Use of Information Technology in Research

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Abstract

With society's increasing knowledge and technological advancement, our nation requires the development of skills that will allow it to maintain pace with the advancement of science and technology. In the global village, it will be impossible to isolate educational systems from other social institutions, national and international interactions, and consequently education.

In the twenty-first century, education is the source of all changes and developments. In education, information technology requires a culture. This culture must be learnt concurrently with the utilisation of hardware resources. The system must be trained to utilise information technology; otherwise, the purchase, transfer, and investment in technology will be a waste of resources. Despite the fact that these technologies are not neutral in any way, they should be utilised as a means of communication within the extant social structures. As a result of the inherent character of human social institutions to undergo change and transformation, the educational system is also susceptible to modifications. The fundamental issue, however, is what strategies should be adopted so that education systems in developing nations do not merely imitate those of developed nations, but instead mature and advance based on their own requirements along the path to progress. In this paper, following an explanation of the function of information technology and its position in education in developing nations, we will discuss its future.

Introduction

Today, information and knowledge are the primary keys to achieving productivity, competition, prosperity, and comfort. As a result, countries have focused on enhancing access to a higher-quality education. To develop human capital, it is necessary to examine our institutions and education to determine whether they are keeping pace with a rapidly changing and developing world. If we compare the modern world to the previous century, we are confronted with astounding advances in sciences, business, medical services, communications, and many other disciplines. Surprisingly, upon visiting the institutions, we observe no difference.

 between modern classrooms and those of the last century; students seated in rows, holding pencil and paper, scribbling hurriedly what the teacher is saying and writing so that they can learn them by heart and give them back swiftly at test time. This is despite the fact that the sciences and technological advancement have altered many aspects of life, but education and the teaching methods of students and teachers have not. The instructional methodologies have not changed [1]. The international society for technology in education (ISTE) emphasises that today's educators should be prepared to offer students technology-based learning opportunities. In truth, preparation for employing technology and technological awareness to improve the quality of pupil learning should be one of the teacher's fundamental abilities [2]. Since 1990, the most effective surge forward in the majority of the world has been the implementation of IT (information technology) in higher education [3].

2. What is IT?

Information technology refers to the knowledge process and its methods of application, processing, conveying, and progressing information[4]. IT comprises collecting, organising, storing, publishing, and utilising information in the form of sound, image, text, number, etc.,

through the use of computers and telecommunications...[5]. Important IT-related changes have become the source of fundamental class modifications. The most significant changes stem from the fact that technology has enabled students to emphasise outside-of-class information, thereby increasing their motivation to learn [6]. One of the responsibilities of information systems in education is to ensure that we have timely access to the necessary information. We should strive to anticipate required information so that we can access it when required.

Some prognostications foretell that IT will result in the formation of a "global village," while others believe that new information technologies will promote international accord (mutual comprehension), peace, and fraternity. Others view technology as a means of bolstering freedom and promoting democratic principles. Others have viewed technology as a factor in emancipating the populace of the third world; therefore, obtaining information through larger communication systems should be pursued, in their opinion. In addition to difficult access to technology, developing nations face structural and behavioural issues associated with it. The effectiveness of these technologies depends on political, cultural, economic, and technical factors, as well as the level of software development, the quality of its institutionalisation, and its application [7].

3. Importance and Role of IT in the Education

Considering that education has utilised technology for more than a century to expand and develop various processes of the educational system [8], it is not surprising that the introduction of new technology has increased the interest in acquiring knowledge through various methods of presenting knowledge. Currently, universities in developed nations can provide a technologically-based education. Smart institutions have made strides in virtual education. Online education and remote instruction are among the new modes of education in the twenty-first century [9]. By transforming learning environments at the start of the 21st century, individuals and societies have placed a heavy burden on the shoulders of educational institutions and their traditional structures due to their growing need for education.

Today, a variety of information and communication technologies can facilitate the education and learning process ([10]; [11]). In addition, there is evidence indicating that information technologies offer efficient and rigid methods for professionally developing teachers ([12]; [13]; [14]).

Beauchomp & Parkinson [15], in a study titled "The students' perception of the sciences during the transition from a rich technology environment in elementary school to a low technology environment in high school," concluded that although high school students were irritated by the lack of access to computers and other information technologies, they enjoyed the course due to the efforts of the science teachers. The most important characteristics of the education system in the era of information and communication are:

1- In the new education, what is worth knowing and what is essential are obliterated. Not the acquisition of all knowledge [16].

2- In modern education, the teacher assists the student in obtaining, selecting, evaluating, and storing information from a vast array of sources.

3-Printed magazines and books are knowledge sources; online books and magazines supplant the draughts determined for writing and publication.

Some advantages of using technology and IT in education include students learning their courses in less time using technological instruments [17].

By utilising information technology and its tools, particularly the computer and planning modern tutorial programmes such as the virtual tutorial programme, students have been provided with the possibility of accelerating the process of information dissemination, a variety

of recognisable and repeatable learning sources, a more flexible structure, the ability to search for information, and the possibility of metacognitive understanding. They can use this device as a tool for their educational activities. Flexibility in terms of when and where pupils and instructors carry out their responsibilities [19]. Economic, cultural, and social existence are dependent on information and communication technology in an information society.

Advantages of the Information Age:

1. enhancing leisure time
2. Enabling teleworking.
3. Providing new avenues for increasing national productivity and competitiveness.
4. Improve employment
5. Lifelong education

5. IT role in the education of undeveloped countries

On the basis of the views of the UNESCO international commission on the study of communication problems, one of the roles of communication and information technology in the field of education, i.e. transferring necessary information for growth, making and growing the personality and learning the skills, transferring necessary various and extended messages in order to assist the learners in recognising, appreciating, and understanding each other and unity in social obligations, has been identified. Education is one of the primary means by which one can attain psycho movement, unity sense, argument, and self-confidence, and information technology plays a significant role in this context. Its expansion in both developed and developing nations, particularly in terms of collective communication, creates new educational opportunities.

On the other hand, it appears that less-developed and developing nations are generally concerned about falling behind the "Information Revolution" in education. This concern causes a significant portion of government financial resources to be spent on the acquisition of the newest forms of technology without regard for the necessary preparations for assimilating and utilising its benefits. Developing nations should adopt policies that safeguard them from foreign economic restrictions accompanied by political and cultural consequences. In the interim, these nations should establish the necessary infrastructure and exercise control over their extant sources in an effort to achieve self-sufficiency.

6. IT and the necessity of changing education

The advent of PC (personal computers) and widespread Internet access creates a setting that compels global education systems to radically alter their educational structures [21]. The obligation of educational systems to address the changes is obvious. Its primary objective should be to increase human resistance to change, i.e., so that people can rapidly adapt to continuous change by observing economics. The greater the rate of change, the greater the importance of anticipating future patterns. To assist humans in mitigating future trauma, we should implement a meta-industrial educational system. Instead of seeking in the past, we should look to the future for our purposes and methods. Evidently, the 21st century will be dominated by modern technology, and due to rapid scientific, economic, cultural, and political changes, educational systems will no longer be able to view themselves as islands distinct from other social and national organisations in the global village. Because education, in the context of both historical empirism and the specific conditions of the 21st century, will undoubtedly be at the centre of changes, evolutions, and multiplications in the 21st century. IT is viewed by society not only as an economic variable and political lever, but also as a means of transforming

education. One can therefore assume that proposed IT in education patterns centre on the nature of knowledge, functional techniques, and a societal criterion for control.

7. Conclusion

In the modern world, education requires modern, moderate, and straightforward technologies in order to meet its requirements for their advent and proper application. Education should implement policies, the most essential being:

The expansion of human sources of IT through educational programmes and the promotion of skills for enhancing the efficacy of the workforce in education.

Using IT to increase the efficacy of educational institutions in order to provide a better education while fostering creativity.

Supporting IT, such as by covering costs associated with research and education expansion.

Using technology to establish a positive atmosphere and participation in education.

Establishing cooperation and coordination between various parties in regards to the utilisation of the aforementioned instruments.

Increasing the use of IT in education by supplying it and promoting its use.

In evaluating types of information technologies, education should take into account factors such as necessity, scientific efficacy, economics, and extant infrastructure and skill capacities.

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