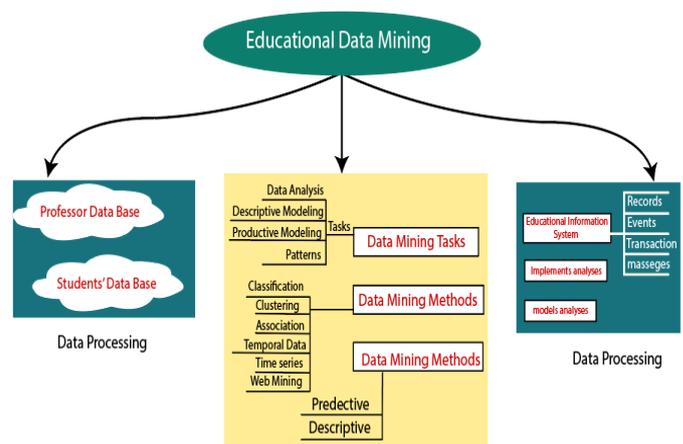


Fig.Educational Data Mining

The educational data mining community is using the large amounts of data to validate research findings at scale. It also helps predictions on student knowledge, dropout, and motivational state become much more accurate with additional data. By mining large amounts of data we gain a broader understanding of specific groups of students, which leads to better adaptivity and personalization for individuals.

## 8. SYSTEM ARCHITECTURE

The design of smart school application 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 college modeling design uses UML (Unified Modeling Language) to describe all user needs and services provided by the application.

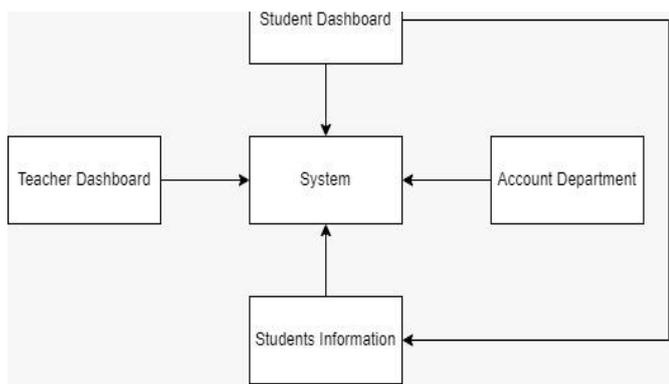


Fig. System Architecture Of Smart Education Model

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.

## 9. IMPLEMENTATION

The modernization of the model of higher education institutions based on digital solutions affects both contextual and procedural aspects. The content side of the digital transformation of higher education is on the one hand, connected with the solution of the problem of personnel training for the digital economy, training of highly qualified specialists who are well versed in the digital environment and understand how to apply the latest technologies. On the other hand, the introduction of

digital solutions should transform not only the approaches and technologies of knowledge transfer, but also improve the quality of education in general. The smart education framework developed within this study focuses on the role of various information and communication technologies in smart education. Furthermore, it stresses the importance of new or improved teaching and learning approaches. The framework highlights the need for a coherent combination of ICT technologies with appropriate teaching and learning approaches.

The process component can be decomposed into levels of implementation in order to introduce ICT into everyday practice and create the so-called “smart education” system.

The first level, the so-called subject, is represented by research and teaching staff, students. The fulfillment of their interests largely depends on the overall success of the whole concept of digitization of higher education. The second level is represented by basic information. Their task is to create a common information space for digital interaction within student data.

The third level includes the services necessary for the successful implementation of the student information like Fees, attendance. This is typically a digital account managed by student and teacher personal accounts system. Based on the support of various technologies, we consider that the goal of smart learning environments is to provide rich, personalized and seamless learning experience for learners. To provide seamless learning experience, smart environments can encompass formal and informal learning. Based on the support of various technologies, we consider that the goal of smart learning environments is to provide rich, personalized and seamless learning experience for learners. To provide seamless learning experience, smart environments can encompass formal and informal learning.

## 10. ADVANTAGES

1. Time saving
2. On Automation mode
3. It satisfy the user requirement
4. Easy to operate
5. Expandable.
6. Great file sharing for teachers and students.

## 11. Application

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

## 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.

## REFERENCES

- [1]Y Xianmin, T Sisi and L. Jihong, "The Definition Potential Value and Challenges of Big Data in Education [J]", *Modern Distance Education Research*, vol. 1, Issue 7, pp. 008, 2016.
- [2]Plümicke, M. Integrated campus portal. In *Novel Methods and Technologies for Enterprise Information Systems*(pp. 249-260). Springer, Cham, vol.2., Issue 5 2014.
- [3] Aldulaimi M.H., Kadhim T. A. and Alfaras M. S. Towards smart learning environments in Iraqi schools – existing infrastructure and challenges. *International Journal of Civil Engineering and Technology (IJCIET)*. Vol. 9, Issue 11, November 2018
- [4] He, J., Lo, D. C. T., Xie, Y., &Lartigue, J. Integrating Internet of Things (IoT) into STEM undergraduate education:Case study of a modern technology infused course ware for embedded system course. In Vol 3. Issue 5 ,2018 .
- [5]Zhu Z., Yu M., Riezebos P. A research framework of smart education, *Smart Learning Environments*. Vol. 3 Issue 2. 2016.
- [6] J Zhuoxuan, Z Yan and L. Xiaoming, "Learning behavior analysis and prediction based on MOOC data[J]", *Journal of computer research and development*, vol. 52, no. 3, pp. 614-28, 2015.
- [7] Van Merode, D., Tabunshchyk, G., Patrakhalko, K., &Yuriy, G. Flexible technologies for smart campus. In *13th International Conference on Remote Engineering and Virtual Instrumentation.IEEE*. Vol. 9, Issue 11 Oct 2016
- [8]Alshammari, S. H., Ali, M. B., &Rosli, M. SThe Influences of Technical Support, SelfEfficacy and Instructional Design on the Usage and Acceptance of LMS: A Comprehensive Re-view .*Turkish Online Journal of Educational Technology-TOJET*, Vol.37, No.7, 2013,
- [9] Aldulaimi M.H., Kadhim T. A. and Alfaras M. S. Towards smartlearning environments in Iraqi schools – existing infrastructure and challenges. *International Journal of Civil Engineering and Technology (IJCIET)*. Vol. 9, Issue 11, November 2018
- [10]Merzon E. E., Ibatullin R. R. Architecture of smart learning courses in higher education. 2016 IEEE 10th International Conference on Application of Information and Communication Technologies (AICT), Baku. Vol. 4, Issue 7, October 2019.