A STUDY OF CLOUD COMPUTING INTEGRATION WITH ICT

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ABSTRACT

The research also looks at how well ICT works in presenting practical examples of abstract ideas. A common struggle in computer science curricula is finding ways to connect classroom learning with real-world applications. The use of information and communication technology (ICT) technologies allows students to put their theoretical knowledge into practice via the use of virtual labs, programming environments, and simulation software. The research delves into the ways in which students get a more profound comprehension of topics via the use of various applications, as they participate in experiential learning.

Information and communication technology's effect on computer science education evaluation strategies is also explored in the research. Because of the wide variety of skills needed in the sector, traditional forms of evaluation may not be adequate. Online quizzes, project-based assessments, and coding challenges are just a few examples of the creative assessment methods made possible by ICT integration. Students are more prepared for the difficulties they will encounter in the workforce thanks to these approaches, which also provide a more thorough assessment of their talents and are in line with business standards. This research highlights how information and communication technology (ICT) has the ability to revolutionize computer science education.

The project seeks to add to the continuing conversation about technology in education by studying individualized learning experiences, collaborative platforms, real-world applications, and creative evaluation approaches. Educators, legislators, and stakeholders must comprehend the efficacy of ICT within the framework of computer science education due to the ever-changing digital world.

INTRODUCTION

There was a strong push to adopt an ICT-classified framework that would facilitate learning in the higher education environment in the mid-to-late twentieth century. The irony here is that the IT industry was supposed to be experiencing its golden age at the time. In this context, "information communication technologies" refers to the mass storage, distribution, broadcasting, and arranging of information as well as the related bundled services, as well as digital media such as television, radio, smartphones, etc. Mail service, texting, video conferencing/chat, social media (Facebook, WhatsApp, etc.), and all the gadgets that make up these platforms are all part of information and communication technology (ICT). Which will do a number of data and communication tasks. Information and communication technologies will benefit from all of these computers' features.

Because of the impact of ICT on people's lives, the most important parts of people's lives have altered. The banking, pharmaceutical, hospitality, tourist, hotel, engineering, and other related industries have all put their unique stamp on the information and communication technology landscape. Information and communication technology's (ICT) impact in these areas throughout the last decade has been both active and positive. One observable evidence of how each sector has worked over the last many decades is the way it operates now. However, there is still a disturbing lack of information about the impact and use of ICT in the realm of education. This means that, in comparison to another sector, relatively little modifications have been implemented.

- The set of interconnected technological resources that may improve our capacity to learn, disseminate, infer, and communicate.

- The following are three features of educational ICT: The sources that are coming in include laptops, desktop computers, online applications, response systems, and so on.

- The power source for the computer's display, large projection screens, etc. Some of them are dual-

purpose, such as portable video recorders and cameras.

Viewpoints such as learners and learning may vary depending on the context. A learner is someone who is always trying to improve their knowledge and skills. A student's interests determine the kind of learning that will take place throughout their academic career. The course will be built in accordance with the new curriculum's contextual changes, and technology will be an intrinsic component of it, utilized and accompanied as needed.

Below are some illustrations that will help to illustrate the many uses of information and communication technology (ICT).
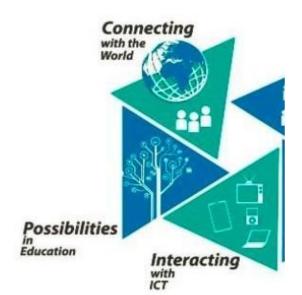

Figure 1 Educational Sector: ICT integration

ICT in Higher Education will have bit different aspect of linking the different modules which includes the below sections.

- Context
- Technology
- Design for Learning

Below table provide an brief insights of technologies which will comes under ICT bucket.

A technology's foundation rests on its traits, limitations, and possibilities. As the lecture is being delivered, it may be adjusted to suit the requirements of the instructor. There are several ways it may be used to enhance the student's comprehension. You may learn new things in various ways with each technology since it has its own nature and features.

The facilitator, aided by both technology and context, is entirely responsible for design for learning as they utilize it to provide the content or study materials. The ideal facilitator would have the knowledge and skills to research the chosen subject thoroughly and use technology to create engaging educational materials.

EVOLUTION OF ICT

Technology has advanced steadily over the previous many decades, and this trend may be characterized as the emergence of new concepts, or evolution. In the past three generations, there was talk of technology; our ancestors lived through the industrial revolution without ever seeing a telephone or other lightning-fast means of communication. In contrast, our parents' generation was much more technologically advanced, and they inherited some of this knowledge. They relied on the radio as their primary source of news until the invention of television, which provided visual news, came along. All of these breakthroughs sprung from the advent of the internet, which occurred after that specific revolution.

From the military and defense to commerce, education, and tourism, these technologies have permeated every industry. Technology has allowed for a decrease in the physical size of electrical products while simultaneously increasing the processing and communication speeds of data encapsulation and other related tasks.

First Phase:

This is the first phase of information and communication technology, which began in the middle of the twentieth century. Calculator No. 1, which was created during World War II, weighed 500 kg. An invention that would later inspire the development of computers occurred in India in the year of its independence: the transistor. Computer became a well-known term when punch cards and magnetic tapes replaced them. The first calculator was shown in the figure below.

Figure 2 First Calculator Invention

Second Phase:

A flurry of activity around new technologies and modest innovations began in the middle of the nineteenth century. The advent of integrated chip programming in 1970 ushered in desktop computers, which in turn transformed disc drives that relied on magnetic tape.

Figure 3 First Desktop Computer

People sometimes refer to these types of PCs as "personal" or "private" desktops. The first desktop computer is shown in the figures below.

Third Phase:

At this point in time, technological advancement was accelerated by the arrival of the microprocessor. The notation (µP) is used when dealing with electronic and electronic student terminology. A microprocessor is a kind of programmable logic device that takes in data, processes it using a compiler according to the instructions stored in memory, and then outputs the result. A microprocessor was crucial to the evolution of central processing units (CPUs) and the reduction of processing time and power costs. The schematic of a microprocessor is shown in the figure below.
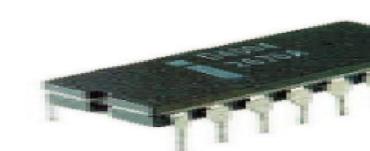

Figure 4 Microprocessor Picture Fourth phase:

In many cases after the development of the microprocessor, communication between computers was required but was not occurring, necessitating the construction of new infrastructure, which was both expensive and impractical. Networking and the expansion of information and communication technologies have emerged as solutions to this problem. These technologies enable the connection of computers within a very limited geographical region, allowing them to interact with intrasystems linked to each other. The next big thing in the information and communication technology industry was the creation of the internet, which connected people all over the globe. A long distance barrier, even those abroad, has been broken as a consequence of the internet. As the internet continues to develop, more and more service providers are offering broadband, a new and improved version of the internet.

You can see the computer networking in action in the diagram below.

Figure 5 Diagram of Network of Computers Fifth Phase:

Thanks to satellite phones, we can stay in touch even when landlines and mobile phones are down.

Wireless communication is a fifth-generation invention that has become an integral part of our daily lives. This is mostly caused by mobile phones, particularly smart phones. Back when mobile phones were first coming out, they were huge. Much later, researchers worked to reduce the physical dimensions of mobile phones while simultaneously increasing their functionality. These days, we rely on our mobile phones for everything from making calls and sending texts to doing online shopping and making payments, as

well as for routing directions, listening to podcasts, taking pictures, and more.

ICT Major Stakeholders of Education

There was a dramatic shift in the dynamic between instructor and student once information and communication technologies were used in the field of education. So, there are holders for stacks below, which include

- Organization/University
- Media (Both Audio and Visual)
- Alumni of the university or organization

Figure 6 Various Devices connected internet and communicating

- Administrator

- Government (Includes State, Central and HRD ministry)
- Higher Management (Trustee, policy makers)
- Facilitator
- Parents
- Students
- Corporate Sector

Maintaining positive relationships with all of these investors is a very challenging and time-consuming endeavor. Because technological trends are always shifting, giving the idea that they will transcend traditional boundaries and posing a challenge to work outside of traditional job descriptions. Every stakeholder will have an equal opportunity to engage in different parts of the learning process and will play a significant role.

Parental involvement is crucial since they will be the ones to keep an eye on the policies enacted by the university's upper administration and see first-hand how they improve the educational system. Students who have graduated and are now known as alumni play an important part in the school by speaking, giving feedback, and sharing their experiences in the hopes of inspiring future students to enroll. An alma mater is a public exhibition of a student body that serves as a model for other well-known extracurriculars.

Advantages of ICT

Many schools are considering implementing ICT programs since it is a reliable and popular way to expand students' access to official and informal education. The following are some of the reasons why ATE is the best option. Information and communication technology stands out due to its enormous data storage capacity and its lightning-fast response times when retrieving specific requests.

- By allowing students a grace period before responding (e.g., around the clock), ICT facilitates more engaging learning.
- Additionally, it enables training to get responses from all around the world, providing real-time data.
- Studying or obtaining knowledge does not need relying on textbooks and other notes supplied by educational institutions, governments, or libraries. In today's digital environment, information on any topic is readily available at any time via the internet and WWW.

With the use of ICT, people all around the world will be able to access mentors, subject-matter experts, and peer-to-peer learning opportunities. Basic advantages are detailed below: Overall, the class performed better.

Class participation has improved.

Body language, communication and soft skill will improve since every student will be active participating in group chat, discussion and writing mails.

Steady use of ICT in all the subjects will bring good understanding and motivational space for the student ability in learning.

- Understudies can utilize ICT to arrange their work and make it all the clearer.
- ICT can bolster distinctive showing strategies, this changes the way understudies can learn.
- Some PC projects, for example, showing programs provide immediate criticism on work finished by understudies.
- A few applications can spare time and exertion, for example, programs that show frenchvocb, these are speedier and more successful than utilizing paper.

- Encourages shared work, so understudies can cooperate.

CHALLENGES IN ICT

There is still reluctance to use ICT in underdeveloped nations, despite several scenarios demonstrating the significant benefits it will bring to students, facilitators, universities, and governments. The implementation of ICT in the educational system is met with various objections and demands. Below, we'll go into more depth about the internal and external obstacles that will impede the deployment of ICT.

Dearth of trained facilitator:

The biggest problem is that the faculty members do not have enough training in information and communication technology, thus their knowledge and skill sets are not up to par. Few selected educators have a firm grasp on the fundamentals of information and communication technology (ICT) education.

Unfavorable organizational culture:

Instead of actively using ICT in education, many educational institution policymakers

and upper management continue to rely on outdated, ineffective practices.

• Insufficient time

The faculty will have a plethora of tedious manual tasks that will eat into their valuable work time. Incorporating content design into the teaching and learning process via the use of ICT will be challenging for facilitators due to time constraints. In order to learn about new technology, the facilitator has to spend time with their coworkers.

• Issues of maintenance and upgrading of equipment

Upgrading to the newest information and communication technology (ICT) technologies is expensive. Inadequate government funding has rendered most of the ICT projects ineffective. Maybe the pupils won't be able to afford this activity since they come from a low-income background.

• Insufficient funds

The relevant authorities will conduct continual upgrading activities as time goes on after implementing ICT in a university or institution. Both the software and the hardware will contribute to it. A large

investment in infrastructure and financing was necessary in emerging nations like India. It is very challenging to proceed since the government does not have enough money.

• Challenge of language and content

Almost all of the software is written in English, the most widely used language in the world, and the same is true of the internet content. Developing nations whose citizens are fluent in English will fall short. Education in this language is far off, and the language barrier will become more severe in rural and suburban areas.

Several outside factors that impede the introduction of ICT

• Shortage of equipment's

There will not be enough computers or related resources (printers, scanners, etc.) for each student because of the high volume of applications. Not to mention that the essential goal of the ICT won't be met.

• Unreliability of power

A significant obstacle to the implementation of ICT is the widespread lack of electricity throughout the nation.

While this is less of an issue in metropolitan areas, it will affect many rural institutions.

LEARNING PLATFORMS

There are several definitions of "e-learning," but in the end, it really means learning by electronic means. Specifically, this means that learning will take place not in a traditional classroom setting, perusing text books, or interacting face-to-face with teachers, but rather online.

Online classes and PC-based preparation are the foundational elements. New, state-of-the-art technology makes it possible to learn anywhere, at any time. Visual and auditory elements, such as a combination of text, graphics, music, and action, may increase the interest in these classes. Students may be taught using several mediums, such as television, portable telephones, personal digital assistants, and computers.

- There are two further types of online education: structured, formal classes, and more informal, less structured methods like chat rooms, email, and the like. The much-discussed e-learning-based deep learning combines the two types of knowledge to better understand performance problems.

- However, there is a vast array of contexts in which e-learning finds application. Methods that transfer knowledge to experts via the association structure have been indicated in associations.

- It is defined as a masterful instructional and learning resource in expulsion guideline universities that use a wide range of technologies, most notably the Internet, to reach students from a distance.

- Typically, e-learning has begun to represent a distinct way to enroll in a course of study at many institutions, where students occasionally, if ever, go face-to-face or have on-site access to informational workspaces, because they think online.

CONCLUSION

This practical and empirical study with subject matter expert which is based on ICT and its trends by integration of Cloud infrastructure accentuates on the breaks and slits in existing system in ICT and cloud technology and in what way the experts in stream round the state or nation engaged with this technology. Before integration of cloud services to proposed hybrid ICT

framework, the primary task is to evaluate the road blocks, perform risk analysis and analyze in what way this will bring a change in students, facilitator and business when it comes to educational perspective. Here scenario in this present era of technology many universities and colleges are teaching in traditional class room method which is one-way communication along with old technologies like using PPT etc. and students are memorizing concepts just to pass the examination to get degrees and job. So, this will kill the imagination, creative and logical thinking capabilities of a student. To overcome all these barriers, this study has proposed a new-fangled ICT model which is integrated to cloud service. These cloud services which is mentioned earlier in modelling will help in understanding computer subject in practical way and it will work logically also. This will cover the few aspects which is benefits students, facilitators and subject proficient also benefitted. Primarily from ICT and cloud aspects it is evident that presently there is high demand and many software are moving to cloud environment and has high demand. Almost all of them are rated this proposed model which is integrated to cloud service and most of the universities already thinking about cloud or in touch with some cloud vendors. For this study we

have taken AWS cloud for integrating to existing ICT model and which has many advantages like cost effective and will provide few services for free.

Cloud will provide many services which is helpful in teaching computer subjects like instance creation, storage, computing purpose etc. All these will act as a hinderance in showing interest for migrating to cloud by subject proficient expert analysis. When compare to these hinderances there is lot of advantages which will drive management to migrate to cloud by giving an impression that all these security threats can be addressed by doing some security policies with AWS cloud vendor. Resources will be available in multi-tenant environment.

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