Impact of Electronic Resources on Engineering Disciplines in the Present Day Educational System

Bedadyuti Sahoo* and Subhasmita Biswal**


ABSTRACT

Knowledge on information technology for retrieving and use of online resources in academic and research in the present electronic age is the need of the hours. The necessities of the faculty members, research scholars and the M. Tech. students' of engineering disciplines are to use the electronic resources in their day to day practice has posed a serious challenge. As a result, researchers, students and the faculty members are determined towards ICT tools and techniques and have started exploring the benefits from the emerging technologies for their academic betterment. Another way it could be analysed that it has been possible mainly due to the rapid growth of ICT gadgets, availability of myriad resources such as e-books, e-journals, e-theses and dissertations, resources present in the institutional repositories through the electronic databases and so on.

Key Terms: NKC, ICT, Wi-Fi, UGC, AICTE, Digital Library, Electronic Resources, Engineering and Technology

INTRODUCTION

The term Engineer has been derived from the two Latin words 'ingeniare' which means contrive and devise and 'ingenium' means cleverness (https://en.wikipedia.org/). It is one of the best educations to accelerate the industrial development and to give few steps ahead to the society as appreciated by APJ Abdul Kalam, the then Scientist and President of India. It is based upon the art of utilisation of knowledge (http://shodhganga.inflibnet.ac.in/) of the modern society. In this way it is said that, technology is the pivotal around the human needs and services (http://shodhganga.inflibnet.ac.in/) and to increase the socio-economic status of the country. Engineering disciplines are considered as the technical education imparted in the university, deemed university, national importance institutions, autonomous and affiliated colleges or institutions. The programmes like, diploma, degree, post-graduate degree, research degree, craftsmanship etc. are conferred at various government and/or self-financing institutions. As the value of education is responsible for changing the economy of the country, the proper intrinsic growth taking to the class lecture, research and development, preparation of theses and dissertations and in various value added engineering related works are having much importance and significance. So for this, the importance of the availability and usability of resources for the academic institutions particularly engineering disciplines are having much importance for academic excellence.

The knowledge on hardware, software, rich web resources and their accessibility using computer technology and IT tools and techniques in the field of technology based professions has now become imminent. The present evolving concept of information technology for the faculty members, research scholars and the M. Tech. students' are of paramount importance for exploring the latest growth and development for their academic as well as research need. So for this, this survey attempts to explore the current status of information technology literacy of the said categories of users'. The present study also attempts to examine the extent of faculty members, research scholars and the M. Tech. students' of the Engineering Schools/ institutions who are relying on online resources in the Library on different domain areas. In addition to this, the faculty members, research scholars and the M. Tech. students' fine tune their existing knowledge and skills on information retrieval which helps them to redesign their career prospective in the present days.

AIMS & OBJECTIVES

The importance of the technological development after post-independence era has played a great role in all fields of
human life. The application of technology in the field of industry, business, agriculture, food security, education, and many other sectors is a strength which supports to Indian economy. So for this, it acknowledges that, this trend will continue as a support in providing technological support converting manpower to machine power in industries. Looking at the science and technology in the modern era, the British Government established a School of Surveying in Madras in 1794 and gradually the other institutions like, the present IIT Roorkee in 1806, Bengal Engineering College in 1856, Guindy college of Engineering, Madras in 1859, The present IISc in 1909, Delhi College of Engineering in 1914, Jabalpur Engineering College in 1947 (http://www.namstct.org/) and many other institutions have been established. But after 1947, the present all IIT’s, lots of laboratories supported by DRDO, CSIR, department of Atomic Energy, Department of Science and Technology are paving this technological fields towards being self-reliant. So, it is understood that, the growth of engineering sectors are associated and fuels the other allied sectors more advancement. Taking to the above points of discussions, the key objectives of this paper is to highlight the following points.

- Electronic resources support Engineering discipline as a academic growth
- Impact of information technology and engineering databases in the field of engineering disciplines
- The role of electronic resources establishes an ambience for the development of technical institutions

**Literature Review**

Literature review gives the investigator primary ideas in the identical topics and encourages understanding the structural and functional parts of the topics undertaken. Price & et al. in their study stated that, librarians are to reassess their role in the information chain and they should be capable technically delivering and handling the different formats to satisfy the users' request. In the same way, Newman in his article clearly stated that, industry desires the engineering graduates with the mathematics and science skills. So, the graduate engineers are competent on modern design process. In this regard, he pointed out that, Southampton has taken a number of initiatives to build good standard of graduates through better teaching learning processes. Diana also in his study said that, there are three developmental growth on resources like bibliographic, full text and reference are the pattern of sustained growth. Sharon positively pointed out that, despite various challenges with ICT, Libraries have built up good collections of print and online resources balancing the cost and forging a single ICT framework. He also added that, it would be more continuous if the introduction of the online teaching and information competency literacy could be provided to the library professionals. Shiv Kumar gave importance that the use of search engine and OPAC searching are the most important for the users to find the online resources from different databases. In this manner, Lois in his article elaborated that, the role of the library professionals are in the midst of the upcoming technologies and they must be aware about the present technologies and latest areas of the development for managing the library. The knowledge on smart watches, Google classes and innovative ways for innovation, knowledge on computer hardware and software, use of mobile devices in the computing environment can provide the good services and satisfy the demands of the users. So this El-Shall emphasized that students come to the institutions not for anticipating a job and a degree but to learn to configure and manage themselves. It is enumerating the fact that, the management is not basing upon knowledge but it is an art where students, research scholars and the faculty members learn from the institution. Joo & Choi in their study stated that, the intention of the online resources is to access by the students not the means for the credibility. So it needs searching skill within the individual user's level. Al-Qallaf & Al-Mutairi showed that, students are conscious, and competent in the foreign language but also in the same way they are concerned about the use of web technologies in their teaching and learning practices.

- **Electronic Resources are the Boom for the Engineering Disciplines**

  According to the Wikipedia, Engineering is the combined applications of science, mathematics, economic, social and practical knowledge for innovation, design, maintenance, invent and research in the form of structures, tools, machines and many other components of the organization and processes (https://en.wikipedia.org/). The engineering invention is not a new concept. Stating from the human devises such as wedge, lever, pulley and wheel in the ancient time till the invention of spacecraft in this modern world, the contribution to the society has a great donation which signifies the importance of engineering and technologies in the ages of human development. The works like pharos of Alexandria, pyramids in Egypt, Parthenon in Greece, the great wall of China etc. are the burning examples of civil, military and architectural engineering frameworks in the ancient age. In this way, the first steam engine in the year 1698 and the industrial mass production are the major contributions in the beginning of industrialisation. But, during modern era, lot many works have been done by the then engineers for social development. The combined development in the fields of civil, mechanical, electrical, electronics, metallurgical, chemical, mining, software, computer science, genetic engineering etc. are the comparative development. So for this, the present facilities given by the engineers and the technical scientists changed human life in many spheres of life. Former President A. P. J. Abdul Kalam envisaged the socio economic growth back of last six decades of India. He in his statement said that, the entire world is facing acute problem of getting technical and engineering professionals. So for this various companies and universities are gravitating to India for scientific and technical research and development. It is a matter of imagination to find out the clean cities, good citizens and responsible entrepreneurs, sophisticated institutions for effective creation of the environment (http://www.namstct.org/). Here, it is understood that, the importance of the engineers and their contribution to the society for the construction and development of all spheres of life.

- **Impact of Digital Library in the Engineering Institutions**

  Rapid advancement of information technology and its development in the engineering disciplines have brought renaissance in the present system. It is most applicable in the industry as well as academic sector because the higher the inputs, the greater is the productivity. So for this, to bridge the gap, the digital aspects help a lot. In the same way, the digital libraries in the engineering institutions play great roles for the promotion and excellence of the engineering disciplines.

Use of electronic resources in the present day information scenario (https://www.ijiet.net/) is a common phenomenon among the teachers, research scholars and the students of engineering institutions. So it is understood that, the importance of digital library for accessing e-books, articles, pamphlets, lecture notes, reports, theses and dissertations...
and also to collect the information for class lecture is of paramount importance.

Growth and Development of Technical Education in India

As soon as India got independence, the technology advanced rapidly due to liberalization and privatization. A large numbers of technical institutions flourished and produced many scholars. So for this, people get support from the government and personal investment for establishing and maintaining the standard and stability increased the value of engineering courses. The increased partnership with the industries and the industry sponsored research and development and also the collaborative works with the different universities across India are the new imperatives for sustaining the engineering disciplines in prominent and qualitative manner.

The regulatory mechanism is the most important for establishing the institutions and to provide quality education. So for this, the UGC is the apex statutory body as far as India’s higher education is concerned and another statutory agency is AICTE which was created in 1986 for technical education and to support the technical institutions. The basic aim of AICTE is to coordinate and plan for the institutions or technical universities throughout the country. The provision of the NAAC (National Assessment and Accreditation Council) by the UGC and the NBA (National Board of Accreditation) of the AICTE has strengthened the quality of education and its significant improvement.

Electronic Resources in Engineering Institutions

The engineering discipline in the present scenario requires good, technical and expert hands for making our country more competent, productive and self-sufficient. Trained human resources, research and development create opportunities for industry and service sector. In this way, the industry would produce quality product challenging the labour markets. Structural rigidity and competition in the field of production is a challenging and hard to survive. So for this, the excellent and competent hands can reduce the gap between market economy and sustainability. So for this, joint venture provision of engineering education through public and private partnership can bring the optimal solution meeting the changing needs of the present economy. The growth of concrete structures and the software companies face hard to get trained masons, carpenters, blacksmiths, electricians and software engineers for running their companies in well manner. So the good engineering education is the only way to solve the problems in employing the personnel like, computer operators, computer analysts, factory workers, factory and workshop mechanics, technicians etc. in the long run. So for this, the criteria like, obdurate supremacy of teaching and research, leading attitude of the factory creating new frontiers and best selections in faculty and student can enhance the proficiency and the efficiency of the engineering sector. In this way, the problem of unemployment and the deduction of standardisation in the engineering education will not flourish in the long run. Here, the availability of required resources for the faculty members, research scholars and students will make them more reliant in doing their own works well.

It is further said that, the availability and usability of e-resources are two terminologies which are considered two sides of the same coin. In case of lack of availability usability becomes meaningless. The proper usability of e-resources depends upon the awareness and skill of the user. So for this, large quantities of subscribed e-resources in the libraries are to be kept for the users’ as a whole. Though it is large...
expensive, still is a mandate and necessary for the healthy teaching learning process and research. The strategic plan (http://www.inflibnet.ac.in/) is necessary to attract the users' like students, research scholars and above all faculty members in the engineering institutions". In addition to this, timely orientation and users' training enhances the capabilities in retrieving the resources for their better utilisation.

Living Problems and Constraints in the Engineering Institutions

In general cases, faculty members, research scholars and the M.Tech. students face problems in accessing the online resources and for the utilisation of online resources for their day to day activities and research and development. Some of the articulated problems and the constraints are given below.

They are over pressurized and they are facing paucity of time in exploring and experimenting the resources for their day to day activities. Sometimes the lack of knowledge on searching the database in extracting the required items becomes the problem. So for this timely training and awareness programs are to be given to them. Lack of (Wireless Fidelity) Wi-Fi environment in all engineering institutions create problems in accessing the resources beyond library timing; and inadequate terminal facilities and the additional responsibilities apart from the allotted workloads create pressure on them in hunting their wanting for their learning process and research.

Conclusion

In the conclusion, it can be said that, the basic purpose of the institution is to provide education for the greater interest of the country. So for this, many technical initiatives have been taken away for up-gradation of the engineering education in India. It is based upon the inputs of the working groups and consultation of other stake holders. The initiatives like, reformation of the independent regulatory authority for higher education with a standing committee on engineering education. AICTE is the highest regulatory body in India on this matter to focus on such related issues like, curriculum development, faculty development, implementation of the credit based systems and compulsory in-service training for wellbeing of the latest development. In this manner, improving governance of the institution, attracting and retaining the faculty members, curriculum reform, integrating science and engineering education, industry academic interaction and monitoring the other newly borne institutions for making the education standardized is a prime factor for the present day engineering scenario. Here, the role of the UGC and AICTE is more important for imparting engineering education and sustaining the engineering disciplines more prominent. But, to some extent quality of the education is not maintained and provided which is called as unregulated growth especially in private engineering institutions. It is due to the engagement of less qualified and incompetent faculty members, inadequate classrooms, poor infrastructures and laboratories and the lack of cooperation among the institutions. The engineering discipline is basically practical orientated. It needs cooperation between the company and the engineering institution which enriches the value of engineering education where students can own personal ability in articulate and productive way. So for this, it is a big challenge in the present scenario, what exactly the National Knowledge Commission (NKC) under the chairmanship of Sam Pitroda emphasized on engineering disciplines and undertook many initiatives to make the Engineering education more functional in India. Last, but not the least, the engineering disciplines need more and more skill orientations by which they can meet the global norms and mechanisms in full-fledged manner.

References