



Impact of Information Technology on Education- A Case study

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Abstract: Now a days there is a high demand for the online education system. This paper gives useful references to the individuals who are wanting to create online courses so they can settle on educated choices in the execution cycle. Technology plays a vital role in every sphere of life, and education is no exception. The advent of technology has deeply impacted the educational scene. It has made learning easy and interesting. The role of technology in education has been an important question since the potential of computer technology to transform Skinner's teaching modules recognized in the 1960s. It remains an important issue today with debates about the impact of technology on our society, the implications of quick and easy online access to information for knowledge and learning and the effect of technology on young people's social, emotional and physical development frequently in the news. Therefore, educational technology is based on theoretical knowledge from different disciplines plus experiential knowledge from educational practice. It is the use of technology to improve education or a systematic process for designing instruction or training used to improve performance. Educational technology is sometimes also known as instructional technology or learning technology.

Keywords: Information Technology, Education, Hardware Resources, Information Society

1.0 Introduction

It has been observed that the learning process of the students has witnessed significant changes within the education systems. The learning process, which was once used to be confined to physical books and lectures that were delivered by the teachers within traditional classrooms are now significantly shifting on the online platforms. From the perspective of computer science, this digitalization of the learning process and the emergence of online education has made it easier for every person to attain and access education in just a click of a button (Selwyn, 2010).

Similarly, the internet has played a significant role in the facilitation and provision of online education, which in turn, has helped to flourish this domain substantially. However, it has also been observed that an increasing number of students who attain education through eLearning face various challenges, as well as uncertainties within their enrolled courses, which makes it difficult for them to complete their online education successfully. Therefore, in this report, some of these prevalent problems within the online education systems will be analyzed and appropriate solutions for them will be provided from the perspective of computer science in order to facilitate the learning process of the students (Abrami et al., 2011).

This is the era of information and technology (IT). Nowadays, every aspect of our life is connected to IT. Huge usage of IT is emerging in all over the world. Although, use of information and technology is spreading its impact in every field of life. But, it impacts significantly in the field of education to make the learning process interesting as well as successfully [1]. According to J. T. Fouts[2], the first use of the computer in 1970 into the education field. But, now computer and its technology almost use in every educational institution across the world. According to Sahin and Thompson [3], there is frequent use of the technology in the various fields such as research, marketing, business, banking, administration etc. but the frequency of IT use is not much in an education system. But, today, use of IT in an education system has been received more attention for improving the standard of learning as well as teaching. Various resources such as computer, internet, broadcasting technologies are being used to improve the education system [4]. In earlier days, teachers were not much aware of the need of bringing IT as an essential part of their day to day activities. Moreover, it was impossible to do study in foreign universities without going over there. But, today's scenario is completely changed. IT makes it possible by using various technologies such as online education, distance education, Computer Aided Courses etc. in the field of education. No doubt, computers have become essential for everyone in every field. Teachers now started using technology like smart classes, LCD projectors, EDUCOM, Laptops, memory sticks in their classroom to make effective learning process. Haddad et.al.[5] identify the five levels of technologies which are used in education such as presentation, demonstration, drill and practice, interaction and collaboration

Modern-day students not only have computers to help them with their schoolwork, they also use the Internet for research while teachers use technology to enhance their lessons. Technology has revolutionized the field of education. The importance of technology in schools cannot be ignored. In fact, with the onset of computers in education, it has become easier for teachers to impart knowledge and for students to acquire it. The use of technology has made the process of teaching and learning all the more enjoyable.

COMPUTER LITERACY

It is observed that despite having the technical knowledge and ability to manage computers in general, many students still lack basic computer literacy, which has also become a major problem within the provision of online education. Many students have been seen to face difficulty in operating the basic programs like Microsoft PowerPoint and Word, which in turn, makes the handling of the files a challenging process for them. Similarly, for several students, fixing basic or common problems associated with their computers is also a troublesome process due to their insufficient knowledge within this area.

Without this necessary technological expertise or knowledge, it would become a highly problematic process for the students to manage their courseware and assignment in an appropriate way that is required under their online courses. However, this problem can be solved if teachers or educational institutes offer basic courses within computer literacy in order to improve the knowledge of the students under this field. This is because when the student would have fundamental knowledge about hardware and software of the computer, this in turn would aid them to participate within their online classes without facing any hindrances or interruptions (Lee & Huang, 2014).

ESSENTIALITY OF IT TRAINING AT ORGANIZATION

Information technology pays more attention to the e-learning industry in higher education and provides higher education for the dissemination of knowledge among more students than ever before. Information technology combines the power of new global technological networks with the infinite potential of the economy, which is revealed whenever people create, acquire, and apply skills and knowledge. In distance education, information technologies are provided using digital and analogue technologies, including various combinations of teleconferencing courses, video conferencing, various combinations of telephone connections, and computer transmissions.

The education that IT offers has no borderlines and is expanding thanks to the technological revolution. It seeks to be interactive, time-independent, and individualized, with an emphasis on learning, not on learning, and commonality of results, not a commonality of processes.

IT is a fundamental part of protecting the smooth operation of your business and organization, as well as the introduction of new trends, technologies, and best practices. Employees who undergo online training can remain at the forefront, which is essential for the survival of any business on the market today. In interactive IT training, blended learning can include classroom interaction and individual lessons. This type of training covers a wide range of subjects, from primary Microsoft Office to high-tech topics in the field of information security and programming languages. Any online IT course, due to this nature, can quickly gather detailed information about a subject through interactive programming tests or videocapture. Such actions are often quick and effective.

ADVANTAGES OF IT TRAINING

IT training is useful for a wide variety of people in the organization at all levels, from C-suite executives to administration. Organizations should begin by reassessing training methods that reflect the current positions and career goals of their employees. Online IT training benefits employers and employees.

Flexibility and convenience mean increased productivity and time savings for employees. Employees can take any training course on multiple devices at their own pace and at the time or at the time that is determined by management.

Productivity can be monitored and measured, and job positions adjusted accordingly; Employee productivity can be easily measured using tracking and reporting tools that allow management to see the progress of their employees immediately. Then, management can plan the courses accordingly.

Companies would be benefited from increased productivity and efficiency, as well as lower costs and skills support. At the same time, there is no need to hire new employees, pay for off-site staff training, or pay for a trainer.

Besides, whenever a company introduces a new product, although it is an exciting time, employers may encounter problems in educating employees about product features. This can be problematic due to costs and time, especially during full-time studies. Labor productivity may decline if you spend hours in class at work. Online training solves all these problems by changing your free time and reducing the cost of training a company, renting premises, travel expenses, and loss of productivity.

Some of the benefits of online product training are:

1. Learning is quick, easy, and flexible. Staff can be trained on their devices, on time, and they go.
2. Employees can be trained in different places on new services or products at different times, starting from the day of graduation.
3. Learning can be adapted to different markets and intercultural, efficiently, and quickly.
4. Increase profits and increase efficiency.

IMPACT OF NEW TECHNOLOGIES TO EDUCATION

Both education and training are the processes of a lifetime; they have no restrictions on when to start and stop. In our daily lives, we learn something new, and this helps us to change the way we live. Education provides us with knowledge, and then we must study and process this information for our use. It is imperative to make education accessible to all at all times; this would help reduce illiteracy. Information technology can accelerate the delivery of information, so this opportunity can be used to improve our educational environment. Thanks to the introduction of information technology, the cost of access to educational materials is reduced, and students can quickly learn from any part of the world.

New technologies are changing our perspective of learning, and they have also have changed the learning process. Both teachers and students use these new educational technologies to archive specific academic goals. The only problem is that information technology is expensive, so those who cannot afford such a price, as a rule, experience difficulties in using the capabilities of information technology in education. For instance; The broader use of broadband Internet access makes it easier for students to access academic information promptly. Teachers also use this broadband Internet to create and provide academic data using video and graphic illustrations.

Lots of educational resources:

IT makes it easy to access academic information at any time. Both students and teachers use IT to acquire and exchange educational materials. For instance; Teachers can efficiently conduct visual and audio classes for their students using computers and broadband Internet. This violates the boundaries of access to information because the student attends the lecture and not in the physical class. Teachers can also assign assignments to students via email or on-campus educational forums. Instant access to educational information.

Information technology accelerates the transmission and dissemination of information. Students can easily access academic data using their computers and new technologies such as mobile phone applications. IT professionals have written educational applications that students can use to access information quickly. These mobile phone apps replace some of the old methods, such as borrowing books from libraries, and how students can use the mobile phone apps of the Library to download books informing about e-books so they can have these books at any time, which saves them time and helps to read anytime, anywhere. Full-time education.

Unlike in the past, when the instruction was limited to physical activity, students and teachers could only access academic information at school. With the help of the online education system, the students would have access to information at any time, from any place. Information technology makes online learning more accessible, so you would find that a student in Africa studies the same course as a student in the United States or India. And when it comes to getting a job, all of these students would have the opportunity to compete for the same job.

Group Learning: Information technology helped students learn in groups, and also helped teachers teach students in groups. Earlier in the school, we had group discussions in which each participant participated, but shy students could stay away from these groups for fear of expressing themselves. Now, with the help of information technology, academic forums have been created in schools where students can discuss specific topics without fear of expression. They can also participate in video and text chat. Another advantage of these online group discussions is that not all members of the group would belong to the same class or school in which they were in the past. Students from different schools around the world can be in the same academic group and exchange academic information.

The use of audio-visual media: IT has changed the way we learn and interpret information. Using audio-visual education helps students learn faster and easier. Unlike text and class notes, students are bored with this form of learning. This is a human weakness, and people do not want to read the text for much longer they are bored, so the introduction is audio-visual.

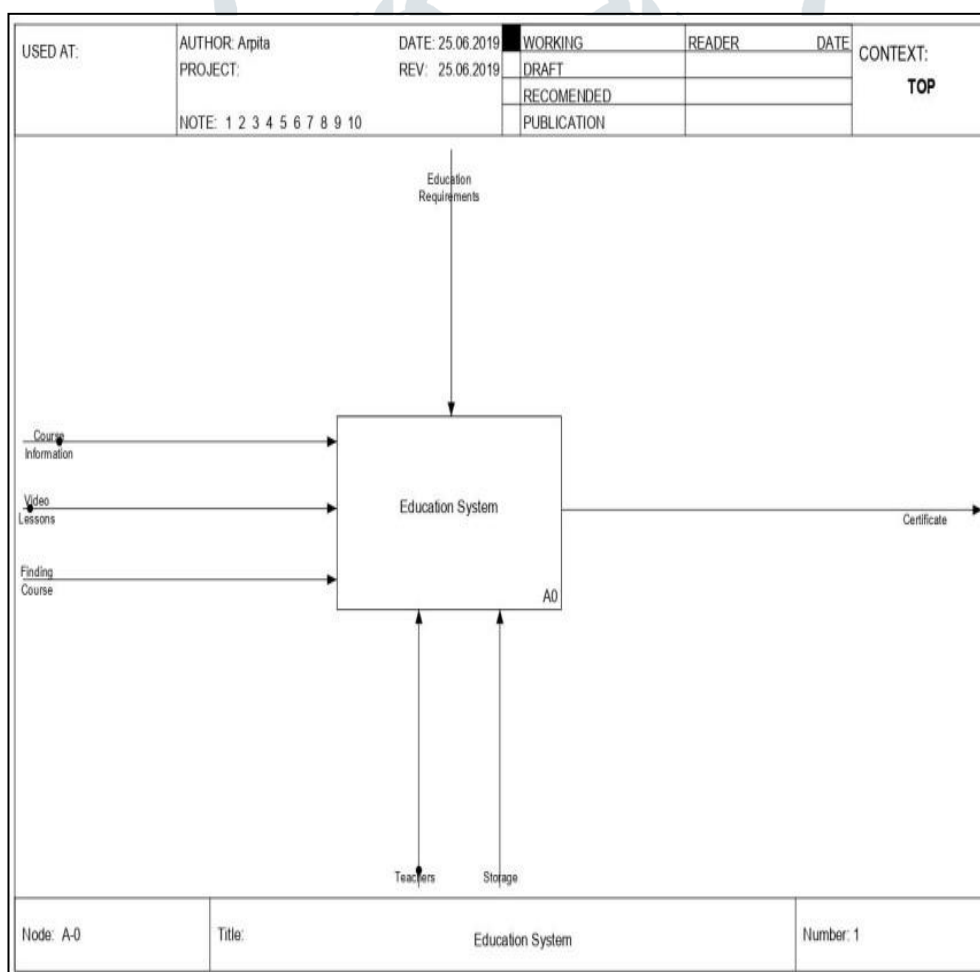


Figure-1: Integrated Computer Aided Manufacturing Definition (Idef0) Diagram

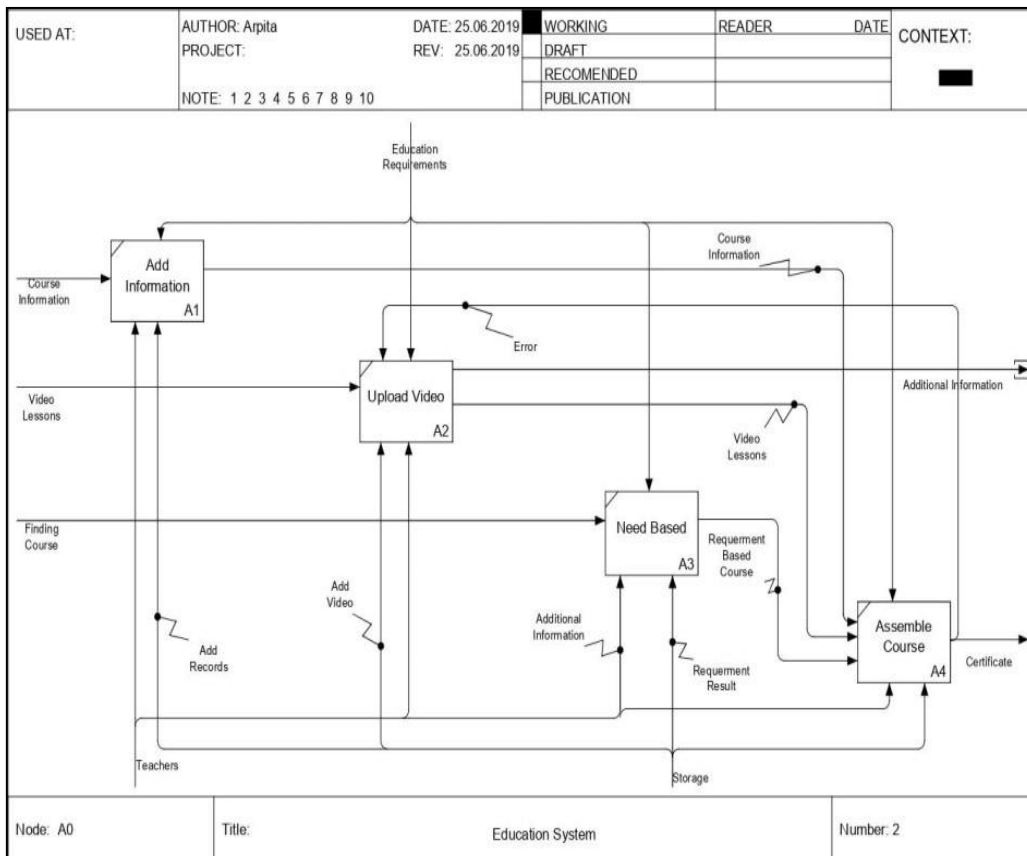


Figure-2: IDEF0 Methodology

THE ROLE OF IT IN THE EDUCATION OF UNDEVELOPED COUNTRIES

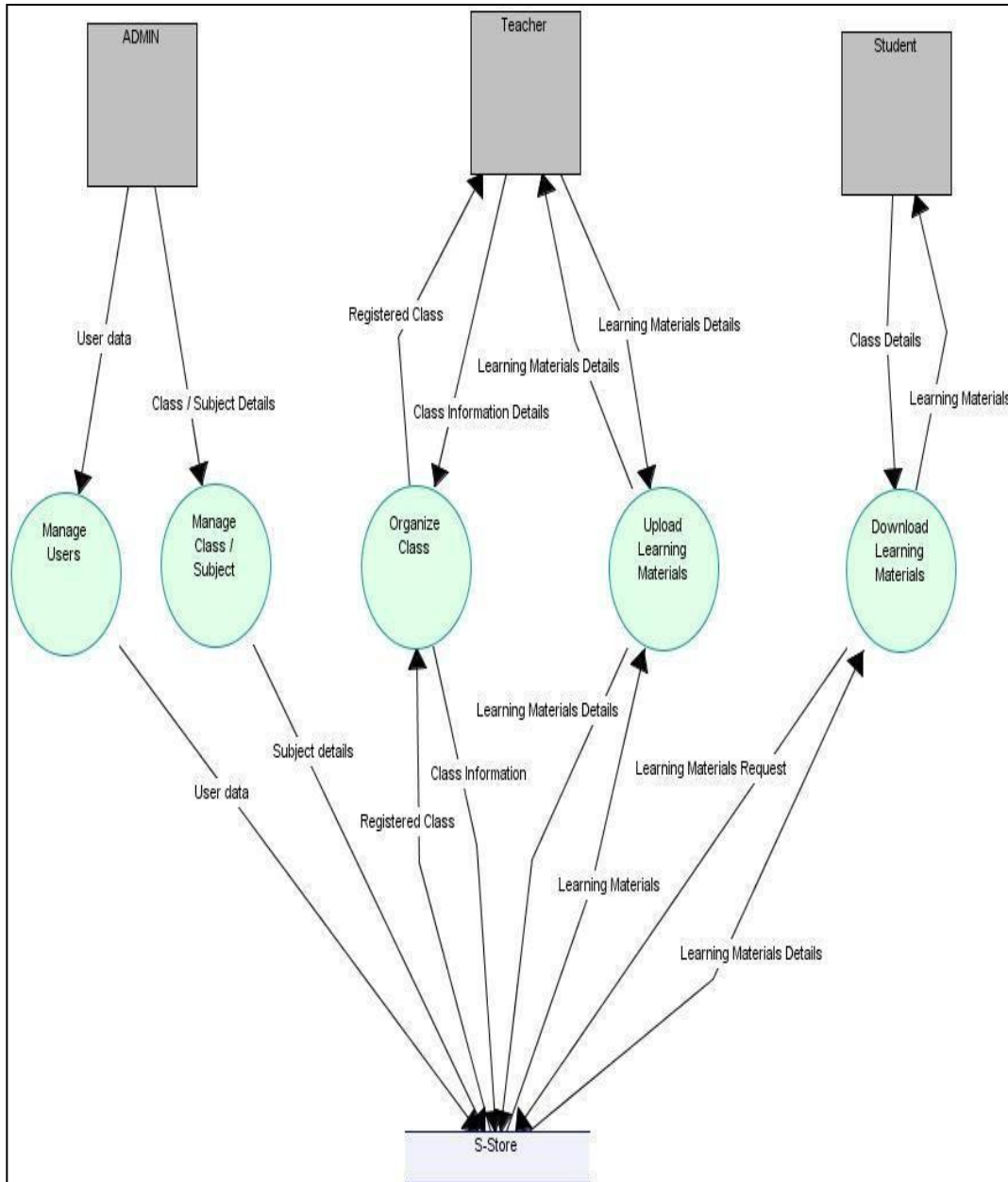
Based on the opinion of the UNESCO of the International Commission for the Study of Communications. One of the roles of communication and information technology in education, i.e., The transfer of necessary information for the growth, formation, and development of personality and skills training transmitting the necessary diverse and complex messages to help students recognize they understand and value each other and unity in social obligations. Education is one of the principals means by which you can get mental movement, a sense of unity, argument, and self-confidence. In this case, information technology plays an important role. His growth is developed and not developed. Countries, especially in the case of corporate communication, open up new educational opportunities. But, on the other hand, it seems that less developed and developing countries are generally worried about their lag behind the "information revolution," especially in the field of education. This problem causes something big. Part of state financial resources is spent on the acquisition of the latest technologies without considering the drug for absorption and using its advantages. Developing countries should adopt such policies that protect them from external economic constraints that accompany political and cultural Results. At the same time, these countries should try to take a step towards the creation of the necessary infrastructure and control of existing sources.

IT AND THE NEED FOR EDUCATION CHANGE

The advent of PCs (personal computers) and the expansion of Internet access creates an environment that makes global. Education systems are required to change their education structure in the main areas. The duty of educational systems with the changes apparent. Its main goal should be to increase a person's strength against change, i.e., someone can quickly adapt to constant changes by observing the economy. The faster the change, the more attention. Attention should be paid to the recognition of patterns of future events. To help people eliminate future shocks, we must create a meta-industrial

educational system. To do this, instead of searching in the past, we must find our goals and methods in the future. Obviously, in the 21st century, modern technology and due to rapid scientific, economic, cultural, and political changes, education systems would not be able to adapt. The islands themselves are separated from other social and national organizations in the global village. Because education, both in terms of historical empiricism and specific conditions spanning the 21st century, undoubtedly would become the center of change, evolution, and multiplication of the 21st century. Of course, society does not see him not only as an economic variable and political lever but also as an opportunity to change education through information technology. So, what can we suppose that the proposed IT models in education, as the center of the nature of knowledge, functional methods, and criterion of control in society.

E-LEARNING ALL OVER THE WORLD



Currently, it has become common practice to use various technologies in the educational process. Not so long ago, professors had only blackboards and chalk, and now we see at least blackboards and markers, or even multimedia whiteboards, projectors, laser pointers, etc. This mainly depends on the financial support of universities. Nevertheless, it depends on the professors themselves, whether they are ready to use all the latest devices and change their usual educational process. For example, creating online courses, responding to students' emails, moderating a forum created specifically for their course, etc.

In terms of teaching, we should be open to the technologies that surround us. Therefore, we must be open to the revolution on the Internet that has occurred in recent years, go online, and increase the number of tools that we use. Unfortunately, this is not the same everywhere. Progress largely depends on the current situation in the country, both economic and social. In the Soviet period, cybernetics was a productive science. We are experiencing the consequences of this now — not only the lack of professors but also the insufficient use of technological progress in our universities. Only today, the field of information technology (IT) is starting to grow in Russia. And we must keep track of what our European and American colleges have already done. All this also explains the differences in the educational process. Education in the Soviet Union was one of the best in the world, but the USSR disappeared, and its legacy disappeared. Like a phoenix, we are now trying to return to the best universities in the world. But everything takes time. This is the main reason why we cannot use products that are used by various universities around the world. The system is entirely different. In Russia, we switched to the Bologna system of

education just a few years ago, and now we have the first graduates with bachelor's and master's degrees. There are many examples of the successful use of e-learning in mobile learning technologies. And the systems that use foreign (concerning Russia) universities cover a full area than just courses and homework. They are modular and have different modules for the specific needs of people playing different roles on campus: students, teachers, financiers, teachers, etc. All this is combined into one system that shows the life of the entire university. One reasonable question that should arise at this point is how much does it cost? Here we can also find various solutions. The variety of products on the market allows you to choose. There are significant corporate solutions that are sold by leading IT companies; there are large open-source projects that are open source but include several universities that develop them, there are small projects, we can call them individual participants who also create educational the infrastructure of their universities (<http://www.kuali.org/>). Every platform has its pros and cons. Therefore, each university can choose what is more suitable for its needs. Usually, the first idea that arises is: "Let's try some popular frameworks! So many people use it! "Most likely, this ends with either financial problems that make the problem insoluble or an extremely lengthy process of establishing a solution in a box for a particular university. Open source is also not always the best choice. This is customizable, but from the programmer, it is always difficult to dive into someone else's code. Deferred expense theory works in this case. That is why we think that creating something of ours is the best choice. Also, one of the advantages of this approach is that you can always add something new, very specific to your company, in this project. And you do not need to wait until third parties declare that they will try to adapt your request to the next release of the product. In the end, we believe that we can use all the experience gained by our European and American colleges, but now we need to create something of our own. At the first stage, we cannot plan the development of an extensive system that will combine all the resources of the university, such as finance, administration, library, etc. But we can start with basic needs that will allow students and teachers to participate in the process consistently. : to be in the know, to be in touch, etc. We believe that this will increase the level of understanding between teachers and students and allow them to feel the advanced technologies in education.

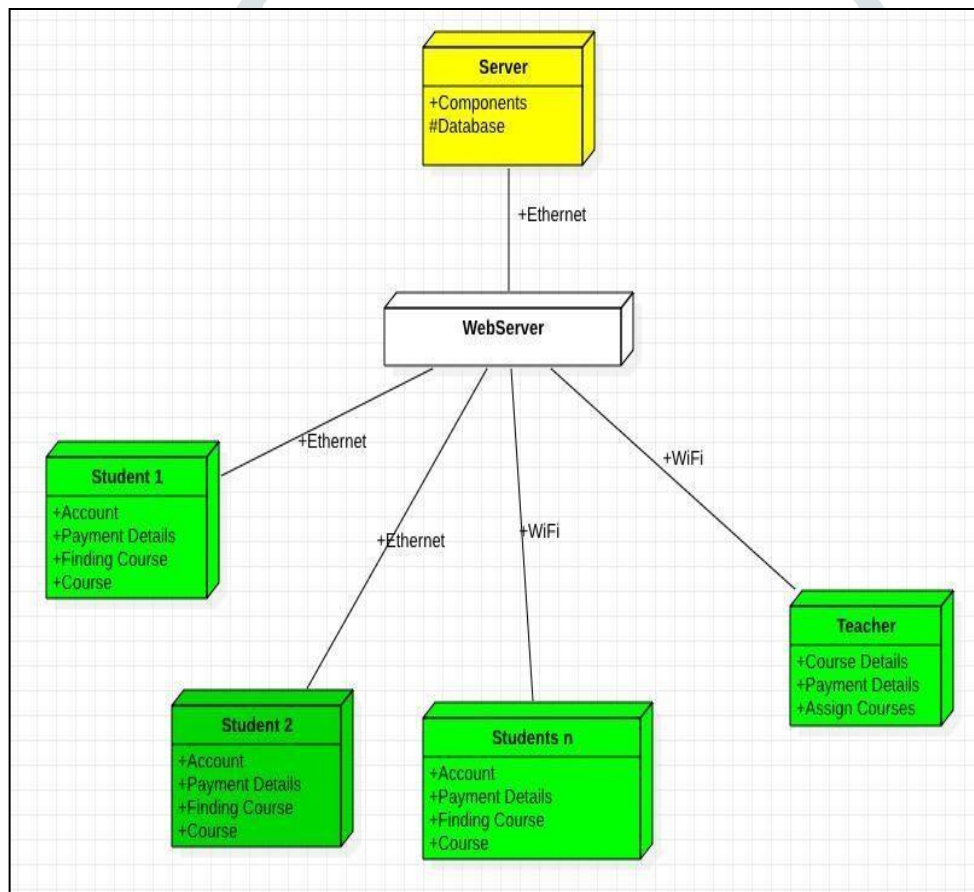


Figure-4: Deployment Diagram

TECHNICAL PROBLEMS

From the perspective of computer science, the learning process of the students is not only dependent on the quality of the lecture, but also on the mediums that are used to deliver the lecture. However, it is often seen that students who are enrolled within the online courses are not provided with strong internet connections, as well as high bandwidth. This makes them left behind from the virtual class fellows in the online courses. The experience of learning further becomes problematic for the students due to their weak monitors which makes it difficult for them to follow the systems of course management (Bennett et al., 2012).

Similarly, as the majority of the students are found to live outside their campuses, they face difficulty in tuning with the technical needs or requirements of their selected courses. It is also observed that several of the students sometimes do not even own computers, which in turn, compels them to seek technical assistance from their learning resource centers. This problem can only be solved effectively by understanding the precise type of technological support that the students require for a particular online course before they enroll in it. This also includes providing appropriate equipment or financial support to the students so that they can buy the needed equipment themselves in order to complete their online courses successfully.

TIME MANAGEMENT

As online courses need a significant amount of work and a lot of time from the students, managing time also becomes a challenging task for many e-Learners during their online education. Usually, adults are often seen to enroll themselves under the web-based programs of learning due to the flexibility associated with the time and place that these online courses offer to them. However, these adults rarely get the time to take such courses effectively due to their busy work schedule and different everyday commitments (Veletsianos & Navarrete, 2012).

For these learners, a regular schedule planner can be highly useful, as it would also allow them to set reminders related to their assignments and courses. Again, the field of computer science has empowered people to decide their own routine due to the flexibility which it offers. Thus, it is the duty of the students to capitalize on these benefits provided by this field by appropriately scheduling their learning activities as per their own feasibility (Rovai & Downey, 2010).

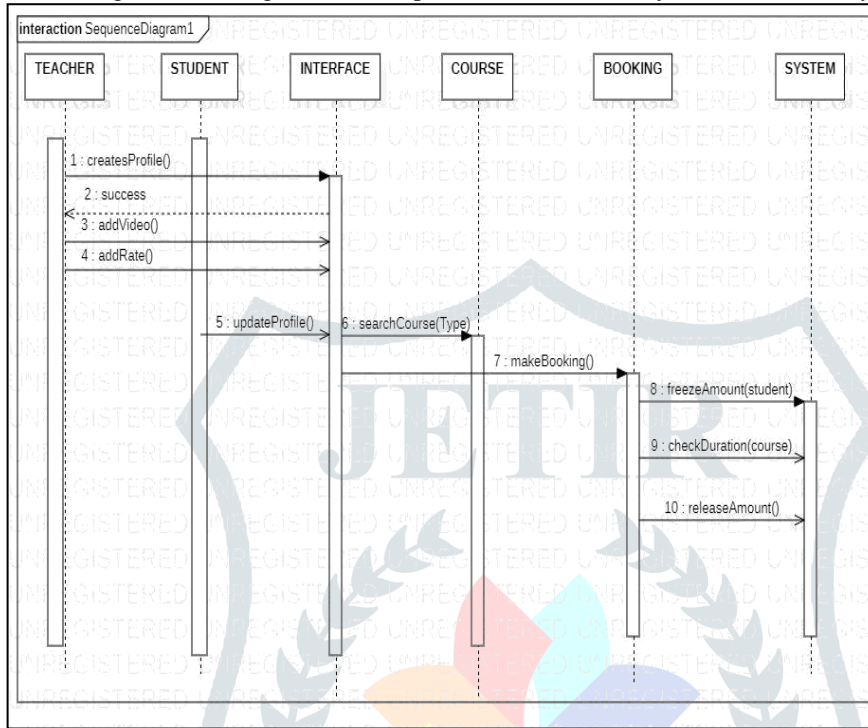


Figure-5: Sequence Diagram Of The Model

SELF-MOTIVATION

One of the important requirements of online education and eLearning is associated with self-motivation. Nevertheless, much to their surprise, many students who enroll in online courses lack this ability. This is because, once the students get enrolled within distance courses of learning, they frequently fall behind and start to give up, especially due to the problems that they face in handling the mediums of technology (Kuo, Walker, Belland, & Schroder, 2013). It is highly necessary for the students to find motivation within themselves in order to follow the new trends within the realms of education and to appropriately prepare themselves for the future problems or challenges that they might face within their careers and education. Again, counseling and guidance from the teachers can be a suitable solution for this problem, but only a positive attitude can aid the students to overcome the problems within their learning process.

This could be a difficult task, but students are required to comprehend that this is mandatory for them in order to attain benefits from online education in the future. With respect to the computer science perspective, it is known that without internet and computer software modern education cannot be attained. Therefore, students are required to understand that if they want to take an online class, then they would have to take proactive measures to understand intricacies associated with the technologies that are needed to successfully complete such courses (Chen & Jang, 2010).

PROPOSED SOLUTION

As we have already said because of differences in the educational system, we cannot easily inherit or expand the popular systems that are widely used abroad. Our main idea is to combine one server part with several interface implementations. The client-side may be a desktop application, a web application, or a mobile application. This is a standard client-server application approach, but here we want to focus on two parts: desktop and mobile implementations. Each client's office has its characteristics, advantages, and disadvantages. But the overall picture shows that only the unity of all these functions can provide maximum ease of use and efficiency for users. Taking all the advantages and disadvantages of various implementations into account, on the client-side, we must strictly distinguish between functionality. For example, writing an essay from the small screen of a smartphone is very inconvenient. But getting the latest news from professors about class cancellation is the right use case.

The desktop application is by far the most robust implementation, but in everyday life, people spend more and more time with their mobile devices. According to some reports, tablets are becoming more popular and are reducing the use of laptops and desktops. Thus, if we define the main goals of each implementation on the client-side, the mobile application will primarily include notification services (receiving and sending some informational messages), modules that allow you to view course

materials (lectures, practical manuals). Multimedia). Files), the desktop application will also include modules for submitting homework, statistical modules, testing modules. In essence, a web application is very similar to a desktop application; There is a separate use case for this. The desktop application is more convenient for home use, but the user can easily access the web application from any computer connected to the Internet. Loyal users of the application are students, teachers, and teachers. Therefore, we are developing a separate mechanism for roles and privileges. Many users define their respective roles. Besides, there are administrator roles that can monitor system status, register users, and provide initial technical support to users who have problems. A significant step at this stage is to provide a convenient interface to reduce the number of users who may have problems working with the system.

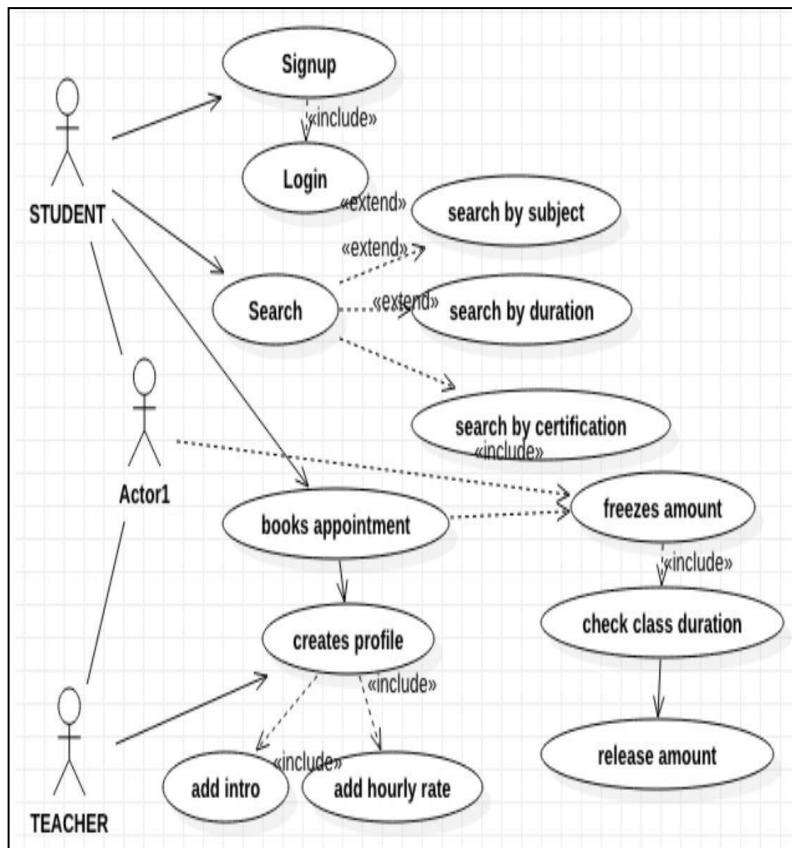


Figure-6: Use Case Diagram

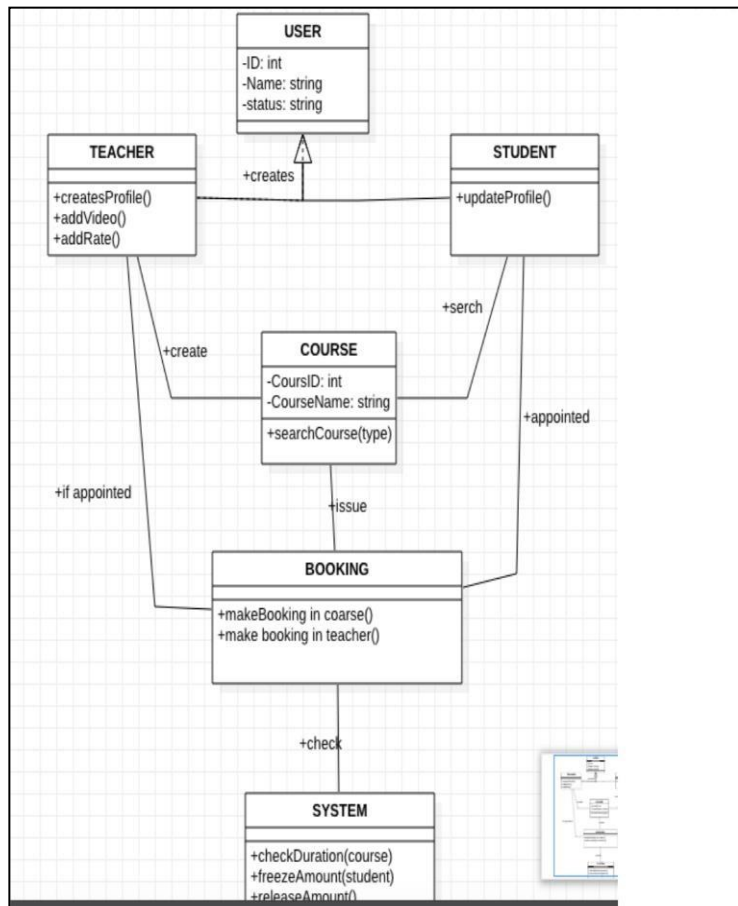


Figure-7 Class Of The Model

QUALITY OF ONLINE COURSES

Since the emergence of the trend associated with online education on the internet, many competitors, teachers or educational institutes have been observed to upload their educational content or learning material in a short span of creating them. However, the demerit associated with this trend is that material which is uploaded on the internet frequently lacks the substance. Majority of the time it is seen that the content of the learning material deviates or differs from the actual subject. Moreover, students also face difficulty in understanding the language or tone of the content, which in turn, makes them demotivated to pursue online education any further (Margaryan, Bianco, & Littlejohn, 2015).

Thus, to prevent this problem, teachers should create online courses more strategically. This also includes presenting the learning material in an appropriate manner with the right language and tone so that the students are able to comprehend it effectively. Similarly, students should be provided with online assignment help in order to aid them to refine their techniques of research, which are compatible with their chosen online courses (Friedman & Friedman, 2013).

The field of computer science has even given the ability to the teachers to design the course materials as per the needs of every individual student. Thus, teachers can even utilize data or learning analytics to make customized courses for their students depending on their progress within the online class and can monitor the learning process of the students by conducting thorough evaluation through their grades. This, in turn, can enable them to provide effective solutions to the problems of the students under every online course (Jordan & Mitchell, 2015).

CONCLUSION

It is evident that the domain of online education will continue to progress in the coming years and the developments that have been witnessed within the field of computer science will play a significant role to complement, facilitate and improve online education significantly by making it easier for the students to access the right education which they want to attain as per their own needs and requirements. Moreover, as the technologies will become more complex, the problems will also become more challenging in the feature in order to provide high-quality education to the students. However, again the development within the field of computer science would also be a solution to these problems that will determine the prospect of the future education systems.

In the modern world, education needs modern, moderate, and simple technologies arrival and proper use. Education should pursue policies, the most important of which are:

- Expanding human sources of IT through educational programs and promoting skills to increase work the power of effectiveness in education.
- The use of IT to improve the effectiveness of an educational institution for a better education that accompanies creativity.
- IT support, for example, support for research costs and the expansion of education.

- Creating an appropriate atmosphere and morale of participation in education using IT.
- Establishing cooperation and coordination between the various parts in the use of the above instruments.
- Expanding the culture of using IT by providing and encouraging its consumption in education.

When evaluating the types of information technologies, education should take into account issues such as necessity, properties scientific effectiveness, savings, and opportunities and potential skills existing in this case.

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