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01
Bibliometric Study of Library and Information Science

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Abstract :

Library and information science education (LIS) has been spreading out all over India. Every state, one or more institutes/universities, offers LIS education. The research papers contributed by both academics and working professionally in the libraries. The analysis of co-citations of reference sources or cited sources indicated that "Scientometric," and "Annals of library and information studies" mentioned in their articles.

Kewwords: Bibliometric; Citation analysis; Library and information science; LIS research trends.

Introduction :

The quality of education and research work can be traced by the publications and citations to the research works. Moreover, the University Grant Commission (UGC) is playing an essential role in the quality of educations and research in India. As per the Gazette Notification of the Government of India, every research scholar should publish at least one paper in a refereed journal and two papers presented at the conference during Ph.D. (University Grants Commission, 2016).In India, there have been large numbers of bibliometrics papers published in different areas.

Objectives :

There is still a lack of published literature on LIS contributions in India. Consequently, this current study fills the gap by analyzing LIS publications from 2014 to 2018. The objectives of current research are to find out the current trends of LIS research in India during the year 2014 to 2018. Further, the study is to identify the newly emerging areas of research in LIS field. The study is also identifying the yearly growth citation and contributions, most prolific authors, core journals, core areas of research authorship pattern and degree of collaboration in LIS field in India.

The study has the following objectives:

(a) Examine the pattern of growth of the research publications output in the discipline of LIS during 2004-2015.

(b) Examine the distribution of output by performing sectors like academic institutions and government funded R&D organisations

(c) Identify the most prolific research institutions in the field of LIS in India and their citation impact;

(d) Identify the most prolific Indian authors and the citation impact of their research output

(e) Identify the most preferred journals used for communicating research results

(f) Examine the pattern of citations and to identify the highly cited papers.

Research Methodology :

The data was further refined and document types like editorials (65), reports (1), proceedings paper (1), articles not published from India (505), and 8 documents that could not be classified as either of the above were discarded. Thus records were left and were analysed to meet the above mentioned objectives. Each downloaded record contained name of the authors with their affiliation, name of the source journal and the number of times cited. Complete count method has been used for counting author citations.

Limitations :

(a) Some fields like 'times cited' are not up to date in the ICI database, which may negatively affect impact analysis of authors and institutions.

(b) In some records the address field is empty, hence leaving the decision to include or exclude that record to one's judgment.

(c) ICI does not index all LIS journals published from India

Review of Literature :

Several studies have been published in literature that dealt with bibliometric aspects of research in LIS. However, none of these studies have used the Indian Citation Index as the source for data. For instance, Patra & Chand1 analysed LIS research literature emanating from India based on the data abstracted in Library and Information Science Abstracts (LISA) from 1967 to 2004. Authors found that most of the articles were written by a single author and the author productivity followed Lotka's law. Herald of Library Science was the most prolific journal and late professor P.N. Kaula was the most prolific contributor. The study also found that the highest number (208) papers were published in 1999 and thereafter, a gradual decline was observed in the research output. In another study, Barik & Jena2 analysed the annual growth of LIS research publications in India using Scopus database for the period 2004-2013. Authors found that the highest and lowest number of articles were indexed in 2013 (20.7%) and 2005 (1.9%) respectively, and the yearly average annual growth rate was 16.5%. Two authored papers dominated the pattern of authorship. Kademani & Kumar were identified as most prolific authors. The journal Library Philosophy and Practice was identified as the most used journal for publishing research results. The researchers also found that author productivity did not follow Lotka's law. Maharana & Das3 did a similar study in which the authors analysed the growth and development of LIS research carried out by Indian researchers based on the publications indexed in Social Science Citation Index (SSCI) during the period 1999-2013. Authors found that 2010 and 2000 to be most and least productive years respectively. Analyses of productivity by authors found that 273 authors contributed a total of 140 publications with an average of 1.95 authors per publication and 0.5 papers per author. The authors also concluded that author productivity did not follow the Lotka's law. In a study Mittal4 attempted to trace the research trends in LIS in India during January 1990-June 2010 as reflected through articles abstracted in LISA. Co-word analysis was used to identify the core research areas by quantifying the frequency of occurrence and the analysis of co-occurrence of 4735 descriptors assigned to 1408 articles. The author used the Kamada-Kawai algorithm for constructing the network of relations between descriptors and making spatial distribution of these. The results of co-word analysis found highest interest in bibliometrics/scientometrics/ informetrics, library system and university libraries. The results also suggest that there exist substantial activities in digitisation, digital libraries and Web 2.0. Qadri & Khan5 analysed the development of Indian LIS literature for the period of Pre 1990s to Post 1990s. The data for this study was collected from the online LISA database. The study showed that there is more interest in modern subject areas like information technology,

bibliometrics, electronic resources, knowledge management, and library automation rather than in traditional subject areas like classification, cataloguing, indexing, documentation and library services etc. This study identified S.R. Ranganathan, P. Perumal and A. Neelameghan as the most prolific authors in the pre-1990s era, while V. Venkatappaiah, P.N. Kaula, and I.N. Sengupta were the most prolific authors in the post 1990s era. Single authored papers dominated the authorship pattern. The most common journals used for publishing research results were IASLIC Bulletin, Bulletin of Indian Library Association, Granthalokam, Granthagar, and Herald of Library Science prior to 1990s and SRELS Journal of Information Management, Annals of Library and Information Studies and the International Journal of Library and Information Science were the most productive journal until 2011. Pradhan & Chandrakar6 presented a bibliometric analysis of Indian LIS literature published in foreign journals using the online version of Social Science Citation Index database for a period of 2000-2009. The researchers found that out of the total of 21,197 articles, only 228 were contributed by Indian authors.

Conclusion :

The volume of published literature by Indian authors was found to be increasing steadily during the period of study with the highest number (38) publications in 2009 followed by 33 papers in 2008. A journal wise distribution analysis was also conducted and the journal Scientometrics was found to be the most used journal with 61 publications followed by E-Library with 36 publications. This study also analysed authorship patterns and found that there were a total of 467 authors publishing 228 papers, and that papers with two authors were the most common followed by single authored papers. Analysis of sub-disciplines of research topics found Bibliometrics/ Scientometrics as the most popular research area followed by User Studies

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02
"Librarianship and Research"

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Abstract:

The research process is as old as the history of man, and the scientific method has evolved out of continuous efforts to solve problems. An ever-increasing awareness of the complex interrelationships and interdependence of phenomena in the world of knowledge is an undeniable symbol of the essential integration of the research process. Because librarianship itself is concerned with all human knowledge, the use of interdisciplinary research to attack library problems is particularly important and promising. Present, historical and future perspectives, professional organizations involved in science research represent research methods used in library and information science. Research can be defined as a scientific and systematic search for relevant information on a particular topic. Research advances business. Research in Library and Information Science in India This study also deals with the historical and developmental changes in the field of library and information science. It also focuses on recent research trends due to emergence and use of information and communication technology in library as well as related fields. The present study shows scope for new research in various fields in LIS. Today, moving towards the twenty-first century, libraries have progressed in their tools. In earlier times, the situation was very different. Libraries and information centers collect and arrange and maintain all types of reading materials such as print, electronic, periodicals. It is the function of library and information center to provide the reading material required by its readers through various services. In this, they identify the needs of the readers and provide reading materials, information, and reading advice. Research in librarianship is necessary to improve the quality of the service facilities provided by the library and provide them to more effective readers.

Keywords: Research, Librarianship, Importance of Research.

- **Introduction:**

Librarianship is a constantly evolving discipline. No research is completely new, it has support. The researcher is doing the research by finding the consistency and inconsistency in this basis. It is necessary to use the studied original sources for the quality of this work. Various referrals are available, both free and paid. But for research, it is necessary for the researcher to acquire the skill of finding the correct reference and its application. Research begins with the perception of a problem, when there is something unsatisfactory in society. There is no knowledge required to solve the problem then the problem is realized. Any work is based on prior knowledge and experience. Similarly, it has to be taken for research in various fields. The development of any subject depends on the study of that subject and research. Knowledge cannot increase without study and research. Growth is the development of knowledge through study and research and the impact of knowledge on the development of society. Research is very important to the researcher. While doing research, it is also necessary to know where and how the information required for research is available. The information required for research is obtained from the library, through the Internet, online, offline, individuals, organizations, universities and research institutions. In this background, the library

is a society-oriented organization Libraries play an important role in the development of the society. The interdisciplinary subject of library and informatics was born to manage all such library functions, procedures, collection of reading material, information dissemination. As the library is an organization that works related to the society, this subject was included under the faculty of social science. As problems arise in the society and research is done to solve the problem. Also in library and informatics research is done to solve different problems. Therefore, the research methods used for research in this subject are social research methods.

- **Objective of Research Article:**

Library and information science has evolved over 100 years. Library science education is professional education. Training of library and information professionals is essential for effective functioning of libraries and information centers in the country. To develop manpower to run library institutions at various levels. In recent years the scope of library research has changed with the utility of information technology. The introduction of computers and automation in libraries has introduced new elements in library work in acquisition, processing and circulation, in this changed context, there is a wide scope of research in library and information science education

- **Research Meaning and Definition:**

Variability is a characteristic of human life and nature. It is not acceptable for the human mind to accept an event as it is, but human efforts are continuous to transform and improve the event. It is through this effort that new discoveries are always made, and this is how the society develops. The meaning of the word research is to discover. It is a physical process. The process of research is useful in discovering the mysteries of nature and the facts of social science. The inquisitive nature of human beings is considered to be the foundation of the research nature. Research is an important activity in human life. It is necessary for the growth of knowledge. Society develops through research means rediscovery, it is a continuous process. Research is a movement from the known to the unknown. Research involves defining and redefining problems, formulating hypotheses or suggested solutions, collecting, organizing and evaluating data,making deductions and reaching conclusions. Research is governed by the rule of objectivity, not the rule of subjectivity.

Research may have the following objectives:

a) To find a new generation with old data.

b) Reconciling old conclusions with new data.

C) Trying to reach more conclusions from the same set of data.

d) Presenting a completely original idea or theory.

e) Finding or solving existing contradictions in the field of study.

f) Continuously developing a discipline or field of study using scientific and rational methods.

- **Definition:**

- The Advanced Learner's Dictionary of Current English defines research as, "an especially careful investigation or inquiry into any branch of knowledge by discovering new facts."
- Redman and Mori define research as "a systematic effort to acquire new knowledge."
- D. Schlesinger and M. Stephenson defines research in the Encyclopedia of Social Sciences as, the manipulation of things, concepts, or symbols with the purpose of generalizing them in order to extend, correct, or verify knowledge, whether that knowledge aids theory formation or practice."

- According to Charles H. Busha and Stephen Harter, research is a "systematic search for knowledge", characterized by disciplined inquiry. An efficient and effective approach to expanding knowledge is to conduct specially planned and structured investigations, a process known as research."
- Dr. S.R. According to Ranganathan, "the word research denotes a serious and comprehensive investigation to discover new facts, to interpret them in the light of known ideas, in the light of theories, in the light of newly discovered facts to apply the conclusion to practical purposes"

The above definitions have focused on the nature, method, aim, purpose result and use of research in society. Research is not merely an inquiry; it is actually a scientific inquiry. It is carried out scientifically or critically. It represents studious, exhaustive and diligent investigation. Research aims at seeking knowledge. It endeavors to discover new facts or principles. Thus, research comprises of defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data, making deductions and reaching conclusions; and last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

- **Research in Library and Information Science in India:**

Research in LIS in India is not deeply rooted. It was Dr. S. R. Ranganathan who took librarianship to the level of a science by creating five rules of library science. He categorized them as general principles, fundamental laws, theories, principles. In the 1970s and 1980s, the introduction of library and information science programs at more universities trained students to conduct research studies in partial fulfillment of a master's degree in library and information. The Sen Committee's recommendation to the UGC made doctorate mandatory for senior academic posts in universities. Librarians and teachers of library and information science will largely go into research in library and information science. Doctoral studies, post-doctoral research, field studies besides major research projects are important for research in library and information science. Funded research projects (through UGC, ICSSR, DST, etc.) are limited. Traditionally, it has been objected in the librarianship profession that although research is done in the librarianship profession, the research done is not communicated. So J. J. Neil believes that 'librarianship is an information-poor profession'. Academic public research library librarians should conduct research to change this situation. In the current scenario, librarianship is undergoing rapid changes. But research in librarianship is taking place on a larger scale than ever before. Also, by increasing the quality of research, that research is being widely used in librarianship.

Reasons for Slow Growth in Research in Library and Information Science:

1. Traditional methods of teaching and lack of research orientation.
2. Lack of research experience by faculty and librarians.
3. Lack of knowledge about research methodology.
4. Inadequate number of teachers, who are burdened with classroom teaching
5. Non-availability of many qualified research guides.
6. Inadequate financial aid.
8. Lack of good library facilities and services.
9. Absence of required data. 10. Lack of encouragement for doctorates and lack of recognition of research areas.

- **Importance of Research in Librarianship:**

The importance for research in Librarianship mainly from following reasons:

1. The first reasonis the educational function of advanced study in librarianship. The main purpose of advanced trained is to train that, to impart to the student a body of knowledge and of techniques about the subject to which they had been insufficiently exposed during the earlier stage of professional training, or not exposed at all. These types of advanced training leads to fruitful specialization in the area of academic librarianship, special librarianship, public Libraries, library administration, bibliography documentation and information etc.

2. The second reasoninvolves the critical function, critical approach to librarianship. The profession requires students who can criticize, add to, and improve the professional knowledge and expertise. An importance function of research is to be critical. All the techniques, processes, and the practices of librarianship which are taken for granted in the beginning courses should be put to critical examination. Such a critical study enables the student to achieve and develop skills in them. The knowledge developed in the profession through surveys conducted by the faculty could be put to use, and basic research on the problems of librarianship be undertaken. These serve the critical function not for the sake of criticism, but for the improvement of professional practice.

3. The third reasonis the symbolic function. This is a result of growing professionalism in library and information science. Since 1930s, proliferation of library profession is under wayand profession began to see greater vistas of service opening before it. Advanced training and research leading to doctorates just like in other professions) were recognized as prerequisites of library profession to be treated at par with other professions. Starting with 'library economy' 1876 we are now in an information age, where we deal with computers, online services, and complexities of information technology. All these developments in informationtechnology have their effect on library and information science. To cope up with this ever increasing multi-dimensional knowledge, we have to keep ourselves ready and this necessitates research in our own subject field library and information science.

- **New Topics for Library and Information Science Research:**

There are many issues that need research in a developing country like India. These include Web 2.0, Web 3.0, Libraries 2.0, Libraries 3.0, Social Media, Blogs, Social Networking, Management changes, re-engineering of library and information functions and services, expert systems, information retrieval systems and ICT era etc. Digital Repositories, Library Software, Semantic Web, Library Technology, Barcode, RFID, Smart Card etc. Information Literacy, Information Rights, e-Governance, Intellectual Property Rights/Copyright Issues in the Digital Age, Open Source Software Use and Management, Data Mining, Information Needs Assessment/Information Seeking Behavior Assessment/Community Information Services, Bibliometric / Webometric Analysis, Data warehouse etc.

- **Conclusion:**

Research is a continuous activity. Research in LIS should be based on business demands. Due to information explosion and evolution of information and communication technology various new developments are taking place in the field of library and information science such as digital library, virtual library, e-library, databases, e-journals etc. This evolution is ongoing. This opens the door for various research activities in LIS. Concepts and techniques are developed through research. Similarly research is being done in LIS and various concepts and ideas are being developed in LIS with the help of new trends in Information and Communication Technology (ICT). As a result, scope for research in LIS has increased.

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03

" Language learning skill with Advanced Technology, parallel to Degree Education. "

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ABSTRACT

Learning of a new language is essential for an educated person. Reading, Writing, Speaking and Hearing are the required skills for better learning in our day to day life. Communication of knowledge, via a language gets fewer efforts for grasping the themes and ideas involved in it. The advanced technology medias used in the process of knowledge communication are the Print, Soft Prints, Pictures, Tables and Graphs, Charts, Audio Visual, Videos, etc. New language learning skill can be acquired with the script written using grammar of that particular language, pronunciation and the pattern of conversation including words, sentences, phrases, paragraphs and lessons. One has to study structure of that language and repeatedly using in proper field of knowledge, he gets skills more effectively. His entry is offered through language to a Treasure of wisdom. He is then free to move in the Information Age of 21st Century.

Key Words : Language, Learning, Communications, Pronunciation, Phonetics, Sensory Organs, Skill Developments, Talking Dictionaries, Duo lingo, Braille Script, Advanced Technology, Stenography, Academic Degree & Education.

Language: The history of mankind on this earth shows the developments step by step and now a day's World is too much advanced as compare to its old time. Any development without communication is a null. A man is developing with his surroundings. After long and tedious efforts he acquires the knowledge lying with the nature. All the stuff he can recognize with the sensory organs, like Smelling Touching feel by his skin hearing or listening, vision seeing, tasting with the tongue. As the human civilization advanced and mankind get stable with the river banks and the farming was the main activity, the need of proper communication the men became more civilized. They developed the skill of communication with the simple words and sentence such he can solve his day to day problems.

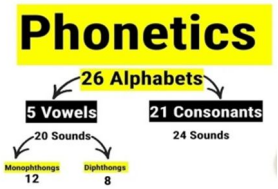
Learning : This process of learning is life time process for human beings. The great gift received from nature, a man received that is his sensory organs. He is able to learn new things in his life span are tremendous. The grasping powers can be strengthened with the help of language and the repetitions of the same activities. The language is a communication means of knowledge, the knowledge already in existence, which is stored by the generations and now tome used and spread throughout the community.

Reading, Writing, Hearing, Talking and making conversation is a skill that develops (for your betterment) as you practice. That is why here is the proverb "Practice makes a man perfect." Language learner requires the literature of that particular language. Language Listener requires the keen hearing of the typical pronunciation of it. The speaking of the language requires require the speech practice. The writer of language should memorize the parts of speech with the grammar thoroughly. The reader of the language requires the habit of regular reading. Hence as we say 'An apple per day keeps Doctor away', like that if we read,

hear, write and speak each day get the mastery of the particular language with our mother tongue.

Communications : Language is a prominent media for communication of knowledge. All of us know very well the multi Medias. The actual meaning of the multimedia is Multi Communication Media. Here the communication is existing but silent. Men communicate with each other via media of Print, with the micro forms with the audio systems, the video systems and one in all. In ancient days there were the drums beatings, using sparklers. When electricity comes in existence the telegrams, telescopes were the means for communications. Typewriting and Printing technology needs skills, makes multiple spread of knowledge and education.

Pronunciation : To learn a new language one should adopt the style and pronunciation. After long practice and way of stress on words one can pronounce the word having consonants and vowels. (The mouth passage is used to cause and not to cause the obstruction for voiced breath.) As this we can make typical sounds to form a word. And with the help of Grammar of Language makes pattern of a sentence. In a particular subject there is a link of many more concerned sentences and make paragraphs of a story or knowledge. In sequence with the sentence, phrases means having meaning but not a complete sentence.



Vowels : " If the mouth passage is left so open as not to cause audible friction, and voiced breath is sent through it, we have a vowel."(Prof. Sweet.)

Consonants: "Consonants are the result of audible friction or stopping of the breath in some part of the mouth or throat."(Prof. Sweet.)

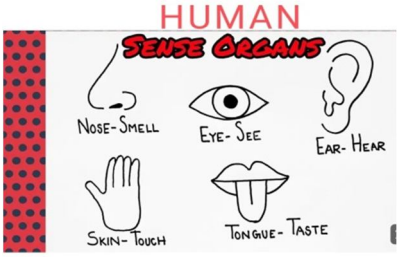
Diphthongs : " A diphthong is a union of two vowel-sounds in one syllable."(Prof. Skeat.)

Four common diphthongs are : as we heard in : **I now enjoy music.**

Short Vowel: That pen is not much good.

Long Vowel: Pa may we all go too?

Human Sensory Organs : Eyes, Ears Nose, Tongue, & Skin Touch we use these organs for seeing - vision, Hearing or listening, Smelling, Tasting, and Touch sensing. Then the process starts for Grasping, Thinking, Explaining, Exclusion or deduction, Addition the data to coverst into words and sentences.



Language Rules & Skill Developments : As the formation, pattern, phrases, pronunciation learning a new language, one should perfect in a basic language preferably world renown language that is English (U.K.). English is Universal Language with her talent of wider acceptability and the ability to learn easily by masses. When you master a language as

third language in the curriculum, your readiness to acquire the skill with another language and that means Fourth, Fifth prominent languages used in the world. In the 21st century all the world languages adopted their richness with regards to figures of speech, valuable level of speech.

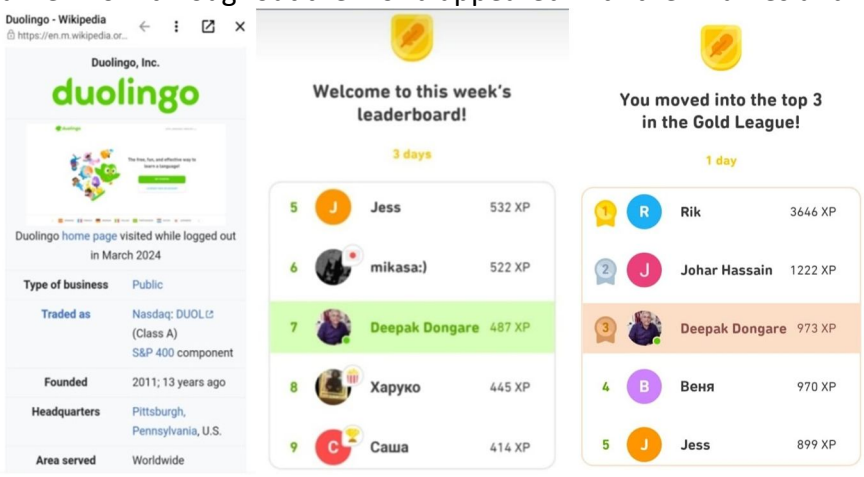
When Sputnik launched to space, the Russian Language got importance for their achievement in the space technology. Simultaneously Russia launched their language programs with the World. That period was of record players of Audio Systems. They added in their monthly language magazines each a venial flexible record disc for the audio sections in these magazines for proper pronunciation and on clarity. Thus the audio visual reading developed for self teaching. The theme behind this, man can grasp quickly with dual impact printed matter and audio facility at the same time make the learning effect faster. The next step is Audio/Video makes best triple impact or result to capture the gesture and posture here. So the beginners can achieve the learning skill well acquainted with the newer languages.

Duo lingo : The world's best way to learn a language the Duo lingo say so. For learning and developing the skill of a new language this Duo lingo App is used. The exercises containing all Structure of language one can start his learning with ease. You may choose a new language and you will get the Units about and exercises explaining step by step to learn, at your leisure and free time. Some points given by the app are:

Language is for proper utilization of valuable time.

1. For travelling abroad and to a different terrain.
2. To make the attachments with the people.
3. For entertainment of self.
4. Reading writing for betterment in our life.

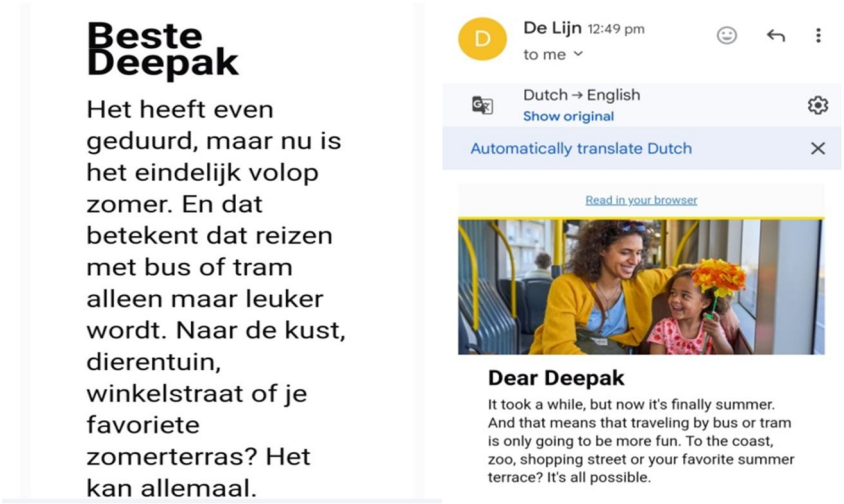
If you know English language well, then you can join with Duo lingo. This is very effective system to learn a new language. As I joined Duo lingo approximate Two months period. Exercises conducted sequentially and after continuous practice you are entering to a leader board, here the number5 of exercises mentioned and your serial number amongst the other learner from throughout the world appeared with their names and rankings.



1. Duo lingo Home Page
2. Week's Leader board
3. Moved Top 3 in the Gold League
4. Gold, Sapphire and Ruby League.

Here for example No. 8 and (are Xapyko means Sariko and Ca( )a means Sasha so also in the Gold League chart No. 4 is Vinaya, these are the Russian students who are learning the Dutch language and are participants in these leagues from Gold, Sapphire, Ruby and onwards. I am on 3rd topper that is Deepak Dongare and solved here 973 exercises with consistency. Thereby I got Gold, Sapphire league completed and entered in Ruby league.

See the Transport 'The Line' Company Mail me for their Summer offers in Dutch lnguage which is automatically translate to English. We can pronounce very easily while learning.



Braille Script : Blind persons to learn the language using this script having letters and the other marks. Here the matrix of dots creates the consonants and vowels. The special books of specific papers are pressed and engraved for the characters to read.

Mobile App Dictionary : This is the very useful Dictionary for reference. This is an applet for your mobile and you are getting the meaning of words English to Dutch and vice versa.

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Educational Degrees : Degree Courses, today's trend is as B.A., B.COM., B.Sc.,Agr., B.E., Architecture, B.C.S., B.C.A., B.P.Ed., B.Lib., B.Tech., B.Ds,, BAMS., BHMS, MBBS, B.Pharm. And many more. All these have the Post Graduation programs of two to four years duration. A Bachelor student is a Degree Holder prepared for his academic skills. His education at this level is most useful for his personal developments in his life and also the roles his role part effectively in the community.

Stenography : This is also a skill to encrypt the basic language in to shorthand. Skill of speedy writing @ 120 w.p.m. can obtained after this course of stenography is complete. To increase the fluency one should study and practice devotionally. Person studying the English stenography also studying the basic language thoroughly and become a master. Pitman

Shorthand English and also Inamdar and Karnik's Marathi Laghulekhan are the books to study and practice. Also Pitman Shorthand Dictionary is available to draw outlines in shorthand for a particular word.

Education : We start studying as we attain the age of 6+ yrs. Here we reciting the poems, songs and we have the information of our surroundings. The questions in our minds solving step onwards. As we ask Who, What, Whose, Where, Whom, When, how many, How, Why – means we acquiring the skill to collect the data, knowledge for our wisdom purpose. Lastly honored with an educational degree certificate in a particular field then we all accept that the person is educated, a bachelor of particular stream or faculty.

Conclusion : Concluded that, man is a thinking animal, he learns things throughout his life. Human sensory organs are the natural gifts received with the brain power to human make him the most dominant creature on this earth and in the Universe. In short language is a means of communication with each other. Advanced Technology makes possible within a short period to develop the skills of learning new languages. Many applets are available with the digital, mobile data, virtual data, multi media is used to circulate the knowledge within the multilingual world with ease. This is a big opportunity for new generations' at a few cost but by all means.' Thus the skill of learning is very significant for all of us.

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1) Pitman Shorthand Instructor and Key, New Era Edition – Isaac Pitman, Fifth Indian Reprint 1977. A.H.Wheeler & Co., Allahabad.

2) Duo Lingo Current Applets.

3) Dictionary Applets Dutch to English.

4) De Lijn Gmail to me on 1st August2024 with translators Dutch to English and vice-versa.

04

Research made easy with reference management softwares

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Abstract-

In writing ofthe research paper, article or thesis referencing plays very important role. Referencing is the acknowledgement of other researchers and contributors in our research work. Citation is used to avoid plagiarism. Systematic referencing is very important in preparation of research report, survey, thesis or book. References should always be accurate, allowing your readers to trace the sources of information you have used. Open source provides some softwares which are very important in reference management. It also creates personal resource library as well as organizes all the references and citations used for different research projects. Here prominently used some open source reference management softwares are discussed.

Key words - Open Source, Reference Management, Citation

Introduction –

Research is an art of scientific investigation. The role of research is very important in all fields in today's era. Research provides for all for nearly all branches in education system. The students who are doing Ph.D. or masters may mean to attend high position in social culture. For librarians for their creative work research is the mean of development. For analyst research is mean for generalization of new theories. Thus, research is the foundation of knowledge, for sake of knowledge an important source of providing guidelines for solving different problems.

After a problem is formulated, it is compulsory for researcher to write research article, synopsis of the topic or research paper during his research work. He has to visit libraries for bibliographies, journals, reference books. Researcher has to prepare bibliography and citation information used for his research work. In this regard some open-source reference management toolsplays very important role in providing systematic, accurate research data and accuracy in text citations.

After project is complete, addition of citations manually is very complicated process for researcher. Reference management software with ease solves such problems.

Reference Management Software-

Reference management softwares have different names as bibliographic management software or citation management tools. It is used in research report preparation, record of citations and these citations afterword utilize for generating bibliographies in future work.

Database of bibliographic reference is main factor of reference management solutions which are stored, shared and retrieved when required.Word processors also combined with reference management solutions to produce reference list in proper format or style.

This software also allows to search for references from online libraries.

The ideal reference management software must have following features

- Generating citations in different style - You really want to guarantee that the product you pick ought to create references in the style you require.

- Creating and organizing bibliography- It ought to help you in coordinating the catalog in such a way that it is simple for you to look for and access the references you require effectively and rapidly.
- Inbuilt library- Compile your reference collection and help in accessing the right information and saves the time.
- Mobile friendly- Reference management software must be mobile friendly so that we access it from any device or platform and refer the references.
- Sharing references facility- The reference management software must allow to share references, database or bibliography with another user. It helps when more than one person working on the same research project.
- Content Checker- The reference management software must notify the grammar mistakes or spelling mistakes and gives suggestions to improve it.

Open-source Reference Management Softwares

Zotero-Zotero is free and open-source reference management software. We customize this software as per our requirement. This software is useful for working on many devices like laptop, I pad, smartphone etc. With the use of Zotero we can store and organize bibliographic information. We search the information easily and create reference list easily as per our requirement.

Key Features-

It collects online research material with just one click

As per our requirement it helps to organize the research work.

This software synchronizes your information across different gadgets.

With help of this software, it creates references and bibliographies.

It permits teaming up with different clients without any problem.

It includes high end security features.

Mendeley- From the most popular reference management softwares, Mendeley is the one of best software for reference management. It allows users to generate citations and bibliographies in Microsoft Word, and LaTex. This software allows you to collaborate with other researchers and share your research papers. With this software you do your work on mobile as well as desktop or laptop as per your convenience.

Key Features-

This software allows to access library everywhere.

With the help of this software, we create references, citations, bibliography as per required style manual.

It provides personalized recommendations.

This software organizes PDF documents.

This software import and create references in multiple ways.

This software integrates with MS Word, OpenOffice, and BibTeX.

This software having online interface allows you to connect with other researchers with similar interests.

Refbase -Refbase is a web-based reference management. This software is useful in managing scientific literature, references, and citations. It can import and export different bibliographic formats, including Endnote, RIS, BibTex, PubMed, etc. It can also generate bibliographies and citations in LaTex, HTML, RTF, and PDF. Having advanced search features, it can generate an RSS feed from searches.

Key Features-

This software has standard interface as per web standards.

- This software includes quick, simple, advanced, and powerful SQL search options.
- This software provides various display options such as list view, cite view, print view etc.
- When new record is added, automatically e mail announcement provision is there.
- You can extract literature that is cited within a text to build an appropriate reference list
- This software allows to export records.

Docear- Docear is free and open-source reference management software. It works on Windows, Linux, and Mac OS X platforms. This software is used not only for organizing, creating, and managing academic literature but also used for managing references for business, and other studies related research data.

Key Features-

This software gives interface for organizing references.

This software sorts documents into different categories as per comments, bookmarks, and annotations.

This software includes several tools lime mind mapping, PDF management and reference management.

It allows drafting your research paper and gives citations and references from your collection.

This software helps you to find out references which are free to use and can be downloaded instantly.

Quiqqa -Qiqqa is a free and open-source research and reference management tool. This tool is useful for academicians, researchers for searching and reading research papers and documents. It helps in crating bibliographies instantly. Qiqqa includes advanced features to organize the references and allows users to search for the content they require seamlessly.

Key Features-

It is easy to add PDF and search whenever required.

It also allows add non-PDF references.

It detects duplication in text automatically and it saves time.

We import PDF from drive and other sources.

It includes optical character recognition.

It gives full text search of the documents.

It can export the entire library of documents.

It allows web browser integration.

Conclusion-

Referencing is very important in preparation research paper, article and thesis. References are useful for the researcher as well as reader. While writing research article, thesis citation is very time-consuming process. With the help of reference management software, we easily manage citations which save time of researcher.

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05
संशोधन मेट्रिक्स

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ग्रंथपाल,
श्रीमती सुशिलादेवी देशमुख वरिष्ठ महाविद्यालय लातूर

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प्रस्तावना :

संशोधन म्हणजे ज्ञानाची पातळी वाढविण्यासाठी एखादया विषयाचा पद्धतशीरपणे केलेला अभ्यास होय. ज्यामध्ये सत्याची तपासणी आधी सापडलेल्या तत्वांची पुष्टी संशोधन करत असताना संशोधना संदर्भात काही संशोधन विषयक बाबी लक्षात द्याव्या लागतात. जुने सिद्धांत पडताळणे, नविन सिद्धांतनिर्मिती करणे, समस्येचा सखोल अभ्यास करणे. संशोधन पारदर्शक होण्यासाठी संशोधन मेट्रीक्सची गरज दिसून येते.

व्याख्या :

"संशोधन मेट्रिक्स परिमाणात्मक निर्देशक किंवा उपाय आहेत. जे संशोधन आऊटपुटच्या प्रभावाचे काही पुरावे देतात."

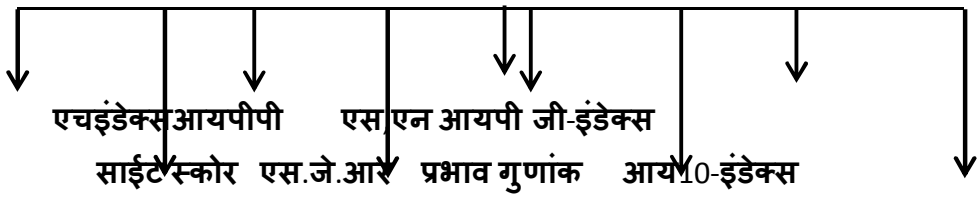
"संशोधन आउटपुट जर्नल, जर्नल लेख, पुस्तक, पुस्तक प्रकरण किंवा एकूण संशोधन उत्पादकता असते."

"जर्नल्सच्या किंवा लेखकाच्या कामगिरीचे परीक्षण ज्याद्वारे होते ते संशोधन मेट्रिक्स होय."

"प्रकाशन क्षेत्रात जर्नल व लेखक या दोघांच्या कामगिरीचे मूल्यांकन करण्यासाठी प्रकाशन उदयोगात संशोधन मेट्रिक्स हे महत्वाचे साधन आहे."

- **रिसर्च मेट्रिक्स कशासाठी वापरतात ?**
- **नियतकालिके प्रकाशित करण्यासाठी.**
- **जर्नलच्या कामगिरीचे परीक्षण करण्यासाठी उपयुक्त.**
- **संशोधकाच्या वैयक्तिक संशोधन परिमाणाचे मापन करण्यासाठी.**

<u>संशोधन मेट्रिक्स</u>



1) एच इंडेक्स (H-Index)

एच इंडेक्स हा लेखकाच्या कामगिरीचे म्हणजे लेखक स्तरीय संशोधन मेट्रिक्स आहे. संशोधकाच्या प्रकाशनाची उत्पादकता आणि सायटेशन Impact **या दोन्हीचे मापन करण्यास उपयुक्त आहे.** 2005 **साली जे.ई. हिर्श यांनी हा** Index **सुचविला म्हणून या** Index **ला** Hirsch Index or Hirsch

Number **या नावानेही ओळखतात. संशोधकाला संशोधनाकरिता फेलोशिप प्राप्त करण्यासाठी चांगल्या उत्तम दर्जाच्या विद्यापीठामध्ये नोकरी प्राप्तीसाठी किंवा वैज्ञानिकास नोबल परितोषिक इंडेक्स उपयुक्त ठरतो.**

वेब ऑफ सायन्स द्वारा संशोधक लेखकांची उत्पादकता व परिणामाचे परिक्षण करण्यासाठी एच-इंडेक्स वापरला जातो.

2) जी- इंडेक्स – (G- Index)

जी इंडेक्स हा लेखक स्तरीय मेट्रिक आहे. सन 2006 **मध्ये लि-एगे**(Leo Egghe) **यांनी हा इंडेक्स सुचवला आहे. ज्या संशोधकाचे अधिकाधिक लेख हे** Cited**झालेले आहेत. अशा संशोधकांना हा** Index **अधिक सारांश देतो. म्हणजेच लेखकाचे उच्च दर्जाचा संशोधन पेपर कोणता हे या इंडेक्स वरून सहन लक्षात येते.**

उदा. 200 **संशोधन पेपर प्रकाशित झाले आहेत. त्यापैकी खूप मोठया प्रमाणात ज्या लेखाचा संदर्भ इतर संशोधकांनी घेतला आहे. हे जी इंडेक्स वरून समजते.**

3) आय 10 – इंडेक्स

ज्या प्रकाशनासाठी किमान 10 **सायटेशन आहे, अशा प्रकाशनाची संख्या आय–**10 **इंडेक्स होय. किमान** 10 **उदाहरणे** Citations **असलेल्या प्रकाशनांची संख्या म्हणजे आय–**10 **इंडेक्स**Google **स्कॉलरद्वारे आय** 10 **इंडेक्स वापरला जातो.**

हा इंडेक्स मोजण्यासाठी सोपा व सहज असून Google Scholar **वर तो मोफत उपलब्ध आहे. आय** 10 **इंडेक्स केवळ गुगल स्कॉलर द्वाराच वापरला जातो.**

4) प्रभाव गुणांक(Impact factor)

जर्नलच्या कामगिरीचे मूल्यांकन करण्यासाठी सर्वात प्रसिद्ध मेट्रिक म्हणजे प्रभाव गुणांक किंवा Impact factor **होय.**

हा गुणांक 1960 **च्या दशकात संग्रह व्यवस्थापन करण्यासाठी ग्रंथपालांना मदत करण्यासाठी बनवला आहे. प्रभाव गुणांक हा जर्नलच्या गुणवत्ता ठरविण्यासाठी एक प्रतिनिधी म्हणून कार्य करतो. सर्वात साधा आणि सोपा संशोधन मेट्रिक म्हणजे प्रभाव गुणांक होय.दोन वर्षाच्या कालावधीमध्ये जर्नलमधील लेखांना किती प्रमाणात संदर्भांकित करण्यात आले आहे व** Citation **मिळालेले आहेत. त्याची सरासरी म्हणजे हा गुणांक होय.**

- **प्रभाव गुणांक हा** Arithmetic Mean **आहे.**
- **प्रभाव गुणांक हा लेख, आढावा, लेख संपादकीय लेख यांच्या उद्धरणांमध्ये कोणताही फरक करत नाही.**
- **केवळ किती उद्धरणे मिळाले आहेत. यांचीच गणना यामध्ये केली जाते. लेखनाचे स्वरूप व गुणवत्ता मापन करत नाही.**
- **भिन्न भिन्न विषय क्षेत्रामध्ये प्रभाव गुणांक तुलना करू शकत नाही.**
- **विशेषम: लहान स्वरूपाच्या जर्नल्समध्ये प्रभाव गुणांक हा वर्षानुवर्षे लक्षणीय फरक दर्शवू शकतो.**

5) साईट स्कोर

साईट स्कोर हे प्रकाशित केलेल्या संशोधनाचे उध्दरणाचे गुणोत्तर(ratio of Citations) **आहे. स्कोपसच्या जर्नल्स व पुस्तकाकरिता हा वापरला जात आहे. साईट स्कोर हा जर्नल मधील केवळ लेख वा लेखाचा आढावा यांचाच केवळ विचार करत नाही, तर तो जर्नलमध्ये प्रकाशित सर्व सामग्रीचा विचार करतो. स्कोपसने सन** 2016 **डिसे. मध्ये साईट स्कोर हा गुणांक तयार केला आहे.**

6) एसएनआयपी (SNIP)

एसएनआयपी म्हणजे SNIP–Scorce Normalized Impact Per Paper **होय. एसएनआयपी हा जर्नल्स स्तरीय मेट्रिक आहे. एसएनआयपी हा वर्षातून** 2 **वेळा व तीन वर्षाचा कालावधी ग्राहय धरून प्रकाशित केला जातो.** Scopus deta **चा वापर यामध्ये केला जातो. जर्नल्स मध्ये** 2 **भिन्न ज्ञान शाखांची तुलना याद्वारे करता येते. लेख आढावा लेख व परिषदांमध्ये प्रकाशित पेपर अशा प्रकारच्या आशयाशी संबंधित हा मेट्रिक आहे.**

7) एसजेआर (SJR)

एस जे आर म्हणजे सायमागो जर्नल रँक होय. यांचा उद्देश हा विषय क्षेत्रीय गुणवत्ता व जर्नलचा दर्जा इ. वर प्रभाव टाकणे हा आहे. स्कोपस डेटावरून मोजला जातो. सर्व citations **हे समान प्रमाणात मोजण्यासाठी ते** Cite **करणाऱ्या स्त्रोताच्या किंमतीचा विचार करून एखादया जर्नलच्या प्रतिष्ठेची गणना केली जाते.**

8) आयपीपी(IPP)

IPP**म्हणजे प्रति प्रकाशन प्रभाव होय. यालाच**Raw Impact Per Publication**म्हणजे प्रत्येक प्रकाशनाचा कच्चा प्रभाव असे देखील संबोधले जाते.**

समारोप

प्रभावशाली आणि गुणवत्तापूर्ण संशोधनासाठी संशोधन मेट्रिक्स पारदर्शक आणि महत्वपूर्ण ठरते. संशोधनाच्या क्षेत्रात महत्वपूर्ण साधन मानले जाते. संशोधन मेट्रिक्समुळे संशोधनास परिपूर्णता येण्यास मदत होते.

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06

EMPLOYMENT AND BUSINESS PROSPECTS FOR LIBRARY AND INFORMATION SCIENCE PROFESSIONALS: AN EXPLORATION

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Abstract

This research paper is intended to explore the different employment and business prospects for professionals in the Library and Information Science (LIS) field, examining current trends and future opportunities.It provides an in-depth overview of the job market available for LIS professionals globally and in India. The paper also reviews different employment sectors and employer organizations for LIS professionals. Along with, this research delves into the emerging business prospects for LIS professionals that extend beyond traditional library settings.

Keywords: Library andInformation Science, LIS, LIS Professionals, Employment, Job, Business, Entrepreneurial, Prospects

1. Introduction

The field of Library and Information Science (LIS) has undergone significant transformation due to technological advancements, changes in information consumption, and evolving user expectations. Traditionally seen as a domain focused on the management of physical information resources, LIS has expanded to involve a wide array of digital, data-driven, and user-centric roles. This shift has opened up new employment opportunities across diverse sectors, including academia, public sectors, corporates, and specialized institutions.However, the rapid evolution of the field also presents challenges for LIS professionals in adapting to the new demands of the employment market. Understanding the current landscape of employment prospects, as well as the entrepreneurial avenues available, is crucial for professionals and students in this field. This research paper aims to explore these aspects in depth, offering insights into the potential career paths and business opportunities that exist within the LIS profession. By analyzing the LIS employment sectors, employing organizations, and the entrepreneurial prospects that can be leveraged, this paper seeks to provide a comprehensive overview of the employment and business prospects for LIS professionals.

2. Statement of Problem

Despite the expanding scope of LIS, there is confined research on the specific employment and business opportunities available to professionals in this field. Many LIS graduates and professionals are uncertain about the career paths available to them, especially in non-traditional sectors. This paper seeks to fill this gap by providing a comprehensive analysis of the employment and business prospects for LIS professionals, based on current trends and future predictions.Hence, the problem for the present study has been framed as

"Exploring Employment and Business Prospects for Library and Information Science Professionals: An Exploration".

3. Review of Related Literature

Previous research on employment and business prospects in the LIS field reveals a growing demand for LIS professionals with expertise in information management. Several studies with different approaches have been conducted at national and international levels to identify the employment as well as entrepreneurial prospects in LIS field. A review of such studies can be classified as:

a) Studies on Employment/ Job Prospects in LIS

b) Studies on Business/ Entrepreneurial Prospects in LIS

Following are some major studies done with different approaches by the researchers that were focused on "employment" and "business" prospects in LIS sector:

3.1 Studies on Employment/ Job Prospects in LIS

Malik and Ameen (2020) studied the challenges and prospects in context of employment landscape in LIS sector in Pakistan.

Kaba (2017) examined the LIS employment prospects in United Arab Emirates (UAE). The study was focused on the employment opportunities in higher educational institutes in UAE.

Veer et al. (2018);**Sawant and Sawant (2017)**;**Shekhar Singh (2016)**; **Yadav and Bankar (2016)**;**Pradhan (2014)**;**Baruah (2010)**;**Nayar et al. (1979)** explored the job prospects in LIS sector in an Indian perspective.

Shahbazi et al. (2016; 2013) analyzed the employment market for emerging IT-based jobs and their required competencies in LIS field.

Shongwe (2015;**Ocholla and Shongwe (2013)**; **Afolabi (1994)** analyzed the LIS employment market in South Africa by conducting an analytical review of the literature.

McClelland (2014) identified the marketing-related job prospects in academic and public libraries in USA.

Ohaji (2010)examined the job prospects in academic libraries in USA. The study was concentrated on"Digital Librarians" job opportunities within academic libraries across the United States.

Cullen (2002) explored the employment market for library and information management experts in Ireland.

Reser and Schuneman (1992*)*, in their research, identified the LIS employment market in context of academic libraries through content analysis evaluating public and technical services.

3.2Studies on Business/ Entrepreneurial Prospects in LIS

Bumkeng and Adadu (2023) explored the different business prospects in LIS field. They studied the concept of entrepreneurship, job opportunities, and librarianship in the modern era, emphasizing the skills needed by library and information science professionals to succeed as entrepreneurs.

Butt and Ahmad (2022) proposed a model of business prospects based on LIS professional qualifications that can be opted by the LIS graduates in Pakistan to become self-reliant.

Wema (2021) reported entrepreneurship prospects among LIS professionals in Tanzania. The researcher analyzed areas in LIS profession in which business skills can be applied.

Alagiri and Visalatchi (2020) explored traditional and modern business avenues for LIS experts with an Indian and International perspective.

Singha and Mondal (2015) explored emerging competencies and entrepreneurial prospects within the LIS field in India. They found that the changes in demand of users and advanced technology created new competencies in job market and business opportunities for LIS specialists.

Stanley and Oghenetega (2021); **Edewor and Omosor (2016)**; **Saka and Ahmed (2014)** in their study, conceptualized the term "entrepreneurial librarianship" and identified the opportunities for librarians in Nigeria as an entrepreneur.

Batthini (2014) identified the different business opportunities for the professionals associated with LIS field. The study emphasized introducing entrepreneurship as an elective subject in the LIS curricula. The research conducted by

Elonye and Uzuegbu (2013) investigated various business opportunities that LIS professionals can pursue as entrepreneurs today. The study also emphasized the essential skills needed for LIS professionals in entrepreneurship.

4. Objectives

The key objectives outlined for the present study are as follows:

a) To identify the Employment Prospects for LIS Professionals

b) To review the Global Employment Market for LIS Professionals

c) To review the Employment Market for LIS Professionals in India

d) To explore the Employment Sectors and Employer Organizations for LIS Professionals

e) To identify the Business Prospects for LIS Professionals

5. ResearchMethodology

The researcher has reviewed relevant studies done in context of employment and entrepreneurial opportunities in LIS. The paper is based on a comprehensive review of related literature, including research papers, theses, preprints, reports, books and book sections, web articles and descriptions in LIS job advertisements. The content analysis of randomly selected job advertisements published on different platforms such as online job portals and Employment Newspaper is conducted to explore the employment prospects in the LIS job market.The research also consideredthe review and opinions of LIS experts published on websites and other platforms to gain insights into current employment and business trends in LIS.

6. Employment Prospects for LIS Professionals

The field of Library and Information Science (LIS) offers diverse employment opportunities centered on the organization, access, management, and preservation of information. Traditional libraries, including public, academic, school, and special libraries, are primary employers, but the roles within these institutions have evolved beyond tasks like book lending and cataloguing. LIS professionals are now essential in areas such as information literacy, digital resource management, and the integration of technology into library services (Indeed.com, 2024). In addition to traditional libraries, LIS professionals can secure positions in various industries and sectors, including corporate libraries, digital libraries, information centers, archives, and museums (Shekhar Singh, 2016). LIS skills are also highly appreciated in fields such as healthcare, finance, law, government, and corporate organizations.The growth of digital technologies and the internet has created new roles for LIS professionals, particularly in digital curation, archiving, and the management of digital libraries and repositories. They

also work in web content management, information architecture, and user experience design, applying their expertise in organizing and presenting information in accessible formats (Ahmad and Yaseen, 2009).LIS has further expanded into data management, curation, and analytics, where professionals manage, organize, and analyze data, facilitating decision-making and knowledge discovery. This expansion has led to roles such as Data Analysts, Data Curators, and Data Librarians in research institutions, businesses, and government agencies(Veer et al., 2018). The nature of LIS employment is increasingly multidisciplinary, blending technology and data management skills to meet the evolving information needs of society (Baruah, 2010).

6.1 Global Employment Prospects for LIS Professionals

The LIS field has undergone substantial growth and transformation in recent years, fuelled by technological advancements and the rising need for effective information management and access. Accordingly, the global employmentprospect for LIS professionals has diversified, presenting a wide array of employment opportunities across different sectors. Globally, the employment landscape for LIS professionals is varied and continually changing.

According to the Veracity Index by Ipsos (2023), "Librarians" rank as the third most trustworthy profession worldwide. The Bureau of Labor Statistics, U.S. Department of Labor (2024), reports that the median annual salary for Librarians and Library Media Specialists was $64,370 in May 2023, with employment projected to grow by 3% from 2022 to 2032, a rate consistent with the overall average. Over the next decade, an average of 13,700 job openings per year for Librarians and Library Media professionals are expected. According to the International Federation of Library Associations and Institutions (IFLA), the demand for LIS professionals is anticipated to continue increasing due to factors such as the growing volume of digital information, the need for information literacy and knowledge management, and the adoption of emerging technologies in information services (Yadav and Bankar, 2016). The labour market in Europe for LIS experts is showing growth, with an increasing number of job listings for librarians and information managers.The Middle East and Africa are emerging as new markets for LIS professionals, with growing investments in education and information management infrastructure. Countries like the United Arab Emirates and South Africa are advancing their library systems, requiring qualified professionals to manage information resources effectively.In Asia, countries like China, Japan, and India are witnessing a rising need for LIS professionals as they expand their library systems and develop digital libraries.

While traditional library roles remain essential, the global LIS employment market has expanded beyond physical libraries. LIS professionals are increasingly in demand across various sectors and industries that require expertise in information management, data curation, digital preservation, and knowledge organization.

6.2 Employment Prospects for LIS Professionals in India

The employmentprospect for LIS professionals in India has significantly evolved, offering a wide range of opportunities. Beyond traditional library roles, LIS professionals can now pursue careers in corporate, government, and non-profit sectors, managing large volumes of information. As India progresses towards becoming a knowledge society, the demand for skilled LIS professionals is expected to rise.

The key insights into the LIS employment market in India include:

a) Primary Employment Sectors:

Most job opportunities are in education, with school education making up 43.93% and higher education 34.28% of advertised positions (Pachauri, 2023). Universities and colleges are major employers, requiring skilled professionals to manage academic resources, support research, and maintain access to digital systems (Sinha and Pandey, 2014).

b) Diverse Employment Opportunities:

LIS professionals work in various sectors, including academic, public, corporate, government, and non-profit libraries, as well as digital libraries. These roles often involve managing information systems, digital resources, and traditional library services.

c) Types of Positions:

Common roles include Librarians, Information Scientists, and Archivists. Recent trends show a growing demand for specialized roles like Digital Librarians and Knowledge Managers, highlighting the shift towards digitalization and information management (Baruah, 2010).

d) Required Skills:

Job ads reveal a rising demand for digital literacy and IT skills among LIS professionals. Key skills include cataloguing, metadata management, digital archiving, and knowledge of library management software. Soft skills such as communication and project management are also crucial (Biswas and Roy, 2019).

e) Regional Variations:

Job opportunities and requirements vary by region, influenced by the presence of educational institutions, research centres, and cultural organizations. Urban areas typically offer more positions than rural regions (Yadav and Bankar, 2016).

f) Employment Challenges:

Despite the increasing opportunities, a skills gap exists between what modern libraries require and what many LIS graduates possess. Continuous professional development and upskilling are essential to bridging this gap (Sinha and Pandey, 2014).

g) Future Prospects:

As digitization of resources and information management becomes more critical, the demand for LIS professionals in India is expected to grow. There is a strong emphasis on managing digital libraries and data curation (Chore, 2021). Initiatives like the National Digital Library of India (NDLI) are expanding opportunities in this space. The rising demand for professionals with digital and technological expertise includes skills in digital archiving, metadata standards, and information retrieval systems (Baruah, 2014).

Overall, the LIS employment market in India is shifting towards digital and technology-oriented roles while maintaining the importance of traditional library management skills. As the field integrates advanced technologies, professionals with the right skills and adaptability will find rewarding careers across diverse sectors.

6.3 Employment Sectors and Employer Organizations for LIS Professionals

LIS professionals have access to a wide range of employment prospects across various sectors. While traditional roles in libraries, such as those in public, academic, school, and special libraries, remain prevalent, technological advancements and the growing need for information management have opened doors in non-traditional sectors. Below are some key sectors and organizations that offer diverse job opportunities for LIS professionals:

a) Libraries:

Libraries are the most recognized and traditional sector for LIS professionals. Opportunities exist in public, academic (schools, colleges, universities), and special libraries (corporate, government, medical, law, and national libraries).

b) Educational Institutions:

Beyond traditional library roles, LIS professionals can work as teachers, instructional designers, curriculum developers, and educational technology specialists, utilizing their expertise in organizing and disseminating information.

c) Information Technology and Software Companies:

The digitization of information has increased demand for LIS professionals in IT and software companies that develop library management systems, digital libraries, and information retrieval systems. Roles include System Analysts, Database Managers, and User Experience Designers etc.

d) Information/Knowledge Centres:

In today's information-driven world, LIS professionals are crucial in developing and managing knowledge systems in organizations, working in information centres, knowledge resource centres, and knowledge management departments.

e) Archives and Records Centres:

Employment opportunities for LIS experts exist in archives, records management centres, and document repositories, where professionals manage and preserve historical and culturally significant materials.

f) Research Organizations:

LIS professionals are extremely needed in research institutes and policy organizations for literature reviews, information retrieval, and knowledge management, serving as research assistants, information specialists, or knowledge managers.

g) Government Ministries and Departments:

LIS roles in government involve cataloguing, managing digital libraries, and providing reference services in libraries or information centres within ministries and departments (LIS Portal, 2024).

h) Defence Organizations and Intelligence Agencies:

LIS professionals play a critical role in managing specialized information in defence organizations, supporting intelligence operations, and ensuring the preservation of critical documents (Bonilla, 2014).

i) Private and Non-Profit Organizations (NGOs):

LIS professionals manage information resources, develop information policies, and support research and reference services, contributing to programme development, grant writing, and fundraising.

j) Foreign Embassies:

In embassies, LIS professionals manage and organize collections of information resources, curate libraries, manage archives, and provide research services, requiring strong information management skills and cultural understanding.

k) Financial Institutions/Banks:

LIS professionals manage and organize financial records in banks and financial institutions, contributing to decision-making, regulatory compliance, and knowledge management (LIS Portal, 2023)

l) Healthcare and Medical Institutions:

Employment opportunities exist in hospitals and healthcare organizations where LIS professionals manage medical literature, support research, and ensure compliance with information management standards.

m) Legal Firms and Judicial Institutions:

LIS experts manage legal information resources in law firms, assisting with research and document management, with opportunities in courts and legal information centres.

n) Media Houses:

In media organizations, LIS professionals work as media archivists, librarians, or information officers, managing content, ensuring information retrieval, and supporting digital content management.

o) Museums and Cultural Institutions:

LIS professionals may work in museums and cultural institutions as archivists, curators, or digital asset managers, organizing and preserving cultural and historical artifacts.

p) Publishing Firms:

LIS professionals can contribute to publishing by managing the acquisition, organization, and dissemination of published materials, and supporting indexing, abstracting, and editorial roles.

q) Translation Centres:

LIS professionals manage multilingual resources, oversee translation projects, and maintain translated materials databases, enhancing the accuracy and accessibility of translated content.

These examples demonstrate the diverse employment opportunities available to LIS professionals across different sectors and organizations globally, with promising prospects due to growing demand.

7. Business Prospects for LIS Professionals

Beyond traditional employment, LIS professionals have the potential to explore various business opportunities. The increasing competition from IT professionals and limited traditional job options have highlighted the need for LIS professionals to explore entrepreneurial avenues. Some potential business opportunities for LIS professionals include:

a) Book Publishing and Printing:

The Indian publishing industry, valued at Rs. 10,000 crores, offers significant opportunities for LIS professionals in roles like editors or content managers, leveraging their expertise in information organization to enhance book quality and accessibility (Lumina Datamatics, 2017).

b) Information Brokerage:

LIS professionals can act as intermediaries, locating and providing specific information tailored to clients' needs.

c) Digital Content Creation and Management:

Professionals in LIS field can manage digital archives, develop digital libraries, and offer consultancy on digital rights management, ensuring content is well-organized and accessible.

d) Research Support Services:

LIS experts can offer market, academic, or other research services, providing in-depth analysis and reporting for various clients.

e) e-Publishing:

With the projected growth of e-Books to 25% of publishers' business, LIS experts can enhance the discoverability and accessibility of e-publications through their expertise in digital curation and copyright issues (Lumina Datamatics, 2017).

f) Book Supplying Channels:

Opportunities for LIS experts exist in curating tailored book selections for organizations, improving cataloguing, and enhancing customer relations.

g) Journal Subscription Services:

LIS specialists can optimize library subscriptions, negotiate with publishers, and manage electronic resources effectively.

h) Library Software Development:

Given their understanding of library operations, LIS professionals can develop specialized software for cataloguing and resource management.

i) Library Digitization Services:

LIS practitioners can offer digitization and digital resource management solutions, as well as training programs on new technologies.

j) Freelancing and Consulting Services:

Freelance opportunities include consulting on information management, training programmes, and workshops for organizations.

k) Career Counseling:

LIS experts can provide specialized career guidance in libraries, archives, and information management, assisting individuals in navigating job markets.

l) Online Bookstores:

LIS professionals can manage online catalogues, curate content, and analyze user data to improve inventory management and customer satisfaction in online bookstores.

It indicatesthat LIS professionals have ample business opportunities in addition to traditional employment. It's crucial for LIS professionals to cultivate entrepreneurial competencies like initiative, opportunity-seeking, persistence, and problem-solving to thrive as entrepreneurs. They should consider creatively applying their skills to launch new ventures rather than only seeking conventional jobs. By leveraging their expertise in information services, they can develop innovative business models.

8. Conclusion

The present research underscores the growing significance of LIS professionals in today's information-centric world. LIS profession is at a crossroads, with traditional job roles evolving and new business opportunities emerging in the digital age. With the rapid digitization of information and the increasing demand for specialized information services, the employment landscape for LIS graduates is broadening significantly. The findings suggest that, in addition to traditional roles, LIS professionals are well-positioned to capitalize on business or entrepreneurial opportunities.By embracing new technologies and exploring non-traditional career paths, LIS professionals can also secure their place in the rapidly evolving business sector.As the information industry continues to evolve, LIS professionals must adapt and innovate to maintain relevance and ensure continued professional growth in both employment and business ventures.Introducing "Entrepreneurship" as an elective course in the existing LIS curriculum would definitely help cultivate entrepreneurial skills among LIS students.

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07

Digital Ethics & Responsible Research

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Abstract

Digital ethics, also known as computer ethics or information ethics, is now a lively field that draws a lot of attention. But what were the developments that led to its existence and present state? What are the traditions, concerns, and technological and social developments that guided digital ethics? How did ethical issues change with the digitalization of human life? How did the traditional discipline of philosophy respond and how was 'applied ethics' influenced by these developments? This chapter proposes to view the history of digital ethics in three phases: pre-digital modernity (before the invention of digital technology), digital modernity (with digital technology but analogue lives), and digital post-modernity (with digital technology and digital lives). For each phase, the developments in digital ethics are explained with the background of the technological and social conditions. Finally, a brief outlook is provided.

Keywords: Digital ethics, Responsible Research, Cyber Conflict.

Introduction

The history of digital ethics as a field was strongly shaped by the development and use of digital technologies in society. This digital ethics often mirror the ethical concerns of the pre-digital technologies that were replaced, but in more recent times, digital technologies have also posed questions that are truly new. When 'data processing' became a more common activity in industry and public administration in the 1960s, the concerns of ethicists were old issues like privacy, data security, and power through information access. Today, digital ethics involves old issues that took on a new quality due to digital technology, such as surveillance, news, or dating, but it also covers new issues that did not exist at all, such asautomated weapons, search engines, automated decision-making, and existential risk from artificial intelligence (AI).

The terms used to name the expanding discipline have also changed over time: we started with 'computer ethics' (Bynum 2001; Johnson 1985; Vacura 2015), then more abstract terms like 'information ethics' were proposed (Floridi 1999), and now some use the term 'digital ethics' (Capurro 2010), as this Handbook does. We also have digital ethics for particular areas, such as 'the ethics of AI', 'data ethics', 'robot ethics', etc.

There are reasons for these changes: 'computer ethics' now sounds dated because it focuses attention on the machines, which made good sense when they were visible, big boxes but began to make less sense when many technical devices invisibly included computing and the location of the processor became irrelevant.

Digital Ethics as a Macroethics

The digital revolution provides huge opportunities to improve private and publiclife, and our environments, from health care to smart cities and global warming.Unfortunately, such opportunities come with significant ethical challenges. In particular,the extensive use of increasingly more data—often personal, if not sensitive(Big Data)—the growing reliance on algorithms to analyse them in order toshape choices and to make decisions (including machine

learning, AI, and robotics),and the gradual reduction of human involvement or oversight over many automaticprocesses, pose pressing questions about fairness, responsibility, and respectof human rights.

These ethical challenges can be addressed successfully by fostering thedevelopment and application of digital innovations, while ensuring the respectof human rights and the values shaping open, pluralistic, and tolerant informationsocieties. Striking such a balance is neither obvious nor simple. On the onehand, overlooking ethical issues may prompt negative impact and social rejection.This was the case, for example, with the NHS care. Dataprogramme, afailed project in England to extract data from GP surgeries into a central database.On the other hand, overemphasizing the protection of individual or collectiverights in the wrong contexts may lead to regulations that are too rigid, andthis may harm the chances to harness the social value of digital innovation. TheLIBE amendments, initially proposed to the European Data ProtectionRegulation, offer a good example, as they would have made data-based medicalresearch more difficult.[1] Social preferability must be the guiding principle tostrike a robust ethical balance for any digital project with impact on human life.

The demanding task of digital ethics is navigating between social rejection andlegal prohibition in order to reach solutions that maximise the ethical value of digitalinnovation to benefit our societies, all of us, and our environments. To achievethis, digital ethics builds on the foundation provided by Computer and InformationEthics, which has focused, for the past 30 years, on the challenges posed by informationand communication technologies (Floridi 2013; Bynum 2015). This valuablelegacy grafts digital ethics onto the great tradition of ethics more generally. Atthe same time, digital ethics refines the approach endorsed in Computer andInformation Ethics, by changing the Levels of Abstraction (LoA) of ethical enquiriesfrom an information-centric (LoAI) to a digital-centric one (LoAD).

The method of abstraction is a common methodology in Computer Science(Hoare 1972) and in Philosophy and Ethics of Information (Floridi 2008, 2011). Itspecifies the different perspective from which a system can be analysed, by focusingon different aspects, called observables. The choice of the observables depends onthe purpose of the analysis and determines the choice of LoA. Any given system canbe analysed at different LoAs. For example, an engineer interested in maximizing the aerodynamics of a car may focus upon the shape of its parts, their weight, andthe materials. A customer interested in the aesthetics of the same car may focus onits colour and the overall look, while disregarding the engineer's observables.

Ethical analyses are developed at a variety of LoAs. The shift from Information(LoAI) to Digital (LoAD) is the latest in a series of changes that characterise theevolution of Computer and Information Ethics. Research in this field first endorseda human-centric LoA (Parker 1968), which addressed the ethical problems posed bythe dissemination of computers in terms of professional responsibilities of boththeir designers and users. The LoA then shifted to a computer-centric one (LoAC) in the mid1980s (Moor 1985), and changed again at the beginning of the second millenniumto LoAI (Floridi 2006).

These changes responded to rapid, widespread, and profound technologicaltransformations. And they had important conceptual implications. For example,LoAC highlighted the nature of computers as universal and malleable tools, makingit easier to understand the impact that computers could have on shaping socialdynamics and on the design of the environment surrounding us (Moor 1985). Lateron, LoAI shifted the focus from the technological means (the hardware: computers,mobile phones, etc.) to the content

(information) that can be created, recorded, processed,and shared through such means. In doing so, LoAIemphasised the differentmoral dimensions of information—i.e., information as the source, the result, or thetarget of moral actions—and led to the design of a macro-ethical approach, able toaddress the whole cycle of information creation, sharing, storage, protection, usage,and possible destruction (Floridi 2006, 2013).

We have come to understand that it is not a specific technology (now includingonline platforms, cloud computing, Internet of Things, AI, and so forth), but thewhole ecosystem created and manipulated by any digital technology that must bethe new focus of our ethical strategies. The shift from information ethics to digitalethics highlights the need to concentrate not only on what is being handled as thetrue invariant of our concerns but also on the general environment (infosphere), thetechnologies and sciences involved, the corresponding practices and structures (e.g.in business and governance), and the overall impact of the digital world broadlyconstrued. It is not the hardware that causes ethical problems; it is what the hardwaredoes with the software, the data, the agents, their behaviours, and the relevantenvironments that prompts new ethical problems. Thus, labels such as “robo-ethics”or “machine ethics” miss the point. We need a digital ethics that provides a holisticapproach to the whole universe of moral issues caused by digital innovation.

LoAD brings into focus the different moral dimensions of the whole spectrum ofdigital realities. In doing so, it highlights that ethical problems—such as anonymity,privacy, responsibility, transparency, and trust—concern a variety of digital phenomena,and hence they are better understood at that level. So, digital ethics is bestunderstood as the branch of ethics that studies and evaluates moral problems relatedto information and data (including generation, recording, curation, processing, dissemination,sharing, and use), algorithms (including AI, artificial agents, machinelearning, and robots), and corresponding practices and infrastructures (including,responsible innovation, programming, hacking, professional codes, and standards),in order to formulate and support morally good solutions (e.g., right conduct or rightvalues). This means that the ethical challenges posed by the digital revolution canbe mapped within the conceptual space delineated by three axes of research: theethics of data/information, the ethics of algorithms, and the ethics of practises andinfrastructures.

The ethics of data focuses on ethical problems posed by the collection and analysisof large datasets and on issues ranging from the use of Big Data in biomedicalresearch and social sciences (Mittelstadt and Floridi 2016), to profiling, advertising,data donation, and open data. In this context, key issues concern possible re-identificationof individuals through data-mining, −linking, −merging, and re-usingof large datasets, and risks for so-called “group privacy”, when the identification orprofiling of types of individuals, independently of the de-identification of each ofthem, may lead to serious ethical problems, from group discrimination (e.g. ageism,racism, sexism) to group-targeted forms of violence (Floridi 2014; Taylor et al.2017). Trust (Taddeo 2010; Taddeo and Floridi 2011) and transparency (Turilli andFloridi 2009) are also crucial topics, in connection with an acknowledged lack ofpublic awareness of the benefits, opportunities, risks, and challenges associatedwith the digital revolution. For example, transparency is often advocated as one ofthe measures that may foster trust. However, it is unclear what information shouldbe made transparent and to whom information should be disclosed.

The ethics of algorithms addresses issues posed by the increasing complexityand autonomy of algorithms broadly understood (e.g., including AI and artificialagents such as Internet bots), especially in the case of machine learning applications.Crucial challenges include the moral responsibility and accountability of bothdesigners and data scientists with

respect to unforeseen and undesired consequencesand missed opportunities (Floridi 2012, 2016); the ethical design and auditing ofalgorithms; and the assessment of potential undesirable outcomes (e.g., discriminationor the promotion of anti-social content).

Finally, the ethics of practices (including professional ethics and deontology)and infrastructures addresses questions concerning the responsibilities and liabilitiesof people and organisations in charge of data processes, strategies, and policies,including businesses and data scientists, with the goal of defining an ethical frameworkto shape professional codes that may ensure ethical practises fostering boththe progress of digital innovation and the protection of the rights of individuals andgroups (Cath et al. 2017). Here four issues are central: solutions by design, consent,user privacy, and secondary use or repurposing.

While they are distinct lines of research, the ethics of data, algorithms, practicesand infrastructures are obviously intertwined, and this is why it may be preferableto speak in terms of three axes defining a conceptual space within which ethicalproblems are like points identified by three values. Most of them do not lie on asingle axis. For these reasons, Digital Ethics must address the whole conceptualspace, albeit with varying priorities and foci. As such, it needs to be developed fromthe start as a macroethics that is, as an overall "geometry" of the ethical space thatavoids narrow, ad hoc approaches, but rather addresses the diverse set of ethicalimplications of digital realities within a consistent, holistic, and inclusive framework.An example may help to clarify the value of the holistic approach of DigitalEthics. Consider the case of protecting users privacy on social media platforms. Inorder to be able to understand the problem adequately and to indicate possible solutions,ethical analyses of users' privacy will have to address data collection, access,and sharing. They will have to focus also on users' consent and the responsibilitieson online service providers (Taddeo and Floridi 2015, 2017). At the same time,aspects such as ethical auditing of algorithms and oversight mechanism for algorithmicdecisions will be central to the analyses, as they may be part of the solution.

In order to give a better sense of the specific issues discussed in Digital Ethics,the following sections focus on two key areas of application: Internet Infrastructure,and Cyber Conflicts. They are not the only ones, but they should provide a clearsense of the scope and significance of this new area of investigation.

Digital Infrastructure

Increasingly, digital data infrastructures, like the Internet, are part of what makesour societies prosper (Castells 2007). And as this network-of-networks becomesmore important—from managing our critical infrastructures like the electricity gridL. Floridi et al.to managing our private lives—so does the ethics of its technical governance (Cathand Floridi 2017).

The management of the infrastructure of the Internet depends on choice (Lessig2006) and control (Deibert et al. 2008; Choucri and Clark 2012). It is about how onedecides to build the infrastructure through which data travels, and how it does so.The Internet influences who can connect to whom, and how (Denardis 2014). Inturn, these choices can have a fundamental impact on the Internet's ability to fosterthe public interest, especially in terms of social justice, civil liberties, and humanrights (Chadwick 2006; Denardis 2014). Control matters too. Internet infrastructureis increasingly becoming 'politics by other means' (Abbate 2000). Understandingthe ethics of the practices embedded in the technology underlying the Internet'sdigital information flows is vital in order to understand and ultimately improve societaland political developments.

To understand this specific axe of digital ethics we need to address professionalresponsibilities and deontology (Floridi 2012) of those actors involved in

coding,maintaining, and updating the Internet's infrastructure, including its applicationsand platforms. This requires an in-depth understanding of the inner-workings of theInternet. The Internet is not one network but a global network of networks that arebound together through standards and protocols, relying on hardware and softwarefor information flows. Its decentralized, complex, and multi-layered characterexplains why its maintenance takes many actors and organizations. Considering thecomplexity of this system, a taxonomy that explains the Internet by dividing it intothree distinct layers provides the needed level of abstraction: content, logical, physical(Benkler 2000). This model divides the Internet into three layers: the contentlayer (information to interact with), the logical infrastructure layer (software), physicalinfrastructure (wires, cables).

Layer Description

Content News, social media posts, videos on streaming platforms, content generated incollaborative tools like Wikipedia or on digital labour platformsLogical The technology that makes the Internet interoperable, its digital infrastructurePhysical The tangible Internet, its physical infrastructure: Computers (servers, personalcomputers, mobile phones, etc.), telecommunications cables, routers, data centres

Each layer raises specific ethical questions about data, but not all the associateddiscussions have dedicated institutional homes, and often cut across the various layersand organizations (Mathiason 2008). There has been a concerted political effortover the last decade to highlight how human rights frameworks apply to the Internet.Yet more work remains to be done about how the ethics of data and associated ethicsof practices of the various actors mentioned in the taxonomy (Cath and Floridi2017). There is also limited engagement with the ethical questions surroundingmaterial infrastructures through which data flows. Addressing these questions couldalleviate some of the concerns surrounding private ordering of data flows and informationcontrol by the Internet's technical and business community, increase trust inthe decisions of these private actors (Taddeo and Floridi 2011), and make the overalltechnical infrastructure of the network more stable, as it combines moral valueswith an ethical infrastructure to support the instantiation of moral behaviour (Floridi2012). Such an analytical manoeuvre is particularly important as the infrastructureof the Internet increasingly enacts its social ordering upon the world (Denardis2014; Hofmann et al. 2016).

Cyber Conflicts

Cyber conflicts arise from the use of digital technologies for immediate (tactic) orintermediate (strategic) disruptive or destructive purposes. When compared to conventionalwarfare, cyber conflicts show fundamental differences: their domainranges from the virtual to the physical; the nature of their actors and targets involvesartificial and virtual entities alongside human beings and physical objects; and theirlevel of violence may range from non-violent to potentially highly violentphenomena.

These differences are redefining our understanding of key concepts like harm,violence, combatants, and weapons. They also pose serious ethical and policy problemsconcerning risks, rights, and responsibilities (the 3R problems) (Taddeo 2012).Start from the risks. Estimates indicate that the cyber security market will be worthUS$170 billion by 2020 (Markets and Markets 2015), posing the risk of a progressiveweaponisation of cyberspace, which may spark a cyber arms race and competitionfor digital supremacy, further increasing the possibility of escalation andconflicts (Taddeo 2017a, b; Taddeo and Floridi 2018). At the same time, cyberthreats are pervasive. They can target, but can also be launched through, civilianinfrastructures. This may (and in some cases already has) initiate policies of higherlevels

of control, enforced by governments in order to detect and deter possiblethreats. In these circumstances, individual rights, such as privacy and anonymity,come under devaluing pressure (Arquilla 1999). Ascribing responsibilities is alsoproblematic, because cyber conflicts are increasingly waged through autonomoussystems (Cath et al. 2017). Two good examples are the Active Cyber Defenceprogrammesdeveloped in the US and UK, and 'counter autonomy' systems, which areautonomous machine-learning systems able to engage in cyber conflicts by adaptingand evolving to deploy and counter ever-changing attack strategies. In both cases, itis unclear who or what is accountable and morally responsible for the actions performedby these systems.

If left unaddressed, the 3R problems will daunt attempts to regulate cyber conflicts,favour escalation, and jeopardize international stability. Digital ethics offers avaluable framework to address the 3R problems, as these span across the conceptualspace identified at the beginning of this chapter, namely data, algorithms, andpractices.

More specifically, as state-run cyber operations will rely on machine learningand neural network algorithms, focusing on ethics of algorithms will be crucial toL. Floridi et al.mitigate issues concerning the risks of escalation. This is because ethical analysesof algorithms foster the design and deployment of verification, validation, andauditing procedures that can ensure transparency, oversight, on autonomous systemsdeployed for threat detection and target identification. The ethics of data offersthe conceptual basis to solve the friction between cyber conflicts and rights. For itsheds light on the moral stance of digital objects, (artificial) agents, and infrastructuresinvolved in cyber conflicts and, in doing so, it facilitates the application of keyprinciples of Just War Theory—such as proportionality, self- defence, discrimination—to cyber conflicts (Taddeo 2014, 2016). The ethics of practices plays a centralrole in the regulation of cyber conflicts, as it fosters the understanding of roles andresponsibilities of the different stakeholders (private companies, governmentalagencies, and citizens) and, thus, shapes the ethical code that should inform theirconduct. These problems need to be addressed now, while still nascent, to ensurefair and effective regulations.

Conclusion

This chapter provided an overview of digital ethics, a new and fast developing fieldof research that is of vital importance to develop our information societies well, toimprove our interactions among ourselves and with our environments, to protecthuman dignity and to foster human flourishing in the digital age. Much work liesahead, and progress will require multidisciplinary collaboration among many fieldsof expertise and a sustained, unflinching focus on the value that ethical thinking canand should make in the world and in technological innovation.

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08

Bibliometrics: An Overview

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Abstract

Bibliometrics is a technique used to investigate information about any subject. Bibliometrics is a quantitative technique that covers several portions of literature at a single moment, making it useful for distinguishing distribution examples. For evaluating human contributions, it is used to find the pattern of publication authorship and citation applied for a subject, among other things, during time, and to provide insights into the dynamics of the field under study. Bibliometrics gained prominence in recent years due to its practical application in various library operations and services. It is estimated that 22% of the total monthly literature published in library and information science globally is focused on bibliometrics.

Keywords: bibliometric study, bibliometric importance, bibliometric laws and techniques, **Introduction**

Bibliometrics is a relatively new area of research in information science. Many social science publications also include plenty of items in their bibliographies. The growing number of publications may be due to the acceptance of bibliometric techniques. In many different fields, there has been a growing interest in the theory of literary structure. It is also an important tool for study. Bibliometrics is a decision-making approach used by library and information science professionals in a variety of fields, including political science, education, and business. It is used for pure, applied, and action research. This paper presents an overview of bibliometrics, as well as the challenges and conflicts that surround it.

2. **Concepts of Bibliometrics**

Alan Pritchard created the word "bibliometrics" in 1969. However, it gained popularity during the 1980s. Bibliometrics is nearly identical to Ranganatha's bibliometrics, the Russian term for scientometrics, infometrics, and branches such as econometrics, sociometrics, and so on. Scientometrics is currently used to apply quantitative methods to the historical background of science, and it interacts with bibliometrics significantly.

The basics of bibliometrics are primarily associated with published literature these include articles and edited compositions given in terms of reference indices of papers, books, proceedings, and other correspondence-related media, as well as important and auxiliary publications. It is gradually advancing complexity and developing well-behaved characteristics. This has established itself as a useful and familiar research method for looking through bibliographical references with an academic basis.

3. **Importance of Bibliometrics**

The bibliometric study, other than its hypothetical substance, has a different down-to-earth application in the library, the board, and in choosing a science strategy to look into. A portion of the practical applications are as per the following:

1. The bibliometric study aims to strengthen bibliographic control.
2. It determines writing insights that relate to the country of origin, which is also the subject, structure, and cultural distribution of records and their interpretation.
3. The study of bibliographies determines the relationships between various subjects, which suggests a general arrangement of review catalogues.

4. When evaluating secondary services, bibliometric techniques are applied, particularly when an extensive body of literature is reviewed.

5. The bibliometric information was used for making some management decisions.

6. Citation investigation discovers subject connections that prompt recommending titles of journals important to given control in a specific library.

7. The reference information likewise decides the rundown of a profoundly referred-to journal or book.

4. Bibliometric Techniques

Bibliometrics is the application of statistical methods to the study of bibliographic data, especially in scientific library and information science contexts, and is closely associated with scientometrics (the analysis of scientific metrics and indicators) to the point that both fields largely overlap.

4.1 Citation Analysis

Citation analysis is that area of bibliometrics that highlights the study of this relationship. The basic instrument for this kind of study is a citation index, which is an ordered list of cited documents.

4.2 Publication Counts

The basic technique of bibliometrics is adding the total number of publications of a researcher or a group of them having the publication, while the publication count gives a quantitative measure of the total volume of research output.

4.3 Direct Citations

The direct citation count is an easy way to measure out how many citations a particular paper or set of papers has received over time from a particular set of citing documents, from which data for analysis was obtained. Early in the 18th century, citation counts were used to evaluate journals; however, Garfield at the Institute for Scientific Information perfected the measurement of these relationships to rank authors and works.

4.4 Bibliographic Couplings

"Fano" suggested the idea of bibliographic coupling, but "Kessler" clarified that the word refers to the degree of similarity between the content of the citing papers based on the number of common references cited in two documents. It is believed that two source texts with a high coupling strength and a high number of common references are probably about the same subject. Because two papers quote a third paper, which may or may not be citing the same piece of information from the third paper being mentioned, it is observed that the idea of relationship has some limitations and does not appear to be valid for measurement.

5. Applications of Bibliometrics

Bibliometric research has numerous applications in a variety of fields:

- **Science Mapping:** A visual representation of a study field's conceptual framework that highlights key ideas, new directions, and areas of unmet knowledge.
- **Evaluating Research Performance:** Calculating the influence and output of individual researchers, groups, or nations.
- **Information retrieval:** finding pertinent material and optimizing search tactics.
- **Research Policy:** Guiding funding, priorities, and collaborations in research.
- **Technology forecasting:** determining the possible effects of developing technologies.

6. Bibliometric Laws

The bibliometric laws can help organize a lot of library activities as well as analyze certain information phenomena. The foundation of a bibliography was established by three

important laws. These are Bradford's law of paper scattering, Zip's law of word frequency in a text, and Lotk's law of productivity of authors in terms of scientific papers.

Lotka's Law (1926)

'Lotka' published a paper in 1926 in the journal of the Washington Academy of Sciences on the frequency distribution of scientific productivity. Presented an analysis of the number of publications listed in chemical abstracts from 1907 to 1916 with the frequency of publication of the authors. Based on his data, he proposed an inverse square law of scientific productivity.

yx=n2xa

=a>0

X=1,2,3….

Where yx is the relative frequency of authors publishing papers, the value of 'a' is found to be 1.8a for chemists and 2 for physicists.

If 'n' is the total number of authors who have published single papers each.

Table 1: Lotka's Law of Productivity of Authors

Author	Paper
100	1
25	2
11	3
6	4
4	5

In other words, Lotka found that scientists' productivity was confined by the inverse square law, indicating that out of every 100 authors that contribute one article, 25 will contribute two, 11 will contribute three, 6 will contribute four, and 4 will contribute five.

Bradford's law:

In 1934, 'Bradford' formulated the law of scattering to describe the distribution of articles on a particular subject in different periodicals, and this law has received the greatest attention in library literature. His article "Sources of information on specific subjects" was the first publication on observation.

Bradford describes the scattering of literature in several periodicals. He opted to study applied geophysics and lubrication because bibliographical information on these topics was readily available to him. In this work, he observed that if a huge collection of articles is ranked in order of decreasing production of papers relevant to a particular subject, three zones can be identified, with each zone producing one-third of the total number of relevant papers.

Thus, Bradford assessed that in a given subject area, journals can be categorized into three distinct groups:

1. Those producing more than four references per year.
2. Those producing 2-4 references per year.
3. Those with one or fewer mentions in a year.

The first group so becomes the nucleus of journals in a topic field, and it must have more articles on that subject than journals that include articles on similar subjects. The second zone has a considerable number of moderates. Productive journals and the third zone have a substantial quantity of low-productivity articles.

As a result, Bradford proposed in 1934 and again in 1948 that scientific journals containing articles on particular topics should be organized in decreasing order of the number of publications on the subject using the simple geometric series I:n:n2.

Table 2: Bradford's Pattern of Scattering

Zone	No. of journal titles	No. of papers
1	9	429
2	59	499
3	258	404

If scientific journals are organized in descending order of article productivity on a given subject, they can be separated into a nucleus of periodicals more specifically devoted to the subject and several groups or zones comprising the number of articles. The nucleus of the zone will be I:n: n2.

Zip's Law (1933)

This law states that if the words in a long text are sorted in decreasing order of frequency, the rank of any given word in the text is inversely proportional to its frequency of occurrence. Zip's Law can be expressed mathematically as:

Table 2: Simple Zipf's Distribution

word	Rank	Frequency	Rank of Frequency
the	1	245	245
of	2	136	272
terms	3	98	294
to	4	81	324
a	5	65	325
and	6	61	366
in	7	55	385
were	8	52	416

In this scenario given, an approximation to the constant provides an exact fit; the curve displayed is the well-known hyperbola.

r.f.=c

If 'r' denotes the rank word, 'f' stands for the frequency of words, and 'c' is a constant. Zip's law states that the product of the number of occurrences of each word in the body of the text and its rank remains constant. Then it states that:

rf=c

where 'r' represents the rank of word type 'f', the frequency of occurrences of the work, and type 'c' is a constant. Zip's law can be utilised efficiently to create semi-automatic indexes for an information retrieval system. Its use has grown dramatically since the introduction of natural language indexing of textual information, particularly in electronic

form. Zip's law measures the richness of an author's vocabulary. This technique can be used to determine the proper authorship of disputed works.

Conclusion

Bibliometrics, a relatively new field of information science, is primarily concerned with the study of bibliographic data. It is growing in popularity in several academic fields, including business, education, and social sciences. Researchers may gain from bibliometrics, which is used in a wide range of fields such as business, political science, and education. It requires evaluating written materials such as articles, books, conferences, and magazines, in addition to reference indexes. The practical applications of bibliometrics in science strategy, boards, and libraries highlight its importance. It provides writing insights, supports the creation of bibliographic management, and provides subject linkages for review catalogues.

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राष्ट्रीय शिक्षण धोरणानूसार शिक्षकांची भूमिका

कुलकर्णी ज्योत्सना शामराव
ग्रंथालय सहाय्यक
प्रयाग कराड कॉलेज ऑफ नर्सिंग नांदगाव लातूर

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विद्यार्थ्यांनंतर शिक्षक हा शिक्षण व्यवस्थेचा सर्वात महत्त्वाचा घटक आहे. म्हणून राष्ट्रीय शैक्षणिक धोरण शिक्षकांना कसे आधार देईल. आणि शिक्षकांना पदोन्नती आणि सेवा संबंधित फायदे कसे वाढवतील यावर प्रकाश टाकणे आवश्यक आहे. परंतु वेळ आणि व्याप्तीच्या कमतरतेमुळे. येथे फक्त मुख्य वैशिष्ट्यांची संक्षिप्तपणे चर्चा केली जाईल.

1 विद्यमान शिक्षकांना प्रशिक्षित केले जाईल आणि श्रेणीसुधारित केले जाईल NEP 2020 **ने असे नमूद केले आहे की. अंगणवाडीध्पूर्व प्राथमिक विभागातील सर्व विद्यमान शिक्षकांना** NEP **द्वारे तयार केलेल्या अभ्यासक्रमध्शैक्षणिक फ्रेमवर्कनुसार पद्धतशीर प्रयत्नांद्वारे प्रशिक्षित केले जाईल**- 10 **व** 12 **पात्रता असलेल्या शिक्षकांना म्ब्ब्म् मध्ये** 6 **महिन्यांचा प्रमाणपत्र कार्यक्रम घ्यावा लागेल, तर कमी शैक्षणिक पात्रता असलेल्या शिक्षकांना एक वर्षाचा पदविका अभ्यासक्रम प्रशिक्षित केला जाईल. डीटीएच प्रणाली किंवा स्मार्ट फोन वापरून प्रशिक्षण घेतले जाऊ शकते, जेणेकरून वेळ वाया जाणार नाही आणि अडथळा होणार नाही. शिक्षकांसाठी प्रशिक्षणावर पैसे खर्च केले जातात, आणि शाळेचे कोणतेही काम दिले जाणार नाही.**

2 नवीन शिक्षकांची भरती आणि नियुक्ती केली जाईल. एनईपी- 2020 **मध्ये शिक्षकांच्या शिक्षणाचा दर्जा भरती नियुक्ती सेवा स्थिती आणि शिक्षकांचे सक्षमीकरण या बाबींचा विचार केला जातो. असणे म्हणून शिक्षकांबद्दल उच्च आदर आणि शिक्षकी पेशाचा उच्च दर्जा पुनर्संचयित करणे आवश्यक आहे जेणेकरुन अध्यापन व्यवसायात प्रवेश करण्यासाठी सर्वोत्तम असेल. आपल्या मुलांच्या आणि आपल्या राष्ट्राच्या भवितव्यासाठी हे आवश्यक आहे. त्यामुळे, विशेषतः ग्रामीण भागातील उत्कृष्ठ विद्यार्थ्यांना आकर्षित करण्याच्या दृष्टीने गुणवत्तेवर आधारित शिष्यवृत्ती** 4 **वर्षांच्या एकात्मिक बी. एड. कार्यक्रम यशस्वीरित्या पूर्ण केल्यावर त्यांच्या स्थानिक भागात प्राधान्य रोजगार देखील समाविष्ट केले आहे. शिष्यवृत्तीमुळे ग्रामीण भागात काम करू शकणार्या महिलांसह स्थानिक तरुणांना नोकरीच्या संधी उपलब्ध होतील.**

3 ग्रामीण भागात, विशेषतः ज्या भागात गुणवत्तापूर्ण शिक्षकांची तीव्र कमतरता आहे. अशा दर्जेदार शिक्षकांना प्रोत्साहन दिले जाईल. ग्रामीण शाळांमधील शिक्षकांसाठी मुख्य प्रोत्साहन म्हणजे शाळेच्या परिसरात किंवा जवळील स्थानिक घरांची तरतूद किंवा वाढीव गृहनिर्माण भत्ते.

4 अतिरिक्त शिक्षकांच्या बदल्या थांबवल्या जाणार, सध्या बदली झालेल्या शिक्षकांच्या जागी विषय शिक्षक न पुरवता शिक्षकांच्या धडाकेबाज बदल्या केल्या जात आहेत. शिक्षकांच्या

बदल्यांमध्ये भ्रष्टाचार झाल्याचा आरोप आहे. त्यामुळे विद्यार्थ्यांच्या आदर्शात सातत्य राखण्यासाठी अत्याधिक शिक्षक बदलीची हानिकारक प्रथा थांबवली जाईल.

5 शिक्षक पात्रता चाचणी(टीईटी बळकट केली जाईल. सामग्री आणि अध्यापनशास्त्र या दोन्ही बाबतीत उत्तम चाचणी साहित्य तयार करण्यासाठी टीईटी मजबूत केली जाईल. शालेय शिक्षणाच्या सर्व टप्प्यांवर (मूलभूत पूर्वतयारी मध्यम आणि माध्यमिक शिक्षकांचा समावेश करण्यासाठी टीईटीचा विस्तार केला जाईल. विषय शिक्षकांसाठी टीईटी किंवा एनटीए (नॅशनल टेस्टिंग एजन्सी. उच्च शिक्षण प्रवेशासाठी संबंधित विषयातील चाचणी गुण देखील भरतीच्या वेळी विचारात घेतले जातील. उत्कटता आणि प्रेरणा मोजण्यासाठी मुलाखत किंवा वर्गातील प्रात्यक्षिक हा अध्यापनाचा अविभाज्य भाग असेल. खाजगी शाळांमधील शिक्षकांना समान चाचणी (टीईटी) किंवा एनटीए स्कोअरला सामोरे जावे लागेल.शिक्षकांचे सामायिकरण केले जाईल राष्ट्रीय शिक्षण धोरण 2020 सर्व विषयांमध्ये शिक्षकांची पुरेशी संख्या सुनिश्चित करण्यासाठी-विशेषता कला, शारीरिक शिक्षण. व्यावसायिक शिक्षण आणि भाषा यासारख्या विषयांमध्ये-शिक्षकांची भरती शाळा किंवा शाळा संकुलात केली जाऊ शकते आणि शाळांमध्ये शिक्षकांच्या वाटणीचा विचार केला जाऊ शकतो. राज्य व केंद्रशासित प्रदेश सरकारांनी दत्तक घेतलेल्या शाळांच्या गटबद्धतेनुसार.

7 पारंपारिक स्थानिक कला, व्यावसायिक हस्तकला, उद्योजकता कृषी किंवा इतर कोणत्याही विषयात जेथे स्थानिक तज्ञ आहेत अशा विविध विषयांमध्ये मास्टर इन्स्ट्रक्टर म्हणून स्थानिक प्रख्यात व्यक्ती किंवा तज्ञांना नियुक्त करण्यासाठी मास्टर इन्स्ट्रक्टर शाळा व शालेय संकुलांची भरती करण्यास प्रोत्साहित केले जाईल. विद्यार्थ्यांना फायदा होण्यासाठी आणि स्थानिक ज्ञान आणि व्यवसायांचे जतन आणि संवर्धन करण्यात मदत करण्यासाठी याचा विकास केला जाईल.

8 शिक्षकांना स्वयं-सुधारणा आणि त्यांच्या व्यवसायातील सर्वोत्तम नवकल्पना आणि प्रगती शिकण्यासाठी संधी दिली जातील. हे स्थानिक] प्रादेशिक] राज्य] राष्ट्रीय आणि आंतरराष्ट्रीय कार्यशाळा तसेच ऑनलाइन शिक्षक विकास मॉड्युलसह अनेक पद्धतींमध्ये ऑफर केले जातील. प्राचार्यध्एचएम सह प्रत्येक शिक्षकाने त्यांच्या स्वतःच्या व्यावसायिक विकासासाठी दरवर्षी किमान 50 तासांच्या संधींमध्ये भाग घेणे अपेक्षित आहे.

9 शिक्षकांना प्रोत्सहान दिले जाईल आणि उत्कृष्ठ काम करणार्या शिक्षकांना मान्यता मिळणे आवश्यक आहे आणि त्यांना प्रोत्साहन दिले पाहिजे आणि सर्व शिक्षकांना त्यांचे उत्कृष्ट कार्य करण्यासाठी प्रोत्साहन देण्यासाठी त्यांना पगारवाढ देण्यात यावी. म्हणून, कार्यकाळ, पदोन्नती आणि वेतन रचना यांची एक मजबूत गुणवत्तेवर आधारित रचना विकसित केली जाईल. ज्यामध्ये प्रत्येक शिक्षक टप्प्यात अनेक स्तर असतील जे उत्कृष्ट शिक्षकांना प्रोत्साहन देतात आणि ओळखतात. त्याचसाठी कार्यक्षमतेचे योग्य मूल्यांकन करण्यासाठी एकाधिक पॅरामीटर्सची प्रणाली विकसित केली जाईल. राज्य केंद्रशासित प्रदेश सरकारांद्वारे केशब चंद्र मंडळ जे समवयस्क पुनरावलोकनांवर आधारित आहे. उपस्थिती वचनबद्धता ब्च्क् चे तास आणि शाळा आणि समुदायासाठी सेवांचे इतर प्रकार या धोरणात करिअरच्या संदर्भात, कालावधी म्हणजे कार्यप्रदर्शन आणि योगदानाचे योग्य मूल्यांकन

केल्यानंतर कायमस्वरूपी नोकरीसाठी पुष्टी करणे, तर ट्युअर ट्रॅक म्हणजे प्रोबेशनच्या आधीच्या कार्यकाळाचा कालावधी होय.

10 करिअर वाढीची संधी पुढे, हे सुनिश्चित केले जाईल की करिअरची वाढ (कार्यकाळ, पदोन्नती, पगारवाढ इ. एकाच शाळेच्या टप्प्यात शिक्षकांसाठी उपलब्ध आहे (म्हणजे., मूलभूत पूर्वतयारी, मध्यम किंवा माध्यमिक), आणि सुरुवातीच्या टप्प्यात शिक्षक होण्यापासून नंतरच्या टप्प्यात जाण्यासाठी करिअरच्या प्रगतीशी संबंधित प्रोत्साहन नाही(जरी अशा प्रकारच्या करिअरच्या टप्प्यावर जाण्याची परवानगी असेल, जर शिक्षकाची अशा हालचालीसाठी इच्छा आणि पात्रता असेल तरशालेय शिक्षणाच्या सर्व टप्प्यांवर उच्च दर्जाच्या शिक्षकांची आवश्यकता असते आणि कोणताही टप्पा इतर कोणत्याही टप्प्यापेक्षा महत्त्वाचा मानला जाणार नाही या वस्तुस्थितीचे समर्थन करण्यासाठी हे आहे.

11 विशेष शिक्षक विशेष गरजा असलेल्या मुलांना किंवा दिव्यांगांना शिकवण्यासाठी विशेष शिक्षकांची अतिरिक्त आवश्यकता असेल. अशा मुलांच्या विशेष गरजा समजून घेण्यासाठी शिक्षकांना विशेष कौशल्याची आवश्यकता असेल. विषय शिक्षकांना पूर्णवेळ किंवा अर्धवेळ आधारावर पूर्व-सेवा किंवा सेवा मोडमध्ये एक विशेष प्रमाणपत्र अभ्यासक्रम ऑफर केला जाईल. सध्या फक्त सामान्य विषयाचे शिक्षकच विशेष गरजा असलेल्या मुलांना त्यांच्या विशेष गरजा समजून न घेता शिकवत आहेत. NEP-2020 ही समस्या दूर करेल कारण ते शिक्षकांना अशा मुलांच्या गरजांचे विशेष प्रशिक्षण देईल.

शैक्षणिक तंत्रज्ञानाचा वापर आणि शिकाऊ-केंद्रित आणि सहयोगी शिक्षण. सर्व बी. एड. याशिवाय विशेष लहान स्थानिक शिक्षक शिक्षण कार्यक्रम किंवा क्म्ज् किंवा शाळा संकुलात उपलब्ध असतील ज्यांना शालेय संकुलात शिकवण्यासाठी मास्टर ट्रेनर म्हणून नियुक्त केले जाऊ शकते अशा नामवंत स्थानिक व्यक्तींसाठी लहान पद- बी. एड. बहु विद्याशाखीय महाविद्यालये आणि विद्यापीठांमध्ये ज्या शिक्षकांना अध्यापनाच्या अधिक विशेष क्षेत्रात जाण्याची इच्छा असेल अशा शिक्षकांसाठी प्रमाणन अभ्यासक्रमही मोठ्या प्रमाणावर उपलब्ध करून दिले जातील. जसे की अपंग विद्यार्थ्यांना शिकवणे किंवा शालेय शिक्षण प्रणालीमध्ये नेतृत्व आणि व्यवस्थापन पदांवर जाणे किंवा पायाभूत पूर्वतयारी मध्यम आणि माध्यमिक टप्प्यांमधील एका टप्प्यातून दुसर्या टप्प्यावर जाणे.

संदर्भ ग्रंथ

- विभुते भालबा, राष्ट्रीय शिक्षण धोरण-2020 , मेहता पब्लिकेशन हाउस, पुणे
- डॉ. डी. एन. मोरे. उच्च शिक्षण धोरण आव्हाने आणि दिशा, युनिक पब्लिकेशन, पुणे
- नई एज्युकेशन अहवाल 2020
- इंटरनेट
- डॉ. रामशकल पाण्डेय] नई शिक्षा नीति, एस व्ही पी एम, आग्रा
- पी. डी. त्यागी] कोठारी कमीशन एस व्ही पी एम, आग्रा

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नवीन शैक्षणिक धोरण २०२० : एक दृष्टिकोन

डॉ.खलील न. सय्यद
तत्त्वज्ञान विभागप्रमुख
पंडित दीनदयाल उपाध्याय महाविद्यालय, देवणी जि.लातूर

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सारांश

अनेक वर्षांच्या प्रतिक्षेनंतर भारताच्या केंद्रीय सरकारने नवीन शैक्षणिक धोरण (एनईपी) २९ जुलै, २०२० रोजी मंजूरी दिली आहे. इस्रोचे माजी प्रमुख के. कस्तुरीरंगन यांच्या अध्यक्षतेखालील समितीने या नव्या शैक्षणिक धोरणाचा मसुदा तयार केला आहे. केंद्रीय मनुष्यबळ विकासमंत्री (एम.एच.आर.डी.) रमेश पोखरीवाल, माजी केंद्रीय सूचना आणि प्रसारणमंत्री प्रकाश जावडेकर यांनी पत्रकार परिषद घेऊन या धोरणासंबंधी अधिक माहिती दिली. जीडीपीचा ६ टक्के इतका निधी शिक्षणासाठी देण्याची व्यवस्था या नव्या धोरणात नमूद करण्यात आलेली आहे. यात शिक्षण व्यवस्था बहुवैविध्य, बहुभाषिक करण्याकडे अधिक भर देण्यात आला आहे. ज्याचा उद्देश भारतीय शिक्षण व्यवस्थेत शाळा ते महाविद्यालयीन स्तरापर्यंत अनेक बदलांचा परिचय करून दिला आहे. राष्ट्रीय शिक्षण धोरण २०२० चे उद्दिष्ट भारताला जागतिक ज्ञान महासत्ता बनवणे आहे. विविध शाखेतील नव्या विषयांना गवसणी घालणारे हे संशोधन असावे आणि त्यासाठी भारतात सर्वात संशोधनाची एक चांगली रचना उत्पन्न होण्याची आवश्यकता आहे. हेच या नवीन शैक्षणिक धोरणात स्पष्ट केले आहे.

बीज संज्ञा :एनईपी, उच्चशिक्षण, जीडीपी, शैक्षणिक धोरण, एमएचआरडी

प्रस्तावना

भारताचे पहिले शिक्षणमंत्री मौलाना अबुल कलाम आझाद यांनी एक समान शैक्षणिक प्रणालीसह संपूर्ण देशभरातील शिक्षणावर केंद्र सरकारच्या मजबूत नियंत्रणाची कल्पना केली. केंद्र सरकारने भारताच्या शिक्षण प्रणालीचे आधुनिकीकरण करण्यासाठी प्रस्ताव विकसित करण्यासाठी विद्यापीठ शिक्षण आयोग १९४८ ते १९४९ माध्यमिक शिक्षण आयोग, १९५२ ते १९५३ विद्यापीठ अनुदान आयोग आणि कोठारी आयोग १९६४ ते ६५ ची स्थापना केली. भारताचे पहिले पंतप्रधान जवाहरलाल नेहरू यांच्या सरकारने वैज्ञानिक धोरणाचा ठराव स्वीकारला होता. शिक्षण व्यवस्था अधिक लवचिक बनवण्याच्या दृष्टीने आवश्यक ते बदल करत केंद्र सरकारने नव्या शैक्षणिक धोरणाला २९ जुलै, २०२० रोजी मंजुरी दिली आहे. अजूनही कैक युगे मागे असलेल्या देशातील शिक्ष्झण व्यवस्थेचा धागा एकविसाव्या शतकातील वर्तमानाशी जुळविण्यासाठी राष्ट्रीयशैक्षणिक धोरण केंद्र सरकारने जाहीर केले. शालेय शिक्षणापासून उच्च शिक्षणापर्यंत सर्व बाबतींमध्ये अनेक क्रांतिकारक निर्णय या धोरणांतर्गत घेण्यात आलेले आहे, ज्यांची अंमलबजावणी प्रभाविरित्या होऊ शकली तर त्याचे अनेक फायदे देशाला होऊ शकतात. या नव्या धोरणांचा, त्यातील बऱ्या—वाईट गोष्टींचा दुरगामी परिणाम देशभरातील शिक्षण व्यवस्थेवर पुढील काळात होणार आहे.

उद्दिष्टये

१) नवीन शैक्षणिक धोरणाच्या दृष्टिकोनाचा अभ्यास करणे.
२) पूर्व शैक्षणिक धोरणाचा आढावा घेणे.
३) नवीन शैक्षणिक धोरणाची रचना अभ्यासणे.

संशोधन पद्धती

प्रस्तुत संशोधन पेपर हा मुख्यत: दुय्यम सामग्रीवर आधारित आहे. यासाठी वर्तमानपत्र, विविध अहवाल, आंतरजालावरील माहिती, मासिके इत्यादींचा वापर करण्यात आला आहे.

पूर्व शैक्षणिक धोरण

सन १९६६ मध्ये हजारभर पानांचा ग्रंथवजा अहवाल कोठारी आयोगाने सुपूर्द केला. आपल्या शासनकर्त्यांनी त्या आधारावर १९६८ साली ८ पानी राष्ट्रीय धोरण सादर केले. संपूर्ण धोरण १७ मुद्यांमध्ये सामावले आहे. भारताचे हे पहिले शैक्षणिक धोरण १९६८ मध्ये श्रीमती इंदिरा गांधी यांच्या सरकारने आणले होते. कलम ४५ भारतीय संविधान नुसार वयाच्या १८ वर्षापर्यंत शिक्षण मोफत आणि सक्तीचे असले पाहिजे. शालेय प्रवेश केलेल्या मुलाने अभ्यासक्रम यशस्वीपणे पूर्ण केला पाहिजे. भाषा विकास या धोरणात देशात भारतीय तसेच परदेशी भाषांच्या विकासावर भर देण्यात आला. माध्यमिक स्तरावरील विद्यार्थ्याचा हिंदी, इंग्रजी आणि त्याच्या राज्याची प्रादेशिक भाषा अवगत असावी असे तीन भाषाचे सुत्र सादर करावे. माध्यमिक स्तरावर ऐच्छिक विषय म्हणून संस्कृत भाषेचा समावेश करण्यात आला. या धोरणांतर्गत देशातील प्रत्येक मुलाला जात, धर्म, प्रदेश किंवा काहीही असले तरी शिक्षण मिळाले पाहिजे. मागासवर्गीय अल्पसंख्यांक मुले—मुली, शारीरिकदृष्ट्या विकलांग मुलांना शिक्षणाच्या सुविधांचा लाभ घेण्यावर विशेष भर देण्यात आला. संपूर्ण देशात शिक्षणाची रचना एक समान असावी. उच्च माध्यमिक ते महाविद्यालयीन स्तरापर्यंत १०+२+३ असा नमुना होता.

जानेवारी १९८५ पासून नवीन शिक्षण धोरण आखण्याचे प्रयत्न सुरू झाले. म्हणजे साधारणत: १८ वर्षांनी नवीन धोरण आखण्याची गरज भासली. परंतु ते धोरण अपुरे वाटल्याने लगेचच ८ वर्षांमध्ये, म्हणजे मे १९९० मध्ये आचार्य राममूर्ती समिती स्थापन करून राष्ट्रीय शिक्षण धोरणाचा अभ्यास करण्यात आला. डिसेंबर १९९० मध्ये

राममूर्ती समितीने आपला अहवाल सादर केला. या अहवालाचा विचार करण्याकरिता आंध्र प्रदेशाचे तत्कालीन मुख्यमंत्री के.एन. जनार्दन रेड्डी यांच्या अध्यक्षतेखाली जुलै १९९१ मध्ये एक समिती नेमण्यात आली. रेड्डी समितीने आपला अहवाल जानेवारी १९९२ मध्ये सादर केला. या दोन्ही अहवालाचा विचार सेंट्रल अडव्हायजरी बोर्ड ऑफ एज्युकेशन (सीएबीई) केला आणि १९८६ चे शिक्षण धोरण स्वीकारत त्याच्यामध्ये काही महत्त्वाच्या सुधारणा केल्या. भारताचे हे दुसरे शैक्षणिक धोरण १९८६ मध्ये राजीव गांधी सरकारने आणले होते.

नवीन शैक्षणिक धोरण

केंद्रीय मंत्रिमंडळाने नवीन राष्ट्रीय शैक्षणिक धोरण २०२० ला मंजुरी दिलेली आहे. ज्याचा उद्देश भारतीय शिक्षणव्यवस्थेत शाळा ते महाविद्यालयीन स्तरापर्यंत अनेक बदलांचा परिचय करून दिला आहे. राष्ट्रीय शिक्षण धोरण २०२० चे उद्दिष्ट भारताला जागतिक ज्ञान महासत्ता बनवणे आहे.

उच्च शिक्षण:

उच्च शिक्षण संस्थांचे खालील प्रकारच्या संस्थांमध्ये वर्गीकरण करणे:

१) संशोधन संस्था :यात सर्व केंद्रीय विद्यापीठे केंद्र सरकारच्या मालकीच्या आणि अनुदानित संस्था यांचा समावेश होईल. या संस्था देशातील गुणवत्तापूर्ण संशोधनासाठी आणि त्यांचा दर्जा कायम राखण्यासाठी पायाभूत सुविधा आणि इतर सोयी पुरवतील.

२) शैक्षणिक संस्था/विद्यापीठे :या संस्था/विद्यापीठे गुणवत्तापूर्ण पदवी आणि पदव्युत्तर शिक्षण देण्यासाठी काम करतील.

३) महाविद्यालये :यात उच्च दर्जाचे पदविका आणि पदवी शिक्षण दिले जाईल.

उच्च शिक्षणासाठी असलेल्या विद्यापीठ अनुदान आयोगाच्या जागा आता 'राष्ट्रीय उच्च शिक्षण नियंत्रण मंडळ';छभ्म्त्द्धही नवी यंत्रणा घेईल. उच्च शिक्षण संस्थांच्या स्वायत्ततेला आणि गुणवत्तेला प्राधान्य देणे, गुणवत्तापूर्ण संशोधनाला चालना देण्यासठी 'राष्ट्रीय संशोधन मंडळ/संस्थेची' स्थापना करणे, २०३० पर्यंत उच्च शिक्ष्णणासाठी प्रवेश घेणाऱ्यांची संख्या दर्शविणारा 'ढोबळ नोंदणी प्रमाण निर्देशांक' ५० टक्के पर्यंत वाढेल यासाठी प्रयत्न करणे, सध्या हे प्रमाण फक्त २७ टक्के इतके आहे. प्रत्येक उच्च शिक्षण संस्था ही स्वायत्त आणि स्वतंत्र अस्तित्व असलेली संस्था म्हणून काम करेल आणि स्वत:चे शैक्षणिक निर्णय स्वत: घेईल. उच्च शिक्षणाचा विस्तार करण्यासाठी आणि अपेक्षित गुणवत्ता राखण्यासाठी आवश्यक असलेला निधी विद्यापीठे सार्वजनिकरित्या उभा करू शकतील आणि त्याची प्रक्रिया अत्यंत पारदर्शी आणि खुली असेल.

येत्या पाच वर्षात देशातील मागास जिल्ह्यात वरील तीनपैकी एक तरी शिक्षण संस्था उभारली जाईल. फक्त विद्यापीठे चार वर्षांचा शिक्षक शिक्षण कार्यक्रम (इंटिग्रेटेड बी.एड.) सुरू करू शकतील. तसेच दोन वर्षांचा बी.एड. अभ्यासक्रम पुन्हा एक वर्षाचा करून ज्या संस्था चार वर्षांचा इंटिग्रेटेड कोर्स चालवितात त्यांच्याकडे तो दिला जाईल. स्वायत्त महाविद्यालयांची विद्यापीठांसोबतची संलग्नता संपुष्टात येऊन ते आपली स्वत:ची पदवी प्रमाणपत्रे स्वत: देऊ शकतील. कोणतेही महाविद्यालये विद्यापीठाशी संलग्न असणार नाही. थोडक्यात सर्व महाविद्यालये स्वायत्त करण्यासाठी प्रयत्न केले जातील.

पदवी आणि पदव्युत्तर अभ्यासक्रम पूर्ण केल्यानंतर संबंधित संस्था/विद्यापीठ स्नातकांना नोकरी/व्यवसायासाठी आवश्यक ते सहकार्य करेल. आर्थिक कारणामुळे कोणत्याही विद्यार्थ्याचे उच्चशिक्षण अर्धवट राहू नये यासाठी संस्था/विद्यापीठ आवश्यक ती आर्थिक मदत करू शकेल. ५० टक्के ळम्त चे ध्येय गाठण्यासाठी गुणवत्तापूर्ण मुक्त आणि दुरस्थ शिक्षणाला चालना देऊन त्याचा प्रसार वाढविणे, मुक्त आणि दुरस्थ शिक्षणामध्ये दर्जेदार आणि समकक्ष डेंपअम व्चमद व्दसपदम ब्वनतेम ;डव्ब्ब्द्ध अर्थात समग्र, मुक्त, निरंतर अभ्यास सुरू करणे.

पदवी आणि पदव्युत्तर अभ्यासक्रम तयार करत असताना ते आंतरराष्ट्रीय शिक्षणाचा दर्जा आणि गुणवत्ता लक्षात घेऊन त्या समकक्ष राहतील यासाठी प्रयत्न करणे. परदेशी मुलांसाठी शिक्षण संस्थांमध्ये १५ टक्के जागा राखीव ठेवणे. आंतरराष्ट्रीय आणि भारतीय शिक्षण संस्था यांच्या संयुक्त विद्यमाने आंतरराष्ट्रीय पातळीवर आवश्यक त्या पात्रतेचे आणि क्षमतेचे मनुष्यबळ निर्माण करणे. दर्जा आणि गुणवत्ता यात वाढ करण्यासाठी विद्यार्थी आणि शिक्षक यांची आंतरराष्ट्रीय पातळीवर देवाणघेवाण ';जनकमदज — थ्बनसजल म्बींदहमद्ध करणे. जगातील निवडक २०० विद्यापीठांना भारतात शिक्षणासाठी परवानगी देणे. शिक्षकांचा दर्जा आणि गुणवत्ता टिकवून त्यात वाढ करण्यासाठी त्यांना प्रेरणा आणि प्रोत्साहन देणे. विद्यार्थी शिक्षक प्रमाण मानून ३०: १ राखणे. त्यासाठी आवश्यक त्या शिक्षकांची भरती करणे. शिक्षक भरती करत असताना शिक्षकांचे ज्ञान, गुणवत्ता आणि शिकविण्याची क्षमता यांना प्राधान्य देणे. शिक्षक भरतीचे सर्व अधिकार संबंधित संस्थांना देणे. सर्व संस्था आणि विद्यापीठे यामध्ये शिक्षकांची नियुक्ती करताना कालावधी आधारित नियुक्त्या दिल्या जातील. ज्यात नियुक्त शिक्षकाचा परिविक्षा कालावधी पाच वर्षांचा असेल. पाच वर्षे पूर्ण झाल्यानंतर वरिष्ठ, देखरेख समिती आणि विद्यार्थी यांचा प्रतिसाद आणि मते लक्षात घेऊन नियुक्ती कायम केली जाईल किंवा परिविक्षा कालावधीत वाढ केली जाईल. प्रत्येक संस्था शिक्षकाला नोकरीत कायम करत असतानाचे नियम, अटी आणि प्रक्रिया स्वत: ठरवेल. शिक्षकांना प्रशिक्षण देणाऱ्या मनुष्यबळ विकास केंद्राचे संबंधित विद्यापीठात विलीनीकरण करण्यात येईल. उच्च शिक्षणातील संशोधन आणि नवनिर्मितीला चालना आणि प्रोत्साहन देऊन प्रसार करण्यासाठी खालील चार क्षेत्रातील संशोधन आणि नवनिर्मितीसाठी राष्ट्रीय संशोधन संस्थेची स्थापना करणे.

१) विज्ञान आणि तंत्रज्ञान
२) समाजशास्त्र

३) कला
४) माणूसकी

कालांतराने यामध्ये आरोग्य, शेती आणि पर्यावरण यांचा समावेश केला जाईल.

यासाठी या संस्थेला दरवर्षी २०,०००/— कोटी किंवा ळक्च्च्या ०.१ टक्के यापैकी जास्त असलेली रक्कम अनुदान म्हणून दिली जाईल. या संस्थेच्या व्यवस्थापकीय मंडळावर शिक्षण क्षेत्रातीलच तज्ज्ञ आणि व्यासंगी शिक्षकांची नियुक्ती केली जाईल. त्या त्या क्षेत्रातील संशोधनासाठी संस्था आपल्या विभागीय कार्यालयामार्फत संशोधकांकडून प्रस्ताव मागवेल आणि तज्ज्ञांच्या समितीमार्फत त्यांची पडताळणी करून संशोधकांना निधी दिला जाईल. मोठ्या संशोधन प्रकल्पाबरोबरच दीर्घकालीन संशोधन प्रकल्प, महासंशोधन प्रकल्प आणि आंतरराष्ट्रीय संशोधन प्रकल्पासाठी प्राधान्याने मान्यता आणि निधी पुरविला जाईल. सध्या अस्तित्वात असलेल्या आणि संशोधनाला निधी देणाऱ्या शासकीय आणि खाजगी संस्था आपले काम स्वतंत्रपणे चालू ठेवू शकतील. याचबरोबर संस्थेकडून प्रत्येक विद्यापीठ आणि महाविद्यालयात संशोधन करण्यासाठी आवश्यक त्या पायाभूत सुविधा निर्माण करण्यासाठी प्रयत्न करेल.

संस्थेद्वारे केलेल्या संशोधनाचा अंतिम अधिकर संशोधकाकडेच राहील. संशोधनाचा सरकार आणि उद्योगांना उपयोग व्हावा म्हणून सरकार, उद्योग आणि संशोधक यांच्यामध्ये थेट दुवा आणि समन्वय यंत्रणा निर्माण केली जाईल. केंद्र आणि राज्य सरकारच्या विविध मंत्रालयांना आवश्यक संशोधकांची पुर्तता करण्यासाठी राष्ट्रीय संशोधन संस्था प्रयत्न करेल. खाजगी आणि सार्वजनिक क्षेत्रातील उद्योजक आणि व्यावसायिकांनी आपल्या वार्षिक नफ्याच्या ०.१ टक्के इतकी रक्कम संशोधनासाठी राखून ठेवली पाहिजे. ही रक्कम सामाजिक जबाबदारी निधीमधून किंवा स्वतंत्रपणे ठेवता येईल.

२०२० चे राष्ट्रीय शैक्षणिक धोरण अंमलात आणायला फार मोठ्या आर्थिक तरतुदीची गरज लागणार आहे. पायाभूत शिक्षणाच्या स्तरावर शिशुवर्ग आणि बालवाटिकांची जवळजवळ सर्वच गावात पुनर्रचना करावी लागणार आहे. वर्गखोल्यांचे बांधकाम, प्रशिक्षित शिक्षकांची अतिरिक्त पदे आणि शिशूच्या शिक्षणाकरिता लागणारे दृकश्राव्य अध्ययन साधने इत्यादींकरिता बरीच मोठी तरतूद उपलब्ध करावी लागेल.

उच्च शिक्षणातील सहभाग वर्तमान २६ टक्क्यांवरून २०३० पर्यंत ५० टक्के वाढविण्याचा मानस आहे. उच्च शिक्षण संस्थांना शैक्षणिक, प्रशासकीय स्वायत्तता देण्याबरोबरच वित्तीय स्वायत्तताही दिली जाणार आहे. महाविद्यालयाचे विद्यापीठांशी असलेले संलग्नीकरण बंद केले जाईल. व्यावसायिक शिक्षण आणि धंदेवाईक शिक्षण सर्वांना उपलब्ध करून देण्याबरोबरच प्रशिक्षण दिले जाईल. पदवी शिक्षण तीन किंवा चार वर्षाचे आणि पदव्युत्तर शिक्षण एक किंवा दोन वर्षाचे असेल. एम.फिल शिक्षण बंद केले जाऊन पीएच.डी. साठी पदव्युत्तर विद्यार्थ्यांना प्रवेश मिळेल. पदव्युत्तर आणि पीएच.डी. साठीचे प्रवेश हे प्रवेश परिक्षेवर अवलंबून असणार आहेत. गुणवत्ता असणाऱ्या आंतरराष्ट्रीय दर्जाच्या विद्यापीठाची निर्मिती केली जाईल. संशोधन आणि नाविन्य निर्मितीला आणि वसतिगृहे खाजगी प्रयत्नांतून वाढविण्याचा प्रयत्न केला जाईल. एकूण शिक्षणावरील खर्च स्थूल देशांतर्गत उत्पादनाच्या ६ टक्के आणि एकूण खर्चाच्या २० टक्क्यांपर्यंत जाण्याचा प्रस्ताव आहे.

निष्कर्ष

नवीन शैक्षणिक धोरणाच्या कक्षा खूप मोठ्या आहेत. म्हणून विद्यार्थ्यांचे भविष्य घडविणारे असे नवे शैक्षणिक धोरण आहे. धोरणाची अंमलबजावणी करण्याकरिता राजकीय शक्ती त्या त्या वेळी कमी पडली. मोठमोठे प्रगत देश वगळता क्युबा, नॉर्वे, स्वीडन, फिनलंडसारख्या आपल्या राज्याहून लहान—लहान देशात सुद्धा जी.डी.पी. च्या ७ टक्क्यांहून अधिक तरतूद शिक्षणाकरिता केली जाते. जी.डी.पी. च्या ६ टक्के आर्थिक तरतूद शिक्षणासाठी उपलब्ध झाली तर २०२० चे राष्ट्रीय धोरण यशस्वी होऊ शकेल.

संदर्भ सूची

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11
AI Technology in Higher EducationAnd Its Impact on Faculty and Students

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Introduction

AI, or Artificial Intelligence, refers to the simulation of human intelligence in machines, enabling them to perform tasks that typically require human intelligence, such as:

1. Learning
2. Problem-solving
3. Reasoning
4. Perception
5. Language understanding

Key Words – Artificial Intelligence (AI),Machine Learning (ML), Deep Learning (DL),Natural Language Processing (NLP), Virtual Learning Environments (VLEs) ,Intelligent Tutoring Systems (ITS)

AI systems can be categorized into two main types:

1.Narrow or Weak AI: Designed to perform a specific task, such as facial recognition, language translation, or playing chess.

2.General or Strong AI: Aims to match human intelligence, with the ability to reason, learn, and apply knowledge across various tasks.

AI technologies include:

1. Machine Learning (ML)
2. Deep Learning (DL)
3. Natural Language Processing (NLP)
4. Robotics
5. Computer Vision

1. Learning Analytics: Analyzing student data to improve learning outcomes and identify at-risk students.

2. Adaptive Learning: Personalized learning experiences tailored to individual students' needs and abilities.

3. Natural Language Processing (NLP): Chatbots, virtual assistants, and automated grading systems.

4. Machine Learning (ML): Predictive modeling, student clustering, and automated decision-making.

5. Artificial Intelligence (AI) Tools: Virtual labs, simulations, and interactive learning environments.

6. Data Mining: Extracting insights from large datasets to inform institutional decision-making.

7. Automation: Automating administrative tasks, such as enrollment, grading, and student support.

8. Virtual Learning Environments (VLEs): AI-powered platforms for online and blended learning.

9. Intelligent Tutoring Systems (ITS): AI-based systems providing one-on-one support and real-time feedback.

10. Content Creation: AI-generated educational content, such as videos, quizzes, and assessments.

11. Student Support Systems: AI-powered tools for mental health, career guidance, and academic advising.

12. Faculty Support Systems: AI-assisted tools for instructors, such as grading, feedback, and content development.

13. Institutional Analytics: AI-driven insights for strategic planning, resource allocation, and accreditation.

14. Accessibility and Inclusion: AI-powered tools for supporting students with disabilities and language barriers.

15. Ethics and Governance: Ensuring responsible AI development, deployment, and use in higher education.

These factors are transforming higher education, enhancing teaching, learning, and institutional operations.

AI applications are numerous, including:

1. Virtual assistants (e.g., Siri, Alexa)
2. Image and speech recognition
3. Self-driving cars
4. Personalized recommendations
5. Predictive analytics
6. Healthcare diagnosis and treatment
7. Chatbots and customer service

AI has the potential to revolutionize many aspects of life, but also raises ethical concerns, such as job displacement, bias, and privacy issues.

AI Technology in Higher Education

AI technology is transforming higher education in various ways, including -

- Enhanced Assessment and Evaluation: AI is being used to develop assessments, predict academic success and provide customized feedback.

- Intelligent Tutoring Systems: AI-powered adaptive learning systems offer personalized learning experiences for students.

- AI Assistants: AI assistants are being used to support instructors and students with tasks such as grading, data analysis and content creation.

- Managing Student Learning: AI is being used to manage student learning, including tracking student progress and identifying areas where students need extra support.

- Natural Language Processing: AI-powered natural language processing tools are being used to support language learning and writing skills.

AImpact on Faculty and Students

1 New Skill Set: AI technology requires faculty to develop a new skill set, including understanding how to use AI tools and how to teach students to use them effectively.

2**Prompt Engineering**: Students need to learn how to craft questions that elicit the most useful answers from AI platforms.

3 **Critical Thinking**: AI technology is challenging traditional teaching methods and requiring students to develop critical thinking skills to effectively use AI tools.

4 **Adaptability**: Faculty and students need to be adaptable and open to new technologies and innovations.

Future of AI in Higher Education

- **Increased Use**: AI technology will likely become more prevalent in higher education, with more institutions adopting AI-powered tools and platforms.

- **New Innovations**: New AI-powered innovations will emerge, offering new opportunities for enhancing teaching and learning.

- **Ethical Considerations**: As AI technology becomes more prevalent, there will be a need for ongoing discussions about ethical considerations, including bias, transparency and accountability.

A) Advantages of AI in Higher Education:

1. Personalized Learning: AI-powered adaptive learning systems tailor education to individual students' needs, abilities, and learning styles.

2. Intelligent Tutoring: AI-based virtual tutors provide one-on-one support, real-time feedback, and guidance, supplementing human instructors.

3. Automated Grading: AI-assisted grading systems free instructors from tedious grading tasks, reducing bias and increasing accuracy.

4. Enhanced Accessibility: AI-powered tools support students with disabilities, such as language processing, speech recognition, and visual assistance.

5. Efficient Administration: AI streamlines administrative tasks, like student enrollment, course scheduling, and degree tracking.

6. Data-Driven Insights: AI analytics help institutions make informed decisions about curriculum development, student support, and resource allocation.

7. Virtual Learning Environments: AI-powered platforms create immersive, interactive learning experiences, simulating real-world environments.

8. Career Guidance: AI-driven career counseling systems help students identify potential career paths and develop relevant skills.

9. Research Assistance: AI aids researchers in data analysis, literature reviews, and identifying research gaps.

10. Cost Savings: AI can help reduce costs associated with instruction, student services, and administration.

11. Scalability: AI-powered systems can handle large student populations, making high-quality education more accessible.

12. Continuous Learning: AI supports lifelong learning, enabling professionals to upskill and reskill throughout their careers.

By embracing AI, higher education institutions can improve student outcomes, enhance the learning experience, and become more efficient and effective.

B)Disadvantages of AI in Higher Education:

1. Job displacement: AI may replace some administrative and teaching positions, potentially displacing staff and faculty.

2. Bias and discrimination: AI systems can perpetuate existing biases if trained on biased data, potentially discriminating against certain student groups.

3. Depersonalization: Over-reliance on AI may lead to a lack of human interaction, potentially negatively impacting student mental health and social skills.

4. Technical issues: AI systems can be prone to errors, glitches, and technical difficulties, disrupting learning and causing frustration.

5. High costs: Implementing and maintaining AI systems can be expensive, potentially diverting resources from other important areas.

6. Lack of transparency: AI decision-making processes can be opaque, making it difficult to understand how decisions are made.

7. Over-reliance on technology: Excessive use of AI may lead to a lack of critical thinking and problem-solving skills in students.

8. Cybersecurity risks: AI systems can be vulnerable to cyber-attacks, potentially compromising student data and privacy.

9. Equity and access: Not all students have equal access to AI-powered tools and devices, potentially exacerbating existing inequalities.

10. Ethical concerns: AI raises ethical concerns, such as the potential for AI to replace human judgment and decision-making in sensitive areas like grading and admissions.

It's important for higher education institutions to carefully consider these disadvantages and work to mitigate them as they implement AI solutions.

Challenges:-

1. Ensuring AI transparency and accountability
2. Addressing bias and equity concerns
3. Protecting student data and privacy
4. Integrating AI with existing curricula and infrastructure
5. Developing faculty AI literacy and training

Summary –

The summary covers a wide range of AI topics, from basic concepts to applications and societal implications. The summary is organized into clear sections, making it easy to follow and understand .The summary effectively highlights the main points and benefits of AI, such as personalized learning and predictive analytics.

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Artificial Intelligence for Academic Libraries

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Abstract

The aim of the present paper is how Artificial Intelligence (AI) is boon for academic libraries. Artificial Intelligence (AI) is one of the emerging technologies of this era. AI has been associated with several trades like defense, health, business and education. But it's role in academic library services will faster intelligent decisions It is widely used technology in academic library services that can transform the best services in the age of information technology. Present paper aims to highlights the use of AI in library operations. Let's see how Artificial Intelligence (AI) is important for academic libraries.

Keywords : Artificial Intelligence, ArtificialIntelligence in academic libraries, Advantages of Artificial Intelligence, Challengesof Artificial Intelligence.

Introduction

Artificial Intelligence is the technology that enables machines to have the abilities to plan, learn, reason, solve problems, move and to some extent be creative. AI can offer several benefits to libraries and librarians and their users, such as improving the efficiency and accuracy of library data, increasing the relevance and diversity of resources and services, expanding access to information and supporting innovation and learning. It also reduces manual and repetitive tasks for library staff. AI can be applied to various aspects of library services like classification, reference service, acquisition, cataloging, preservation and indexing. For example, AI can help librarians provide personalized and relevant recommendations to their users, based on their preference, behavior and context.

Artificial Intelligence (AI) is one of the emerging trends and applications of computing in libraries. It involves programming computers to do things, which if done by humans, would be said to require intelligence. Artificial intelligence will greatly improve library operations and services and will upgrade the heighten the relevance of libraries in an ever-changing digital society. With the help of the artificial intelligence we can save time, money and efforts. In this way artificial intelligence is very important technology for academic libraries in this digital era.

Artificial Intelligence inAcademic Libraries

AI can be used in various fields of library services these are as follows.

1. Automatic indexing using expert system.
2. Automatic classification using optical character reorganization.
3. Automatic cataloging using optical character reorganization.
4. Automatic acquisition system.
5. In reference services.
6. In different library activities.

Artificial Intelligence already touches many of our daily computing activities. AI is used in many areas such as business, military, education, libraries etc. Unless libraries begin to exploit the new technologies and innovate their information services delivery, they may face obsolescence in this generation.

Advantages of Artificial Intelligence in Academic Libraries

There are many advantages of AI in academic libraries. It can be summarized as follows.

1. Finished task quicker than a human.
2. To minimization of efforts.
3. Maximization of efficiency.
4. To immersive user experience.
5. To save space.
6. To improve libraries status. 7.Success ratio is great.
8. To save money.
9. Multiple functions can do a time.

Challenges Of ImplementingArtificial Intelligencein Academic Libraries

There are some limitations to implementing AI system in academic libraries. AI systems are generally not in operational use in most libraries.

1. Lack of funds.
2. Lack of trend manpower.
3. Lack of space.
4. Lack of power supply.
5. Lack of internet connectivity.
6. Lack of proper guidance.
7. Lack of infrastructure.

So in this way there are many obstacles in implementing AI system in academic libraries.

Conclusion

Artificial Intelligence has gained tremendous application in library information services like user structured information environment, smart Document Delivery Services, Intelligent gateways to online sources etc. AI can help librarians discover new and emerging topics. To improve library and librarians status AI is very useful technology. To improve classification of library resources, to improve circulation services, to improve reference services AI is very useful. One of the major benefits of AI is that it's conclusion is based on data rather than emotions. Even after our best efforts it is known fact that human decisions are always biased in a negative way by our emotions. So in this way AI is very important technology for library and librarians in today's fastest age.

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ACADEMIC LIBRARIES IN THE ERA OF THE NATIONAL EDUCATION POLICY (NEP)-2020

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Abstract:

The National Education Policy (NEP) 2020 aims to transform India's education system to meet 21st-century demands, emphasizing inclusivity, multidisciplinary learning, and holistic development. This research article explores the significant implications of NEP 2020 for academic libraries, essential components of educational infrastructure. It addresses the necessity for libraries to expand collections, transition to digital resources, foster research, upgrade infrastructure, and promote lifelong learning to support NEP 2020's objectives. Despite financial and technological challenges, the alignment with NEP 2020 presents opportunities for academic libraries to enhance their roles, contributing to educational and research excellence.

Keywords: National Education Policy (NEP) 2020, Academic Libraries, Digital Transformation, Multidisciplinary Learning, Lifelong Learning

Introduction:

Academic libraries play an important role in the educational setting, serving as centers of knowledge, learning, and research. They provide students and faculty with access to a wide array of resources, including books, journals, databases, and digital media, which are essential for academic success and scholarly efforts.[1] Over the years, academic libraries have evolved to meet the changing needs of the educational system, graduallyintegrating advanced technologies and digital resources to support online learning and remote research.[2] These libraries are not just repositories of information but also vibrant environments that facilitate intellectual growth, collaboration, and innovation. As higher education continues to develop in response to technological advancements and changing educational system, academic libraries must adapt to stay relevant and effective in supporting the academic mission of their institutions.[3]

Introduction to NEP-2020 And Its Significance:

The National Education Policy (NEP)-2020 marks a significant landmark in India's educational reforms, aiming to transform the education system to meet the demands of the 21st century. This policy introduces a completestructure focused on inclusivity, multidisciplinary learning, and holistic development. It focuses on critical thinking, creativity, and the integration of technology to enhance digital literacy and make quality education accessible to all students, irrespective of their socio-economic background.[4] By promoting vocational education, flexible learning ways, and robust teacher training, NEP-2020 seeks to linkpresent gaps and align the Indian education system with global standards, preparing students for a dynamic and innovative future.[5] This policy is expected to play a key role in shaping India into a knowledge superpower, fostering a skilled and forward-thinking workforce.[6]

Importance of Aligning Academic Libraries With NEP 2020:

Aligning academic libraries with the National Education Policy (NEP) 2020 is essential for several reasons. Firstly, NEP 2020 stresses a holistic and multidisciplinary approach to education, which necessitates that libraries expand their collections and services to support diverse fields of study and interdisciplinary research.[4] By integrating digital resources and facilitating access to a broad spectrum of academic materials, libraries can significantly improve the quality of education and research outcome.[7] Furthermore, NEP 2020's focus on digital and online education highlights the need for libraries to transition to digital repositories, ensuring that students and faculty have remote access to necessary resources[8]. This shift not only democratizes access to information but also aligns with global educational trends towards digital learning environments. Additionally, libraries play anessential role in supporting research and innovation, key pillars of NEP 2020, by providing essential research tools, training, and support services [9]. Hence, the alignment of academic libraries with NEP 2020 is imperative for fostering an educational ecosystem that is adaptable, inclusive, and conducive to lifelong learning.

Role of Academic Libraries:

Academic libraries have historically been essential in supporting educational institutions by providing access to a wide range of information resources, promoting research, and facilitating learning. The role of academic libraries has evolved significantly over the years, influenced by technological advancements, changing educational paradigms, and emerging information needs.Traditionally, academic libraries have served as the primary repository for books, journals, and other physical information resources. They have been central to the educational process, offering students and faculty access to necessary materials for coursework, research, and self-study. Academic libraries have also played an important role in developing information literacy skills, helping users effectively locate, evaluate, and use information. With the introduction of digital technology, the role of academic libraries has expanded. Libraries have gradually incorporated digital resources such as e-books, online journals, and databases into their collections. The rise of digital libraries has enabled remote access to resources, making information more accessible to a larger audience. Studies have shown that digital libraries enhance the efficiency of information retrieval and support the diverse learning needs of users.

Academic libraries have become integral to supporting research activities within educational institutions. They provide access to specialized databases, research journals, and other scholarly materials that are essential for conducting high-quality research. Libraries also offer services such as research consultations, citation management, and data management, which are crucial for the research process. The role of academic libraries in fostering a research culture has been widely acknowledged in the literature.Another critical function of academic libraries is to enhance information literacy among students and faculty. Information literacy involves the ability to recognize when information is needed and to locate, evaluate, and use the needed information effectively[10]. Academic libraries conduct workshops, tutorials, and one-on-one sessions to teach these skills, which are vital for academic success and lifelong learning.The role of academic libraries has also extended to facilitating collaborative learning and knowledge sharing. Libraries provide spaces for group study, discussions, and collaborative projects. They have adapted to the changing educational landscape by offering flexible learning environments that support both individual and group learning. Collaborative technologies and social media platforms have further enabled libraries to engage with users and promote knowledge sharing.Despite their evolving roles, academic libraries face several challenges, including budget constraints, the need for continuous

technological upgrades, and the demand for skilled personnel. The literature highlights the importance of strategic planning and adaptability in addressing these challenges. Future directions for academic libraries include further integration of digital resources, enhanced support for open access publishing, and the development of innovative services that cater to the changing needs of the academic community.

Implications of NEP 2020 for Academic Libraries:

The National Education Policy (NEP) 2020 aims to overhaul the Indian education system, bringing it in line with the needs of the 21st century. This policy has significant implications for academic libraries, which are integral to the educational infrastructure. The review of literature on this subject explores the multifaceted role of academic libraries in the context of NEP 2020, addressing how they can adapt to support the policy's objectives and the challenges they might face.

Expanding Collections and Services:

NEP 2020 emphasizes a holistic, multidisciplinary approach to education, encouraging institutions to offer a broad spectrum of subjects. Academic libraries must therefore expand their collections and services to support a diverse range of disciplines. According to Suresh and Parasar(2023), this necessitates not only the acquisition of new materials but also the development of interdisciplinary resources that facilitate collaborative research. Libraries are also expected to provide access to resources that span various fields, fostering an environment conducive to comprehensive learning and innovation.

Transition to Digital Resources:

The policy's focus on digital and online education underscores the need for academic libraries to transition from traditional print collections to digital repositories. Thangiah (2024) discusses how libraries must invest in e-books, digital databases, and online journals to ensure that students and faculty can access resources remotely. This digital transformation is critical for aligning with NEP 2020's goals, as it democratizes access to information and supports the shift towards a more technology-driven educational framework. The development of user-friendly digital interfaces and training programs is essential to help users navigate these new resources effectively [10].

Promoting Research and Innovation:

NEP 2020 places a strong emphasis on promoting research and innovation within educational institutions. Academic libraries play a pivotal role in this by providing access to cutting-edge research publications, facilitating access to research databases, and offering specialized support services[8]. Libraries need to collaborate closely with academic departments to support faculty and student research, which includes assistance with literature reviews, data management, and the publication process. The literature highlights the importance of libraries in promoting a research culture and contributing to the production of high-quality scholarly work.

Upgrading Infrastructure :

To meet the demands of NEP 2020, academic libraries must upgrade their infrastructure, creating spaces that support both digital and traditional learning activities. This includes the establishment of digital labs, high-speed internet access, and collaborative workspaces. Kumar and Singh (2021) emphasize that modern libraries should be designed to accommodate a variety of learning activities, from quiet study areas to interactive learning zones, thereby catering to diverse user needs.

Lifelong Learning and Skill Development :

The policy's promotion of lifelong learning and continuous skill development supports the role of academic libraries as centers for lifelong education. Libraries can support this by offering workshops, training programs, and resources that enhance information literacy, digital literacy, and research skills. According to Shivankalai (2021), libraries can serve as hubs for lifelong learning by providing access to MOOCs (Massive Open Online Courses), certification programs, and other learning resources that cater to the evolving needs of learners across their lifespan[11].

Challenges:

Despite the opportunities presented by NEP 2020, academic libraries face several challenges. Financial constraints are a significant concern, as the implementation of new technologies and services requires considerable investment[7]. Additionally, the digital divide poses a challenge, with equitable access to digital resources being a critical issue, particularly for students from underprivileged backgrounds. Training and professional development for library staff are also essential to ensure that they can effectively manage new technologies and methodologies[12].

Opportunities :

The alignment with NEP 2020 also presents several opportunities for academic libraries. Enhanced collaboration with academic departments and other institutions can lead to more integrated and inclusive services. Innovation in service delivery, such as virtual reference services, digital exhibitions, and online tutorials, can increase the relevance and impact of libraries[9]. By closely aligning with the goals of NEP 2020, academic libraries can boost their role within educational institutions, becoming central to the educational and research missions.

Conclusion:

The National Education Policy (NEP) 2020 offers a transformative vision for the Indian education system. Academic libraries, as key components of educational infrastructure, must develop to support this vision. By expanding collections and services, transitioning to digital resources, promoting research and innovation, upgrading infrastructure, promoting lifelong learning, and addressing challenges, academic libraries can play anessential role in achieving the objectives of NEP 2020. The opportunities presented by this policy can help libraries improve their contributions to educational and research excellence.

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Bibliometrics, Scientometrics, Webometrics & Altmetrics: Latest field in LIS Research

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Abstract:

Modern practical experience in bibliometrics is based on careful study of the performance of researchers on the Internet. The dynamic and successful development of science and the associated scientific and research activities over the course of the 21th century has highlighted the fundamental problem of measuring the impact of research results. As part of participating in academic life, researchers must constantly evaluate themselves and colleagues with a view to assessing individual and collective contributions and using "digital" scientometric indicators. While indicators such as the H-index and the impact factor of scientific publications are widely known indicators and known to few, almost no one knows what altmetrics and informometrics are and how to use them.

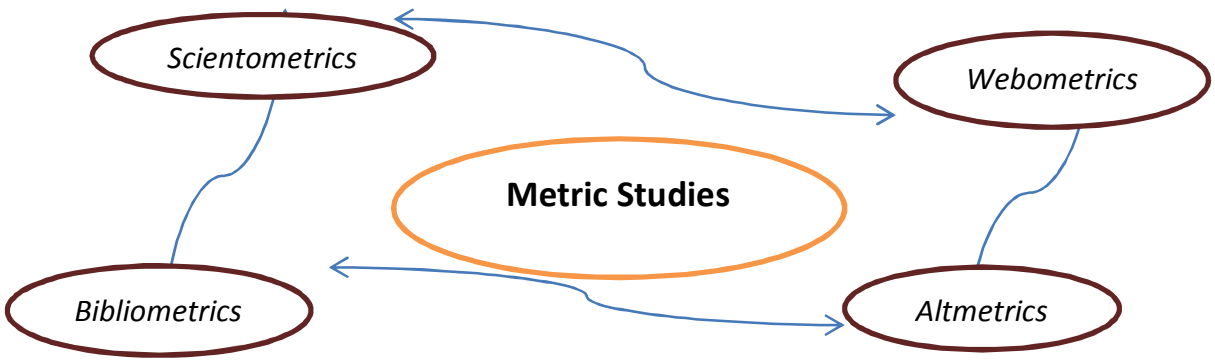
In this paper discuss the features use and details of Bibliometrics, Scientometrics, Webometrics & Altmetrics in the field of library and information science research.

Keyword:

Bibliometrics, Scientometrics, Webometrics, Altmetrics,Citation metrics and social media.

Introduction:

Doing research is a vital part of our lives. It is essential to the expansion of knowledge. Research is an ongoing process that involves repeated searches and a shift from the known to the unknown. The digital society we live in presents numerous challenges when it comes to research. Data warehouses, social media, Web2.0, Web3.0, library consortia, knowledge management, digital preservation, institutional repositories, data mining, and digital libraries are some of the latest trends and techniques in library and information science. The scientific literature itself is the focus of analysis in methodological approaches such as bibliometrics, scientometrics, webometrics, and altmetrics. Scientometrics shares interests and a relationshipwith altmetrics, webometrics, and bibliometrics.



Bibliometrics:

Bibliometrics= Biblio + MetricsMetrics means a scale or measure

Biblio is derived from the combination of Latin and Grek word "Biblion".

This term was 1st used in 1969 by Alan Pitchard. He defined "The application of mathematical and statistical method to books and other media of communication."

Bibliometrics is a quantitative approach to content analysis and citation for academic journals, books, and researchers. It is utilized in statistical analysis and quantitative analysis to characterize publication patterns. Researchers employ this technique to explain the connection between two or more authors or pieces. The number of times a certain publication is cited in other sources is used to determine the publication's quantitative impact. Utilizing statistical and mathematical techniques, bibliometrics research analyzes and constructs indicators of the dynamics of scientific and technological knowledge on a certain subject.

There are some bibliometric techniques like literature usage count, productivity count and most commonly used laws are:

i) Lotka's Law of scientific productivity

ii) Zip's law of word occurrence

iii) Bradfords law of scatter

Advantages of Bibliometrics

- Broadly correlates with peer assessment
- Relatively inexpensive
- Knowledgeable tools available

Disadvantages of Bibliometrics

- Author and Institutions names not well controlled
- All subjects are not covered
- Specialist expertise needed

Scientometrics:

This term Scientometrics originated from a Russian word (naukometriya) for the application of quantitative methods to the history of science, which studies the quantative aspects of science. This term was coined in 1960 by Vassily V. Nalimore.

Nalimove and Mulchenko (1969) defined "Scientometrics as the quantitative method which deals with the analysis of science viewed as an information process."

Bookstein (1995) defined "Scientometrics as the science of measuring science."

Scientometrics is associated with informatics and bibliometrics. This area of study is concerned with evaluating and assessing the literary works. This phrase refers to the study of science's development, relationships, productivity, and organization. Scientometrics is a tool used to visualize the intellectual landscapes of many sciences using various bibliographic units, such as authors, citations, keywords, and texts.

Scientometrics tools are essential for precise literature analysis. Using scientometrics tools such as citation mapping, bibliographic coupling, coauthorship, etc., any work may be quantitatively and qualitatively analyzed.

Advantages of Scientometrics

- Easy to access
- Measuring the productivity of an author based on the number of published articles.
- To identify the peers and core journals
- Formulating search strategies in case of automated system.

Disadvantages of Scientometrics

- Citations to a paper may not reflect its quality.
- Citation pattern change from subject to subject
- Review articles tend to be more highly cited than standard articles
- Self-citations can be distorted in metrics

Webometrics:

The term webometrics was 1st coined by Almind and Ingwer sen in 1997.

Bjorneborn & Ingwersen in 2004 defined "Webometrics is the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the web, drawing on bibliometric and informetric approaches."

Thelwall added another definition of weometrics in 2009 based on content as follows: "the study of web-based content with primarily quantitative methods for social science research goals using techniques that are not specific to one field of study"

Webometrics attempts to quantify the internet in order to learn about its structure, quantity and kind of linkages, and usage trends. This is a quantitative study of web phenomena that looks at search engines, links, and web citations. This is a novel concept that suggests using citation databases to perform similar web-based informatics analyses.

Webometrics tools are those that are used to gather data from the online, including search engines, web crawlers, and webometrics software.

The area of research in the webometrics can dividedinto the following segments.

- Web page content analysis
- Web link structure analysis
- Web usage analysis
- Web technology analysis
- Web ranking

Advantages of Webometrics

- It is easy to understand and use
- It is easy to compare
- It saves money and time

Disadvantageof Webometrics

- It is not easy to practically compare
- It is not applicable for large organization

Altmetrics

This term first coined by Jason Priem (an information scientist)

Altmetrics stand for "alternative metrics"

The increasing use of social media to disseminate research findings means that altmetrics—a measure of impact—will only become more prominent.It is an alternate technique for gauging resources using social media platforms. This is a novel approach to measuring and evaluating social media content. Research impact must be tracked and recorded using a systems approach thatincludes altmetrics.

Altmetrics is a quick and easy approach to learn about people who are doing internet research and what they have to say. The alternative section, known as altmetrics, makes reference to established metrics for evaluating academic achievement, including author h-index, impact factor, and citation counts.

Examples of altmetrics are mentions on twitter, Facebook or online news sites.

Advantages of Altmetrics

- Early impact evidence
- Wider output types
- Finger-graied impact context

Disadvantages of Altmetrics

- Low coverage
- Incomplete coverage of impact types
- Lack of quality control
- Difficulty collecting
- Incomplete and biased coverage of impact areas

Conclusion

In today's digital age, libraries are changing their role from issuing to returning services. Libraries provide information services to readers to save time and learn all five laws of Dr.S. R. Ranganathan, the father of library science. Bibliometrics is the most commonly used research method. Webometrics is used in the quantitative analysis of web phenomena, including link analysis, web citation analysis, and search engines. Scientometric study in library and information science serves to standardize techniques for understanding authors' productive patterns. Altmetrics is a new technique for measuring online reader behavior, network interactions with content and social media. These are all metrics used in library and information science research.

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15

National Education Policy 2020 and Possible Changes in Higher Education

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Abstract

The implementation of the National education policy 2020 has just started. The policy outlines several important changes that are needed today and in the future in our education system. If we think about higher education accordingly National Education Policy 2020 has proposed significant changes in higher education. which will completely change or reform the nature of higher education in our country. Through this policy, higher education will get a different direction. This is going to be very important for the time to come. By taking higher education, students are getting ready for earning source. So what kind of education they should get is proposed in this policy. Through this conceptual research articlean attempt has been made to detailed focus onNational Education Policy 2020and possible changes in higher education.

Introduction

The National Education Policy 2020is a comprehensive education policy introduced by the Government of India in July 2020. NEP 2020 aims to transform the education system in India by providing access to education for all, promoting diversity, equity, and inclusion, and preparing students for the 21st century.National Education Policy 2020 for higher education aims to transform the existing higher education system in India. This policy emphasizes on promoting interdisciplinary studies, introducing new subjects, and providing flexibility in courses and fresh opportunities for students. It aims to increase the Gross Enrolment Ratio (GER) in higher education, provide multiple entry and exit options, and allow students to choose courses according to their interests and aptitude.The policy is aimed at creating a holistic and flexible education system that is adaptive to the needs of the 21st century.

New Education Policy and possible changes in Higher Education

As per National Education Policy 2020, many such new changes have been suggested in higher education. To know and understand National Education Policy 2020 and the possible changes in higher education, we need to know detailed information as per the following points.

1. Quality Universities and Colleges

The role of higher education is very important in the development of the country. Therefore, every youth today should turn to higher education and be empowered to achieve financial independence by getting quality education. This will definitely help in nation building. The policy envisages to provide high quality education through innovative changes in the higher education system by overcoming the prevailing problems in higher education

2. Institutional Restructuring and Consolidation

Transforming higher education institutions into multidisciplinary universities or institutes will help create a vibrant community of scholars and learners. Interdisciplinary as well as interdisciplinary research active groups will develop. Large multidisciplinary universities and colleges will be established. Colleges will be encouraged for autonomy. Multidisciplinary higher education institutions will be developed. Open remedial education online programs will be conducted for continuing studies. An integrated higher education system with business and vocational education will be the focus of the higher education sector

3. Towards a More Holistic and Multidisciplinary Education

Arts education is required along with mathematics, science, business subject, vocational education and business skills. This will lead to holistic and multidisciplinary education. Creative and flexible curriculum design will allow creative combinations of different disciplines and provide multiple entry and exit for students. Master program will also have flexibility. Education can be taken through all three modes of physical classes, online and ODL.

4. Optimal Learning Environments and Support for Students

Some activities are suggested as follows to provide a learning environment for the students and also to enable all the students to achieve success.

Activities:

1. Empowering institutions and teachers to innovate in curriculum, pedagogy and assessment while staying within the broad framework of higher education qualifications to encourage creativity.

2. Each institution has a great deal of all its educational plans,from curriculum reforms to the quality of classroom practice large Institutional Development Plan (IPD)/Integrate into organizational development plan.

3. Providing access to ODL and online education for easy access to quality and higher education

4. All other programs including face-to-face classes, online and downloaded media, courses, curricula, pedagogy and student support in various disciplines all aim to achieve a level of quality.

5. Motivated, Energized, and Capable Faculty

HEIs should have the best, motivated and competent faculty. Recommend activities for that

1. All HEIs will be equipped with the basic infrastructure and facilities,

2. Teaching duties also will not be excessive, and student-teacher ratios not too high Faculty will be appointed to individual institutions and generally not be transferable across institutions.

3. Faculty will be given the freedom to design their own curricular and pedagogical approaches within the approved framework, including textbook and reading material selections, assignments, and assessments.

4.Excellence will be further incentivized through appropriate rewards, promotions, recognitions, and movement into institutional leadership.

5. In keeping with the vision of autonomous institutions empowered to drive excellence, HEIs will have clearly defined, independent, and transparent processes and criteria for faculty recruitment.

6. Excellent faculty with high academic and service credentials as well as demonstrated leadership and management skills will be identified early and trained through a ladder of leadership positions.

6. Equity and Inclusion in Higher Education

Making quality higher education opportunities available to all individuals must be among the highest priorities. This Policy envisions ensuring equitable access to quality education to all students, with a special emphasis on SEDGs.

7. Teacher Education

By 2030, only educationally sound, multidisciplinary, and integrated teacher education programmes shall be in force. all teacher education programmes will be conducted within composite multidisciplinary institutions. All multidisciplinary universities and colleges - will aim to establish, education departments. The 4-year integrated B.Ed. offered by such multidisciplinary HEIs will, by 2030, become the minimal degree qualification for school teachers. B.Ed. program will be available in 4 years, 2 years and year. All fresh Ph.D. entrants, irrespective of discipline, will be required to take credit-based courses in teaching/education/pedagogy/writing related to their chosen Ph.D. subject during their doctoral training period. Ph.D. students will also have a minimum number of hours of actual teaching experience gathered through teaching assistantships and other means.

8. Reimagining Vocational Education

By 2025, at least 50% of learners through the school and higher education system shall have exposure to vocational education. HEIs will also be allowed to conduct short-term certificate courses in various skills including soft skills. The possibility of offering vocational courses through ODL mode will also be explored. Vocational education will be integrated into all school and higher education institutions in a phased manner over the next decade.

9. Catalysing Quality Academic Research in All Fields through a new National Research Foundation

The multidisciplinary nature of all HEIs and the emphasis on holistic education, the inclusion of research and internships in the undergraduate curriculum, faculty career management systems that give due weightage to research, and the governance and regulatory changes that encourage an environment of research and innovation. To build on these various elements in a synergistic manner, and to thereby truly grow and catalyse quality research in the nation, this policy envisions the establishment of a National Research Foundation (NRF).

10. Transforming the Regulatory System of Higher Education

The regulatory system of higher education will ensure that the distinct functions of regulation, accreditation, funding and academic standard setting will be performed by distinct, independent, and empowered bodies. To ensure that the four institutional structures carrying out these four essential functions work independently yet at the same time and work in synergy towards common goals. These four structures will be set up as four independent verticals within one umbrella institution, the Higher Education Commission of India (HECI).

11. Effective Governance and Leadership for Higher Education Institutions

Through a suitable system of graded accreditation and graded autonomy, and in a phased manner over a period of 15 years, all HEIs in India will aim to become independent self-governing institutions pursuing innovation and excellence. Measures will be taken at all HEIs to ensure leadership of the highest quality and promote an institutional culture of excellence. Upon receiving the appropriate graded accreditations that deem the institution ready for such a move, a Board of Governors (BOG) shall be established consisting of a group of highly qualified, competent, and dedicated individuals having proven capabilities and a strong sense of commitment to the institution. It is envisaged that all HEIs will be incentivized, supported, and mentored during this process, and shall aim to become autonomous and have such an empowered BOG by 2035.

Conclusion

The National Education Policy 2020 will completely change the current education system in India. Through this policy, we can hope that the current issues related to higher education in our country will be overcome and an effective education system will be developed. The changes suggested in the National Education Policy 2020 regarding higher education are very important changes. This can be very valuable for the education and bright future of the coming generation. When the implementation of this policy is completed in a proper manner, it will completely change the nature of higher education in our country and it will be also create a skilled and knowledgeable generation as well as competent India.

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New Education Policy: Issues and Challenges

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Introduction

In August 2020, India presented its New Education Policy, NEP 2020, aimed at transforming and bringing very meaningful changes in the country's education system. This visionary policy documents an endeavour of drastic reform in India's education system, which has been suffering from numerous ills and is bereft of contemporary global standards. The NEP spells out a vision for change with transformative power and is endorsed with some challenges that must be addressed in its successful implementation.

1. Aims and Vision of NEP 2020

NEP 2020 envisions an Indian education system that is holistic, flexible, multidisciplinary, and oriented towards fulfilling the requirements of the 21st century; it should be directed towards bringing out unique capabilities of each student. Key objectives include—

• Holistic Development: Emphasis on critical thinking, creativity, and experiential learning rather than rote memorization

• Multidisciplinary Approach: Merging of various disciplines and subjects together to provide an all-round education.

- **National Educational Technology Forum**: Advocating the use of technology in education and its infusion in the curriculum.

- **ECCE (Early Childhood Care and Education)**: Strengthening foundational literacy and numeracy.

- **Vocational Education**: More emphasis on skill-based learning and vocational training.

2. Issues in Implementation

Despite its visionary framework, many factors may create a problem in the successful implementation of NEP. These issues are related to the policy, structural and practical domains.

2.1. Resource Constraints

One of the primary challenges is the financial constraint that central and state governments face. Ambitious goals of NEP can only be executed through heavy investment in infrastructure, teacher training, and curriculum development. Given low economic resources in many of these states, compliance with financial demands could prove hugely problematic, and uneven implementation across the country quite possible.

2.2. Deficient Infrastructure

The NEP also envisages new schools, up-gradation of existing infrastructure, and improved digital infrastructure. There are many rural and disadvantaged regions where the ground reality is an absence of basic education infrastructure. The up-gradation and subsequent maintenance of this infrastructure will be a mammoth task for which continuous investment and planning will be required.

2.3. Teacher Training and Quality

The NEP lays much emphasis on ensuring high quality teaching professionals and quality teacher training programs. The infrastructure of the teaching training institutions is, however, of very poor quality in many parts of the country. The majority of teachers still remain unskilled and lack the necessary understanding about how to apply the new pedagogical approaches implicit in the NEP; this would undermine its effectiveness.

2.4. Curriculum Overhaul

The NEP does not just tinker with the present curriculum; it seeks substantial changes towards flexibility and integration. Standardization of the revised curricula across the educational institutions with very diverse backgrounds will be a Herculean task. The most formidable challenge is the reconciliation of the erstwhile ideal of academic rigor with the new approaches and innovative pedagogies.

2.5. Integration of Technology

While the NEP encourages the use of technology, actual mainstreaming of technology into classrooms is quite uneven. Most schools, particularly rural ones, lack adequate technological infrastructure and connectivity support. Besides, there is also the requirement for capacity building of teachers to use digital tools effectively in teaching.

2.6 Language Diversity

India's linguistic diversity itself is a sure challenge to the implementation of the NEP. While multilingualism is the policy, it is cumbersome and resource-intensive to develop and standardize learning material in languages. Ensuring that every student receives education of high quality in the language of choice, while maintaining national standards, is a delicate balance.

2.7. Inclusivity and Equity

Inclusive and Equitative Issues: The NEP lays much emphasis on inclusivity and the reduction of educational disparities. At the systemic level, this has to address issues of socio-economic inequalities, biases against gender, and addressing issues of marginalized groups. Equity in access to all students continues to be a far-fetched dream.

3. Challenges in Specific Areas

3.1. Higher Education

The NEP aims at increasing Gross Enrollment Ratio with respect to higher education and multidisciplinary learning. Funding of institutions of higher education is, however, adequate, there is an existing requirement for enhanced facilities for research, and new courses as well as disciplines are to dovetail into the already existing programs.

3.2. Vocational Education

The other important component of the NEP is the strengthening of vocational education. Though this emphasis on employability is highly needed, it requires a balance regarding the industry need and quality in the vocational training programs. It is important to have strong linkages between the industry and academia in order to make this a reality.

3.3 Early Childhood Care and Education

It lays emphasis on early childhood education; however, there exist the challenges of Anganwadi workers' and preschool teachers' training. It is of key importance to ensure standardization in the rendering of early childhood programs and that quality education is offered. This will establish a good foundation for further learning.

4. Strategies to Overcome the Challenges

4.1. Increase in Funds and Resources

The approach to mitigate the financial constraint has to be collaborative between the center and the states. The nature of the resources needed may be mended through PPPs and

increasing budgetary allocations towards education. Fund utilization would have to be transparent and accountable for effective implementation.

4.2. Strengthening Teacher Training Programs

Development of strong teacher education programs at all levels is quintessential; this includes induction and ongoing professional development opportunities to update educators' knowledge about changing teaching methods and technologies.

4.3. Infrastructural Development

Infrastructural building should assume high priority, especially in these unserved areas, in terms of physical infrastructure and digital resources with connectivity. This can be fast-tracked through targeted programs and incentives for rural schools.

4.4 Curriculum Development and Integration

Curriculum development and integration are also phased activities. The handling of resultant complexities due to the overhauling of the present curricula is a phased task. Engaging educators in designing the curriculum and providing resources and help needed for actual implementation is a formidable task.

4.5 Enhancing Technological Integration

This could be effectively done by training teachers and investing in such necessary infrastructure. Digital literacy frameworks can also be created for both students and teachers to bridge the gap in technology.

4.6. Promoting Inclusivity

Policies on redressing education disparities and bringing inclusivity into the system have to be instilled. This shall be through targeted programmes for marginalized communities, gender-sensitive policies, and support for students with disabilities.

5. Conclusion

The New Education Policy 2020 is a rather ambitious initiative towards revamping India's education system. The enunciated vision for a holistic, flexible, and multi-disciplinary approach has the potential to overcome the pervading problems and bring about education in tune with the needs of the 21st century. However, the translation of the NEP into practice will depend on meeting substantial challenges like resource constraints, infrastructure deficiencies, and issues concerning inclusivity and equity. By addressing these challenges through strategic planning, investment, and collaboration, India can pave the road toward an effective and more equal education system.

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Research Productivity of Faculty Members of Walchand College of Engineering Sangli: A Scientometric Study

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Abstract:

Researcher has studied Scientometric study of Research Productivity based on Faculty Members of Walchand College of Engineering Sangli In this research paper. This research productivity data has collected from the 'Scopus' e-database. In this research study has been discussed the currently status in research productivity in the selected faculty members such as publications, citations and H-Index. This research has focused to find out Highest and lowest publications, citations, h-index of research productivity of top 10 faculty members in selected research area.

Keywords: Research Productivity, Scientometric Study, Publications, Citations, H-Index.

1. Introduction:

This research paper has studied Scientometric study based on research productivity of Walchand college of Engineering Sangli. In this this research has been studied the currently research productivity in faculty members of Walchand College of Engineering Sangli on the Scopus e-database. research productivity is counted various elements such as publications, citations and h-index based on Scientometric study. This research studied Scientometric study on Scopus e-database.

2. Key terms:

2.1 Research Productivity:

the productivity of an academic programs can be calculated by counting the number of publishing produced over a period. In support of the above statement, Hattie et al also noted that the scholarly productivity of individual librarians can be measured and used as a unit of analysis when evaluating higher education. thus, can be used to Counting the status of an academic content with regarding to scholarly publishing. (Phillips 1990).

2.2 Scientometric study:

Scientometric can be defined as the “quantitative study of science, communication in scienceand science policy” (se, Hess, 1997).

3. Objectives:

3.1 To study of research productivity of faculty in Walchand College of Engineering.

3.2 To know the productive authors based on publication count.

3.3 To find the productive authors based on citation count.

3.4 To identify the productive authors based on H-index count.

4. Walchand College of Engineering Sangli:

Walchand College of Engineering was established in 1947. college has situated at Sangli and extension of campus is located on about 36 hectors. It has renamed as Walchand College of Engineering In the year 1955. There are six-degree programs conducted in this college such as civil, Mechanical, Electrical, electronics, Computer Science & Engineering and Information Technology. as well as diploma programs. There are full-time doctoral (Ph. D.) programs in college under the Shivaji University with QIP scheme. Walchand College of Engineering Approved autonomous in 2007 by the government. WCE revamped its academic programs with consultation of few US and IIT academic experts. WCE was stood all-India 2nd out of 127 participating institutions in Technical Education Quality Improvement Program (TEQIP) in Phase I from 2005-2009.

5. Review of Literature:

Bhakta, Jayanta and Bhui, Trishna (2018) studied Mapping the Research productivity at University of Petroleum and Energy Studies Dehradun in this research. It has involved total 892 publications had been retrieved from the Scopus database in the study. This research shows the 'International Journal of Applied Engineering Research' is the most preferred journal for researchers.

Kumar, Satish (2018) studied Scientometric study of Research productivity of ARIES in this research. It has evaluated the research performance of ARIES based on Web of Science in this study. It has focused research productivity such as publication, citations, H-Index etc.

Kumar, Satish (2020) studied research publications on Web of Science in Astronomy and Astrophysics research in India through Scientometric analysis from period of years during 1988-2017. It has focused main information such as Astronomical literature growth, document types, open access publications, journals, research funding agencies, collaborating countries, institutions and authors of India in this research.

Rohit and Kumbar, Rashmi (2023)analysed research productivity in the universities of Haryana through Scientometric Analysis. It studied six state universities in Haryana for scientometric analysis of 12074 publications on Scopus from 2011 to 2020 in this research. This research focused publication patterns, researcher's productivity, collaboration and universities productivity in this study.

Tocora, et al. (2023)studied Research Productivity in Clinics and Hospitals from Five Latin American Countries through Scientometric Analysis. It has focused available information for publications, citations, networks of collaborations and patent applications. It has suggested various recommendations for clinical research in this research.

6. Scope of research:

Presently working faculty members in Walchand College of Engineering on the Scopus e-database have been considered in this research. The scope of this research study is limited to the Walchand College of Engineering Sangli and current status of faculty contribution on Scopus e-database has been discussed.

7. Research Methodology:

Online survey method and observation method has been selected for this research study and to collect information data on Scopus e-database. This research information has been collected from the Scopus e-database on the Internet. In this research informationfaculty members of Walchand College of Engineering have been collected from Scopus e-database such as publications, citations and h-index. In this research the number of faculty members (total- 73) in Walchand College of Engineering Sangli has been determined using randomly sampling method. as well as observation has been used as a research tool in this research study.

8. Data analysis and interpretations:

Table: 1 Research Productivity of faculty members of WCA

	Departments of Civil			
r	**Faculty Name**	**Publications**	**H-Index**	**Citations**
	Sonavane Pratap Ganapati	6	4	33
	Tande Shrirang Nivrutti	20	3	37
	Munavalli Guru Ramchandra	32	11	460
	Gumaste Krishnakedar Sumant	11	4	254
	Wagh Chandrakant Hanmant	1	0	0
	Kadam Sachin Balasaheb	6	3	162
	Pol Chandrakant Balkrishna	3	2	61
	Mali Amol Kamalakar	7	5	59
	Kokane Anant Kiran	4	1	15
0	Magdum Anmol Arun	2	1	2
1	Sohoni Prachi Kaustubh	5	2	10
2	Bhosale Gopal Maruti	1	0	0
3	Patane Atul Siddheshwar	2	1	1
4	Wandare Sagar Mahadev	2	1	5
5	Mangalekar Rohit D.	3	2	11
6	Desai Ravindra Shashikant	5	2	6
	Total	**110**	**42**	**1116**
	Departments of Mechanical			
r	**Faculty Name**	**Publications**	**H-Index**	**Citations**
	Gawali, B.S.	24	5	87
	Dabade, Uday A.	37	15	931
	Inamdar, Kedar H.	3	2	26
	Sapkal, Sagar U.	36	8	273
	Naik, B. N.	1	0	0
	Gaikwad, Sharad V.	2	1	2
	Dabir, Jamil M.	2	1	2
	Khot, Amruta M.	8	2	19

	Mane, Pravin A.	4	2	22
0	Patil, A. P.	1	0	0
1	Chanmanwar, Rahul M.	7	3	19
2	Maskar, Prabhakar D.	4	1	3
3	Bhandare, Amar S.	5	2	14
4	Dhalait, R. S.	7	1	10
5	Patil, Aniket C.	1	0	0
Total		**142**	**43**	**1408**
Departments of Electrical				
r	**Faculty Name**	**Publications**	**H-Index**	**Citations**
	More, Dagadu S.	45	9	360
	Patel, Nitinkumar V.	7	2	11
	Shaikh, S. L.	4	3	13
	Hasabe, Ramchandra P.	8	2	23
	Diwan, Seema P.	14	3	26
	Karvekar, Sushil S.	19	5	56
	Mohale, Vijay P.	19	4	51
	Karvekar, Aditi S.	6	2	8
	Dhamangaonkar, Amaraja A.	1	0	0
0	Inamdar, Aditi N.	1	0	0
Total		**124**	**30**	**548**
Departments of Electronics				
r	**Faculty Name**	**Publications**	**H-Index**	**Citations**
	Patil, Babasaheb G.	5	2	15
	Dharmadhikari, Vidhyadhar B.	5	4	51
	Agashe, Amrita A.	5	4	40
	Parchandekar, S. K.	2	2	9
	Ruikar, Sachin D.	34	7	138
	Tamhankar, Sunil G.	4	2	16
	Mevekari, Rajan G.	2	2	50
	Patil, Manasi M.	3	2	11
	Khare, Meghana R.	2	1	3
Total		**62**	**2**	**33**

			6	**3**
	Departments of Computer Science & Engineering			
r	**Faculty Name**	**Publications**	**H-Index**	**Citations**
	Momin, B. F.	42	10	273
	Surve, Anil R.	14	6	73
	Shah, Medha A.	15	5	92
	Gavankar, Nitin Laxmanrao	4	3	108
	Chavan, Manik K.	11	5	65
	Waghmare, V. N.	7	1	4
	Mudegol, N. L.	5	1	8
	Mundada, Pooja D.	2	0	0
	Pawar, Aprupa S.	4	3	26
0	Pujari, Siddharaj D.	2	0	0
1	Urunkar, Abhijeet A.	4	1	8
2	Shikalgar, Arifa J.	2	1	7
3	Mali, V. R.	1	0	0
	Total	**113**	**36**	**664**
	Departments of Information Technology			
r	**Faculty Name**	**Publications**	**H-Index**	**Citations**
	Kulkarni, Dinesh. B.	26	4	55
	Sonavane, S. P.	43	8	234
	Umbarkar, A. J.	20	6	86
	Rathod, Ravindra R.	5	3	53
	Chavan, Umesh B.	4	1	5
	Shetty, Bharati S.	2	1	3
	Kharat, P. K.	11	4	45
	Shri.Mayur G. Rathi	2	1	3
	Patil, A. P.	1	0	0
0	Solapure, Sharwari S.	10	4	106
	Total	**124**	**32**	**590**

The above table shows that study of Research Productivity based on Faculty Members of Walchand College of Engineering Sangli. There are involved 6 departments. There are identify total publications 675, total h-index 209, total citations 4659 on Scopus e-database in this table.

Table: 2 Highly cited authors

r	Authors	Citations
	Dabade, Uday A.	931 (29.15%)
	Munavalli Guru Ramchandra	460 (14.40%)
	More, Dagadu S.	360 (11.27%)
	Momin, B. F.	273 (8.54%)
	Sapkal, Sagar U.	273 (8.54%)
	Gumaste Krishnakedar Sumant	254 (7.95%)
	Sonavane, S. P.	234 (7.32%)
	Kadam Sachin Balasaheb	162 (5.07%)
	Ruikar, Sachin D.	138 (4.32%)
0	Gavankar, Nitin Laxmanrao	108 (3.38%)
	Total	**3193**

The above table shows that Dabade, Uday A. is most cited (citations 931) author on Scopus e-database in all faculty members in all departments of WCE. Further Munavalli and More, Dagadu S. is cited 460 and 360 citations respectively in research. this study has found total 3193 citations in all faculty members of WCE.

Table: 3 Highly H-Index authors

r	Authors	H-Index
	Dabade, Uday A.	15 (17.64%)
	Munavalli Guru Ramchandra	11 (12.94%)
	Momin, B. F.	10 (11.76%)
	More, Dagadu S.	9 (10.58%)
	Sapkal, Sagar U.	8 (9.41%)
	Sonavane, S. P.	8 (9.41%)
	Ruikar, Sachin D.	7 (8.23%)
	Umbarkar, A.J.	6 (7.05%)
	Surve, Anil R.	6 (7.05%)
0	Shah, Medha A.	5 (5.88%)
	Total	**85**

The above table shows that Dabade, Uday A. has received most h-index (h-index 15) on Scopus e-database in all faculty members in all departments of WCE. Further Munavalli and Momin, B. F. received an h-index 11 (12.94%) and 10 (11.76%) respectively in research. this study has found total 85 h-index in all faculty members of WCE.

Table: 4 Highly Publications authors

r	Authors	Publications
	More, Dagadu S.	45 (13.27%)
	Sonavane, S. P.	43 (12.68%)
	Momin, B. F.	42 12.38(%)
	Dabade, Uday A.	37 (10.91%)
	Sapkal, Sagar U.	36 (10.61%)

	Ruikar, Sachin D.	34 (10.02%)
	Munavalli, Guru Ramchandra	32 (9.43%)
	Kulkarni, Dinesh.B.	26 (7.66%)
	Gawali, B.S.	24 (7.07%)
0	Umbarkar, A. J.	20 (5.89%)
	Total Publications	**339**

The above table shows that More, Dagadu S. has most published 45 (13.27%) documents on Scopus e-database in all faculty members in all departments of WCE. Further Sonavane, S. P and Momin, B. F. has published 43 (12.68%) and 42 12.38(%) documents respectively in research. this study has found total 339 documents in all faculty members of WCE.

Table: 5 Department wise Publications

r	**Name of Departments**	**No of Publications (%)**
	Departments of Mechanical	142 (21.03%)
	Departments of Electrical	124 (18.37%)
	Departments of Information Technology	124 (18.37%)
	Departments of Computer Science & Engineering	113 (16.74%)
	Departments of Civil	110 (16.29%)
	Departments of Electronics	62 (9.18%)
	Total	**675**

The above table shows that in terms of Publications, faculty members of Departments of Mechanical have the highest number of Publications with 43 (20.57%). Departments of Electrical and Departments of Information Technology have published same Publications 124 (18.37%) respectively. Further Departments of Computer Science & Engineering and Departments of Civil published Publications 113 (16.74%) and 110 (16.29%) respectively. Finally, Departments of Electronics published the least 62 (9.18%) Publications. There are total Publications 675 in this table.

Table: 6 Department wise H-Index

r	**Name of Departments**	**No of H-Index (%)**
	Departments of Mechanical	43 (20.57%)
	Departments of Civil	42 (20.09%)
	Departments of Computer Science & Engineering	36 (17.22%)
	Departments of Information Technology	32 (15.31%)
	Departments of Electrical	30 (14.35%)
	Departments of Electronics	26 (12.44%)
	Total	**209**

The above table shows that in terms of h-index, faculty members of Departments of Mechanical have the highest number of h-index with 43 (20.57%). Departments of Civil and Departments of Computer Science & Engineering have 42 (20.09%) and 36 (17.22%) h-index respectively in second and third place. Further Departments of Information Technology and Departments of Electrical received 32 (15.31%) and 30 (14.35%) respectively. Finally,

Departments of Electronics received the least 26 (12.44%) h-index. There are total h-index 209 in this table.

Table: 7 Department wise Citations

r	Name of Departments	No of Citations (%)
	Departments of Civil	1116 (23.95%)
	Departments of Mechanical	1408 (30.22%)
	Departments of Computer Science & Engineering	664 (14.25%)
	Departments of Information Technology	590 (12.66%)
	Departments of Electrical	548 (11.76%)
	Departments of Electronics	333 (7.14%)
	Total	**4659**

The above table shows that in terms of citations, faculty members of Departments of Civil have the highest number of citations with 1116 (23.95%). Departments of Mechanical and Departments of Computer Science & Engineering have 1408 (30.22%) and 664 (14.25%) citations respectively in second and third place. Further Departments of Electrical and Departments of Electronics received 548 (11.76%) and 333 (7.14%) respectively. Finally, Departments of Electronics received the least 333 (7.14%) citations. There are total citations 4659in this table.

Conclusion:

This research paper has studied scientometric study based on research productivity of Walchand college of Engineering Sangli. In this research study has been discussed the currently research productivity in faculty members of WCE on the Scopus. this scientometric study analysis has found total publications 675, total h-index 209, total citations 4659 on the Scopus. This study has counted research productivity on department wise.

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Green Library Initiatives in Academic Libraries: A Review of Practices and Impacts

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Abstract:

This paper reviews the current landscape of green library initiatives in academic libraries, focusing on practices implemented and their impacts. The study synthesizes existing literature and case studies to assess sustainability efforts within library operations, highlighting key strategies, challenges, and outcomes. Findings underscore the critical role of libraries in promoting environmental stewardship and suggest avenues for future research and development in sustainable library practices.

Keywords: Green library initiatives, sustainability, academic libraries, environmental impact, best practices

Introduction:

In addition to serving as knowledge repositories, academic libraries are essential community hubs that support learning, research, and sustainability in higher education. Putting green library concepts into practice has become more important in recent years in an effort to lessen environmental footprints and encourage eco-friendly behavior among staff and patrons. The purpose of this article is to present a thorough analysis of these programs, looking at the methods used, their efficacy, and the wider effects on environmental sustainability and library operations.

In an era where sustainability of the environment is becoming more and more important, academic libraries are becoming important participants in the green movement. Initiatives for "green libraries" are a reflection of these organizations' increased awareness of their responsibility to solve environmental issues and advance sustainable practices. The purpose of this review is to examine the different approaches and methods academic libraries have used to reduce their environmental impact and to evaluate the effects of these efforts on the academic community at large as well as the libraries themselves.

Academic institutions' libraries have always played a crucial role in their intellectual and instructional activities. However, libraries are starting to recognize their role in fostering a sustainable future as public awareness of environmental degradation and climate change has grown. Green library initiatives impact how libraries manage their resources, operations, and space. They are a part of a larger trend toward eco-consciousness. Reducing the impact of library operations and structures on the environment is one of the programs' ultimate goals. This entails implementing energy-saving technologies including solar energy panels, sophisticated HVAC systems, and LED lights. A lot of academic libraries have shown their dedication to sustainable building methods by pursuing certifications like LEED (Leadership in Energy and Environmental Design). For example, libraries have integrated green roofs, which not only improve insulation and reduce energy consumption but also contribute to urban biodiversity.

Waste management is another critical area of focus. Academic libraries are implementing comprehensive recycling programs, reducing paper usage through digital

resources, and adopting policies to minimize waste. Initiatives such as book repair and recycling programs also help in extending the lifecycle of library materials and reducing landfill contributions. By promoting digital resources and e-books, libraries are helping to decrease the demand for physical materials and the associated environmental impact of production and transportation.

Sustainable practices extend to library operations beyond the physical building. Libraries are increasingly focusing on using environmentally friendly materials in their construction and renovation projects. This includes selecting low-impact, recyclable, and non-toxic materials. Additionally, many libraries are employing green practices in their day-to-day operations, such as using eco-friendly cleaning products and reducing water consumption through efficient fixtures.

The impacts of green library initiatives are multifaceted. On one hand, they contribute to the reduction of the carbon footprint of academic institutions, aligning with broader institutional sustainability goals. On the other hand, these initiatives also foster a culture of environmental awareness among students, faculty, and staff. By incorporating sustainability into their operations, libraries provide a model of responsible stewardship and encourage the adoption of similar practices across the campus community.

Moreover, green libraries can enhance the educational experience by integrating sustainability into their programming and services. For instance, libraries may offer workshops or resources on environmental issues, thus supporting academic curricula focused on sustainability. They also serve as hubs for research on environmental topics, providing critical resources and spaces for scholarly inquiry into green technologies and practices.

Despite the positive outcomes, there are challenges associated with implementing green initiatives. Financial constraints, limited resources, and the need for ongoing maintenance can pose significant hurdles. Libraries must balance the costs of green technologies with their long-term benefits, ensuring that investments lead to tangible environmental and economic returns.

Green Library Initiatives

Green library initiatives encompass a range of practices aimed at reducing resource consumption, minimizing waste generation, and promoting sustainable behaviours within library facilities. These initiatives align with broader institutional goals of sustainability and environmental responsibility.

Type of Green Initiatives

Academic libraries engage in various green initiatives to promote sustainability and reduce their environmental impact. Key types include

1. **Energy Efficiency**: Libraries are adopting energy-efficient lighting systems, HVAC (Heating, Ventilation, and Air Conditioning) upgrades, and smart building technologies to reduce energy consumption.
2. **Waste Reduction**: Strategies include paperless initiatives, recycling programs for paper, plastics, and electronics, and composting organic waste where feasible.
3. **Promotion of Sustainable Practices**: Libraries are actively promoting sustainability through educational programs, workshops, and partnerships with campus sustainability initiatives.

Green Initiatives Implemented

Academic libraries are increasingly implementing a range of green initiatives to promote environmental sustainability and reduce their ecological footprint. These initiatives

cover various aspects of library operations, design, and services. Here are some common types of green initiatives implemented in academic libraries:

1. **Energy Management**: Libraries are adopting LED lighting, automated HVAC systems, and energy-efficient appliances to reduce electricity consumption.
2. **Waste Management**: Initiatives include recycling programs for paper, plastics, and electronics, as well as composting organic waste from café facilities.
3. **Education and Outreach**: Libraries are hosting workshops on sustainability, promoting digital resources to reduce paper usage, and collaborating with campus sustainability offices to enhance environmental awareness.

by implementing these green initiatives, academic libraries not only reduce their environmental impact but also serve as models of sustainability for their institutions and the wider community.

Impact and Outcomes

The implementation of green initiatives in academic libraries has led to several impactful outcomes, both environmentally and within the academic community:

- **Environmental Impact**: Green initiatives have resulted in significant reductions in energy consumption and waste generation, contributing to lower carbon footprints.
- **Operational Efficiency**: Libraries have reported cost savings from reduced utility bills and improved resource management practices.
- **User Engagement**: Educational programs and outreach efforts have increased awareness of sustainability issues among library users and staff.

Overall, the adoption of green initiatives in academic libraries not only contributes to environmental conservation but also supports the economic, educational, and reputational goals of the institutions

Challenges and Barriers

While green initiatives in academic libraries offer numerous benefits, they also present several challenges and barriers that can hinder their successful implementation. Here are some of the key challenges: Despite the benefits, libraries face challenges in implementing green initiatives. Common barriers include budget constraints, lack of staff expertise, and resistance to change among stakeholders.

Role of Librarians and Staff

Librarians play a crucial role in championing sustainability efforts, from leading initiatives to educating users about eco-friendly practices. Staff engagement and training are essential for successful implementation and long-term sustainability.

- Librarians and staff advocate for green practices within the library and the broader academic community, fostering a culture of environmental responsibility
- Staff may lead or participate in planning and executing green initiatives, such as energy efficiency upgrades or waste reduction programs.
- They help allocate resources effectively, ensuring that sustainability projects are well-supported and integrated into library operations.
- Librarians and staff provide training on new green technologies and practices, ensuring that all employees are knowledgeable and capable of supporting sustainability efforts.
- educate library users about the benefits of green initiatives and how they can contribute to sustainability goals
- Staff monitor the effectiveness of green initiatives, tracking metrics such as energy consumption, waste reduction, and user engagement

- Librarians and staff collaborate with other institutions, local organizations, and community groups to enhance sustainability efforts and share best practices.
- green technologies and practices are properly maintained and operated, addressing any issues that arise to keep initiatives effective

Conclusion

This paper provides a comprehensive review of green library initiatives in academic libraries, highlighting their importance in promoting environmental sustainability and operational efficiency. By adopting energy-efficient practices, reducing waste, and promoting sustainable behaviours, libraries can serve as leaders in campus sustainability efforts. Continued research and collaboration are needed to advance these initiatives and address challenges faced by libraries in achieving environmental goals.

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The Impact of Artificial Intelligence on Higher Education

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Abstract:

This paper explores the transformative impact of Artificial Intelligence (AI) on higher education, focusing on its potential to enhance teaching, learning, and administrative functions. AI-driven technologies are revolutionizing personalized learning by tailoring educational experiences to individual needs, while also streamlining administrative processes to improve efficiency. Furthermore, AI supports research and academic writing by automating data analysis and providing advanced tools for content creation. However, the integration of AI into education also raises critical ethical concerns, including data privacy, algorithmic bias, and the risk of exacerbating educational inequalities. The paper highlights these benefits and challenges, emphasizing the importance of implementing AI in a way that is both equitable and transparent. As AI continues to evolve, higher education institutions must navigate its complexities to harness its full potential while mitigating associated risks. The findings suggest that a thoughtful, balanced approach is essential to ensure AI positively shapes the future of education.

Keywords: Artificial Intelligence, Higher Education, Personalized Learning, Educational Technology, AI Ethics, Academic Research

Introduction:

Artificial Intelligence (AI) is increasingly becoming a transformative force in higher education, reshaping how institutions teach, learn, and operate. As AI technologies evolve, they offer innovative solutions for personalized learning, streamlined administrative processes, and enhanced research capabilities. These advancements promise to make education more accessible, efficient, and tailored to individual needs. However, the integration of AI also presents significant challenges, including ethical concerns related to data privacy, algorithmic bias, and the potential for job displacement. Additionally, the rapid adoption of AI in education could exacerbate existing inequalities, particularly in institutions with limited resources. As higher education continues to embrace AI, it is crucial to explore both the opportunities and the challenges it presents. This paper examines the impact of AI on higher education, focusing on its benefits, ethical implications, and the need for a balanced approach that maximizes advantages while addressing potential risks.

Enhancing Personalized Learning:

Artificial Intelligence (AI) is transforming personalized learning by tailoring educational experiences to individual student needs. AI-driven systems analyze data from students' interactions with learning materials to identify their strengths, weaknesses, and preferences. This data allows the creation of customized learning pathways, offering content that matches each student's pace and style of learning. For instance, adaptive learning platforms adjust the difficulty of exercises based on student performance, ensuring they are neither overwhelmed nor under-challenged. AI also provides real-time feedback, helping students to understand concepts more deeply and educators to intervene when necessary. By fostering a more engaging and responsive learning environment, AI helps students achieve better outcomes,

making education more inclusive and effective. This approach is particularly beneficial in diverse classrooms, where traditional teaching methods may not meet the varied needs of all learners. AI's role in personalized learning is a significant step towards a more individualized and student-centered education system.

Streamlining Administrative Processes:

Artificial Intelligence (AI) is revolutionizing administrative processes in higher education by automating routine tasks and improving operational efficiency. AI-driven systems can handle student enrollment, course scheduling, grading, and even administrative communications, reducing the burden on staff and allowing them to focus on more strategic activities. For example, AI chatbots can manage student inquiries, providing instant responses and freeing up time for administrative teams. Automated grading tools evaluate assignments and exams quickly and consistently, minimizing human error and ensuring timely feedback for students. Additionally, AI can analyze large datasets to optimize resource allocation, such as classroom usage and faculty assignments, ensuring that institutions run smoothly and cost-effectively. By streamlining these processes, AI not only enhances productivity but also improves the overall experience for students and staff. This technological advancement leads to a more efficient, responsive, and data-driven approach to managing higher education institutions.

Supporting Research and Academic Writing:

Artificial Intelligence (AI) is significantly enhancing research and academic writing by providing powerful tools for data analysis, literature review, and content generation. AI-driven software can sift through vast amounts of academic literature, identifying relevant studies and trends that might be overlooked manually. These tools help researchers quickly gather and synthesize information, accelerating the research process. For data analysis, AI can handle complex statistical computations, identify patterns, and visualize data in ways that provide deeper insights into research findings. In academic writing, AI tools assist in drafting papers by suggesting improvements in grammar, style, and coherence, ensuring that the content is clear and impactful. Some AI platforms can even generate citations and organize bibliographies, saving time and reducing errors. By automating these tasks, AI allows researchers to focus on higher-level thinking and creativity, ultimately advancing the quality and efficiency of academic work.

Facilitating Remote and Online Learning:

Artificial Intelligence (AI) plays a crucial role in enhancing remote and online learning, making education more accessible and effective. AI-powered platforms offer personalized learning experiences by adapting content to each student's pace and learning style. These platforms can monitor student progress, providing instant feedback and tailored recommendations to help learners stay on track. Instructors can use AI tools to identify struggling students early, allowing timely interventions. AI also automates administrative tasks such as grading and attendance tracking, freeing educators to focus on teaching. Virtual tutors and chatbots are available 24/7, offering support and answering questions, which is particularly beneficial in asynchronous learning environments. Furthermore, AI can analyze vast amounts of data to improve course design and delivery, ensuring that online education meets the highest standards. By addressing the challenges of distance learning, AI helps create a more engaging, interactive, and personalized educational experience for remote learners.

Ethical Concerns and Challenges:

The integration of Artificial Intelligence (AI) in higher education raises significant ethical concerns and challenges that must be addressed to ensure its responsible use. One major

issue is data privacy, as AI systems often require extensive personal data to function effectively. This raises questions about how student data is collected, stored, and used, and whether it is adequately protected against breaches. Another concern is algorithmic bias, where AI systems may inadvertently perpetuate or exacerbate existing inequalities by making decisions based on biased data. This can lead to unfair outcomes, particularly for marginalized groups. Additionally, the widespread use of AI could lead to job displacement, particularly in administrative and teaching roles, creating economic and social disruptions. There are also concerns about transparency and accountability in AI decision-making processes, as the complexity of these systems can make it difficult to understand or challenge their decisions. Addressing these ethical challenges is crucial for the equitable and just implementation of AI in education.

Addressing Educational Inequality:

Artificial Intelligence (AI) has the potential to either mitigate or exacerbate educational inequality, depending on how it is implemented. On one hand, AI can democratize access to high-quality education by providing personalized learning experiences to students regardless of their geographic location or socioeconomic background. For example, AI-driven platforms can offer tailored educational resources to students in underserved areas, helping to bridge the gap between well-funded and under-resourced schools. Additionally, AI can identify students who are struggling and provide targeted interventions, helping to close achievement gaps. On the other hand, disparities in access to AI technologies could deepen existing inequalities, with wealthier institutions and students having greater access to advanced tools and personalized learning experiences. This digital divide could lead to unequal educational outcomes, reinforcing systemic inequities. To address these challenges, it is crucial to ensure that AI tools are accessible, affordable, and designed with inclusivity in mind.

Conclusion:

Artificial Intelligence (AI) is significantly impacting higher education by enhancing personalized learning, streamlining administrative processes, and supporting research. While AI offers numerous benefits, such as increased efficiency and tailored educational experiences, it also presents challenges, including ethical concerns and the risk of exacerbating educational inequalities. To fully realize AI's potential, higher education institutions must adopt a balanced approach that leverages AI's advantages while addressing its associated risks. Ensuring transparency, safeguarding data privacy, and promoting equitable access to AI technologies are essential steps in creating a fair and effective educational environment. As AI continues to evolve, its thoughtful implementation will be crucial in shaping a more inclusive and innovative future for higher education.

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Preparing Researchers for the Digital Age: Navigating Challenges and Leveraging Opportunities

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Abstract: The advent of digital technology has brought about a substantial transformation in the field of research, bringing with it new opportunities, tools, and approaches as well as particular obstacles. The ramifications of this digital transition for research are examined in this paper, along with the essential digital competencies that contemporary researchers need to learn, including data literacy, coding, digital collaboration, and cybersecurity awareness. It also looks at the difficulties in preparing researchers for the digital age, such as the need to overcome opposition to change, resource limitations, and the quick pace of technical innovation. Case examples of effective digital research training programs like The Carpentries are included, along with discussions of cutting-edge approaches to research training, including hands-on project-based learning, online and blended learning, and multidisciplinary cooperation. The article ends with suggestions for future paths in researcher education, highlighting the necessity of curricular integration, ongoing education, international cooperation, and legal and ethical education. By embracing cutting-edge training techniques and addressing these issues, research institutions can better equip the upcoming generation of researchers to succeed in the quickly changing digital landscape.

Keywords: Digital research, Researcher Training, Digital Literacy, Big data, Research methodologies, Digital transformation, Interdisciplinary collaboration, Research education, Digital skills, Academic innovation.

I. Introduction

The digital age has brought about a revolution in research, bringing with it new tools, opportunities, and approaches. The way research is conducted, distributed, and implemented has fundamentally changed as a result of the rapid progress of digital technologies, such as big data analytics, artificial intelligence, and collaborative web platforms (Smith, 2020). Therefore, in order for researchers to stay current in their domains, they need to not only learn new digital competences but also grasp old research procedures (Johnson et al., 2021). This paradigm changes calls for a thorough re-evaluation of current educational methods as well as the creation of novel training methodologies. It also brings opportunities and challenges for modern-day researcher training.

This essay examines the effects of the digital revolution on research as well as the fundamental digital competencies needed by contemporary researchers. The study looks at the difficulties in preparing researchers for the digital age, showcases creative methods for training researchers, and provides case studies of effective initiatives for digital research training. In order to guarantee that the upcoming generation of scholars is prepared to flourish in the digital age, it concludes by making suggestions for future paths in researcher training.

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II. The Digital Transformation of Research

A. The Impact of Digital Technologies on Research

The exponential expansion in processing power, the availability of digital data, and the development of sophisticated software tools have all contributed to the digital transformation of research. These developments have enabled real-time collaboration with academics around the world, the analysis of enormous datasets, and the simulation of complicated processes (Doe & Smith, 2019). Researchers can now generate and interpret data at previously unheard-of scales, which has had a significant influence on fields like social network analysis, genetics, and climate science (Brown & Green, 2020).

Additionally, digital technology has made information more accessible, allowing scholars from smaller universities and developing nations to take part in international research projects (Johnson et al., 2021). Researchers now find it easier to access the most recent findings and contribute to the scientific debate thanks to open-access publishing, online databases, and digital libraries. Furthermore, social media and internet platforms have revolutionised the communication and dissemination of research, enabling scholars to interact with the public and reach a larger audience in novel ways (Smith, 2020).

. **B. Shifts in Research Methodologies**

There have also been notable changes in research methodology as a result of the digital age. Digital techniques like data mining, machine learning, and computational modelling are gradually replacing or supplementing traditional research methods like surveys and experiments (Doe & Smith, 2019). Researchers using these new approaches must be skilled in data analysis, coding, and using specialised software. Digital literacy is even more important because many digital research initiatives are interdisciplinary and require cooperation between academics from other fields (Johnson et al., 2021).

C**. The Role of Digital Infrastructure**

The development of digital infrastructure, such as high-performance computer centres, cloud storage, and cutting-edge networking technologies, supports the digital transformation of research. According to Brown and Green (2020), these infrastructures facilitate global collaboration among academics, allow them to store, exchange, and analyse massive datasets, and provide them with access to state-of-the-art tools and resources. But in order to exploit this infrastructure effectively, researchers need to be proficient in a variety of digital abilities, from basic computer literacy to highly specialised technical knowledge.

III. Key Digital Skills for Modern Researchers

A**. Data Literacy**

One of the most important competencies for contemporary scholars is data literacy. It entails having the capacity to comprehend, analyse, and critically assess data in addition to using it to guide research questions and reach conclusions (Smith, 2020). Researchers need to be adept at gathering, cleaning, analysing, and visualising data in the digital age. This entails being conversant with data management tools, R or Python programming languages, and statistical software (Doe & Smith, 2019).

B. Coding and Programming

Researchers in numerous professions now need to know how to code and program, especially if they are working with enormous datasets or intricate simulations. To automate processes and analyse data, researchers need to be proficient in writing and debugging code, creating algorithms, and using programming languages (Brown & Green, 2020). Additionally, researchers that know how to code can modify software tools, establish repeatable processes, and participate in open-source initiatives (Johnson et al., 2021).

C. Digital Collaboration Tools

Modern research is becoming more and more dependent on digital collaboration tools including project management software, version control systems, and cloud-based platforms. With the use of these technologies, researchers can monitor the status of their studies, share data and code, and work remotely with colleagues (Doe & Smith, 2019). To ensure that research findings are reproducible and accessible, managing large-scale, multidisciplinary projects requires proficiency with digital collaboration technologies (Smith, 2020).

D. Cybersecurity Awareness

Researcher cybersecurity knowledge has grown essential as the field relies more and more on digital technologies. Researchers need to understand the dangers of hacking, data breaches, and other cyberthreats. They also need to know how to safeguard sensitive information and preserve the integrity of their work (Brown & Green, 2020). This includes being aware of secure data storage techniques, encryption, and online communication best practices (Johnson et al., 2021).

E. Digital Publishing and Communication

Proficiency in digital publishing and communication tools is necessary to properly disseminate research findings in the digital age. In addition to having a working knowledge of the platforms and tools used for online publishing and distribution, researchers also need to be able to develop and manage digital content, including blogs, videos, and social media posts (Smith, 2020). Engaging with a variety of audiences, such as legislators, business stakeholders, and the general public, requires the use of digital communication skills (Doe & Smith, 2019).

IV. Challenges in Training Digital-Era Researchers

A. Rapid Technological Advancements

The quick speed at which technology is developing is one of the biggest obstacles to preparing researchers for the digital age. Training programs find it challenging to stay up to date with the rapidly changing techniques and technologies utilised in research (Johnson et al., 2021). To keep current, researchers must constantly refresh their knowledge and skills, which can be very taxing, especially for early-career researchers and those working in settings with limited resources (Smith, 2020).

B. Resource Constraints

Training scholars for the digital era is also significantly hampered by resource restrictions. Access to cutting-edge hardware, software, and infrastructure, together with knowledgeable mentors and instructors, are necessary for providing high-quality instruction in digital research (Doe & Smith, 2019). Unfortunately, many institutions lack the resources needed to offer thorough training in digital research, especially those in developing nations or smaller organisations. This may worsen already-existing inequality in the research community and result in differences in the calibre of research training (Brown & Green, 2020).

C. Balancing Traditional and Digital Skills

Finding a balance between imparting traditional research abilities and teaching students new digital skills presents another difficulty. Traditional research abilities like scientific writing, experimental design, and critical thinking are still crucial, even as digital skills are becoming more and more necessary (Johnson et al., 2021). Without compromising the development of these fundamental skills, training programs must figure out how to incorporate digital skills into the curriculum (Smith, 2020).

D. Ethical and Legal Considerations

Training programs need to address the ethical and legal issues brought up by the digital transformation of research. The use of digital technology has ethical ramifications that researchers need to be aware of. These include the possibility of algorithmic bias, privacy

issues, and the effects of automation on the research workforce (Doe & Smith, 2019). The legal frameworks controlling intellectual property, data protection, and the use of digital tools in research must also be understood by them. In order to guarantee that researchers can carry out their job in an ethical and responsible manner, it is imperative that training programs address these challenges (Brown & Green, 2020).

E. Resistance to Change

Adoption of digital research training is often hampered by resistance to change. Certain researchers, especially those with extensive experience in the subject, could be hesitant to adopt novel technology and approaches (Johnson et al., 2021). This opposition may stem from a desire for conventional research methods, a fear of obsolescence, or a lack of experience with digital tools. Targeted instruction, encouragement, and rewards to promote the adoption of digital skills are necessary to overcome this reluctance (Doe & Smith, 2019).

V. Innovative Approaches to Research Training

A. Online and Blended Learning

Using online and mixed learning is an inventive way to prepare researchers for the digital age. Researchers can access flexible and convenient training possibilities through online courses, webinars, and MOOCs (Massive Open Online Courses), which enable them to learn at their own pace and on their own schedule (Smith, 2020). The flexibility of online learning combined with the advantages of in-person engagement are provided by blended learning models, which integrate in-person and online training (Doe & Smith, 2019).

B. Hands-On, Project-Based Learning

Another successful method for preparing researchers for the digital age is experiential, project-based learning. According to Johnson et al. (2021) this approach entails including researchers in practical initiatives that call for the use of digital skills like data analysis, coding, and digital communication. Researchers can obtain experience in collaborative, multidisciplinary work and build their skills in a context directly related to their research interests by working on practical projects (Brown & Green, 2020).

C. Interdisciplinary and Cross-Sectoral Collaboration

For academics to be ready for the digital age, training programs that encourage multidisciplinary and cross-sectoral collaboration are essential. Through these initiatives, scholars from various fields and sectors—including academia, business, and government—come together to collaborate on projects and exchange information and skills (Smith, 2020). This cooperative method encourages the creation of fresh, creative ideas while giving researchers a wider view on the benefits and difficulties of digital research (Doe & Smith, 2019).

D. Mentorship and Peer Learning

Peer learning and mentoring are crucial elements of successful digital research training programs. Through mentoring, researchers can get advice and assistance from more seasoned colleagues, which can help them grow as professionals and overcome the obstacles of the digital research environment (Brown & Green, 2020). Peer learning promotes a collaborative learning environment and the exchange of best practices and knowledge among researchers as they learn from and with one another (Johnson et al., 2021).

E. Gamification and Simulation

Simulation and Gamification

Simulation and gamification are becoming popular as cutting-edge methods for teaching digital research. According to Smith (2020), gamification is the process of incorporating features of games, including leaderboards, badges, and points, to encourage and include

researchers in the learning process. Researchers can practise digital skills in a safe, virtual environment with simulation tools. This allows them to try out alternative strategies and learn from their failures without having to worry about the implications in the real world (Doe & Smith, 2019).

VI. Case Studies of Successful Digital Research Training Programs

A**. The Carpentries**

An international organisation called The Carpentries trains academics all across the world in digital skills, data science, and coding. The Carpentries gives researchers the tools they need to perform efficient and repeatable research in the digital age through workshops, online courses, and a community of practice (Smith, 2020). Researchers at all point of their careers can enrol in the organization's training programs, which prioritise experiential, group learning (Brown & Green, 2020).

VII. Future Directions and Recommendations

Research training programs must be continuously developed and improved upon in order to guarantee that researchers are prepared to prosper in the digital age. Future initiatives ought to include:

1. Curriculum Integration: Including digital literacy in the foundational research curriculum to guarantee that all researchers gain the required abilities.
2. Continuous Learning: Promoting professional growth and lifetime learning to help researchers stay up to date on new techniques and technology.
3. Global Collaboration: Encouraging information exchange and collaboration among nations, especially to assist academics working in contexts with limited resources.
4. Training in Ethics and Law: Increasing training in the moral and legal ramifications of digital research will help researchers responsibly handle these intricate concerns.
5. Diversity Support: Reducing inequalities in access to training in digital research so that all researchers.

VIII. Conclusion

The research setting has changed because of the digital era, which offers opportunities and challenges for researcher training. Modern academics need to learn a variety of digital skills, from data literacy and coding to digital collaboration and cybersecurity awareness, in order to stay relevant and competitive. However, there are some obstacles that must be overcome in order to prepare researchers for the digital age, such as the quickening pace of technical innovation, limited resources, and opposition to change. Through the use of cutting-edge training strategies including project-based learning, hands-on experience, online and blended learning, and multidisciplinary cooperation, research institutions can prepare the next generation of researchers for success in the digital era. It is imperative that research training programs in the future stay up to date by incorporating digital skills into the core curriculum, encouraging lifelong learning, and by taking ethical and legal issues into account. By doing this, we can make sure that scholars are equipped to utilise digital technology and further knowledge in the twenty-first century.

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21

E LEARNING RESOURCES AND HIGHER EDUCATION

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ABSTRACT---

E learning is nothing but learning facilitiedby the use of range of electronic media and technology. Today e-learning delivered through the Internet. Recent innovation in technology change the role of information and it's management. Electronic media totally changed physical forms of information. This change are going on and new opportunities and necessity in the education system.

KEY WORDS--- Internet, E- Resources, E-learning.

INTRODUCTION---

In the 20 th century the new technology has get success to storeing information in the microfilms ,compact disk then electronic media such as CDs,DVD and microfilms are replacing the physical forms of information. In the present day information technologies advances features are taking center stage in all areas of human lives . E- learning provides a solution to most of the problems in educational system. E-learning means a ICT based personalized, collaboration learning which always helps community of learners, teachers. E-learning is a new strategy for teaching and learning. E-resources means online resources which can be accessible through World Wide Web,like a E-journals ,E-book,E-databases and also online search engine. E-resources also known as Internet resources, Digital or automated sources. Online E-resources are expected to improve E-learning activities. E-learning are application and use of a computers connected to a networks that offers the possibility to learn fromany where and any time.

Education community has largely experienced a great and wonderful shift because of the adoption of technology and Internet. Technological transformation has been covered and useful altered with how users can learning and access educational resources. Now there is rapid growth in E-learning . E-learning tools provided versatile tools and conduct Online courses with Virtual classroom. Technology based E-learning offers a dynamic and interactive learning environment with the help of various E-resources. Now government support and suggest for E-learning and resources for traditional teaching. E-learning and it's resources enhanced the quality of education and empower learners with opportunities for skill development. The previous correspondence courses were te fist distance learning schemes but then the advent of E-learning it becomes the new active mantra for delivering higher education courses in the long distance area.

HISTORY OF E-LEARNING

In the 1840s there was shorthand system via correspondence this is symbolic writing designed to improve writing speed. In 1924s the first testing machine invented, then 1954s there was inventions of teaching machine. This is useful to administrator programmed instructions to their students. Then 1960s the first computer based training program was introduced to the world. The first Online learning system were really only set up to deliver information to students. In 70s Online learning become more interactive and then with the Internet the open university offers interactive education to the students via e-mail.

DEVELOPMENT OF E-LEARNING AND REOURCES

The E-learning platforms is more accessible and flexible . E-is beneficial in teaching and learning efficiency. E-learning is enough to solve all the queries of the students with providing gateway of knowledge. E-learning creates transformative force in education providing learners with access to aside rang of educational resources and opportunities. E-learning is in continuously force in shaping the future of higher education system and empowering learners with opportunities for learning skill development and their personal growth. E-resources are the main part in this activity. E-resources give very close support to E-learning. E-is totally depends on e-resources.

USE OF E-LEARNING RESOURCES IN HIGHER EDUCATION

The advent of information technology and multimedia and huge use of Internet in the new techniques of teaching this made a big change in the traditional teaching process. Now every college, universities and other institutions of higher education are in race to achieve online courses capacity inthis speedy education community. E-learning and it's resources has become more and more important in Higher education system. Learning does not be in the classroom with out using paper and employing electronic media which is called E-learning. Students information users are very expert when using technology. E-learning has become a progressively standardised approach to learning in academic higher education establishment. There is very big interest increased in Internet technology. Higher education is a very big place of guidance for future scientists that creates an best impact on intellectual method , abilities, learning abilities, so higher educational institutions community is continue with vita and prograsive thinking. E-learning resources application can connect students and teachers in an online learning room to overcome the limitation of time ,space ,condition and strict atmosphere. Government and University grants commission UGC has made many provisions to develop and implement E-learning resources in higher education. Higher education in the world has changed due to the ICT . The commercialization of E-learning has made higher education accessible to many users in the world.

BEFITS OF E-LEARNING AND RESOURCES

E-learning is improving the quality of higher education and the effectiveness of learning in whole education world. It gives bigger flexibility of teaching to the teachers and better knowledge experience to students and information users.

AVAILABILITY OF E-LEARNING AND RESOURCES

E-learning has providing learners with access to a wide range of educational resources and opportunities E-learning engaged and provide transformative force in education.

SOME FREE E-LEARNING RESOURCES

Swayam----e tutorial audio video Virtual labs. NPTEL---largest online repository for web and video courses in higher education. Curriculum classes offers digital content in 87 ug subject. DIKSH—NCERT,CBSE, courses provided online courses across all sectors. Nayonal Digital library of India offer learning content for users. E-pathshala PG E-patshalae- resource offers a gateway to all graduate courses. Sakshat---educational material for PhD learners. E-kalpaoffers distance E-learning programmes design. Ed app stands for free ,editable courses. Library and innovative features master class excels in providing exclusive sessions. Thinkfic offers courses management tools . Learning bank is mobile friendly. Gamifield training blended learning solutions. Eloomi n on boarding courses for corporate workers. Firmware offers solutions for e learning. Code academy offers coding sessions. Thus there are the various E-learning resources available for learners ad also for everyone who want to use and get knowledge.

CONCLUSION

E-learning and E-resources continuous to be a driving force in developing the future of higher education. E-learning is empowering learners with opportunities for self learning, skill development, and personality growth . Technological advancement creates new potential for E-learning and promising best and better bright future for learners .

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THE ROLE OF PUBLIC AND ACADEMIC LIBRARIES IN PROMOTING LIFELONG LEARNING AND LITERACY

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Abstract:

This research paper explores the significant roles that public and academic libraries play in promoting lifelong learning and literacy. With the rapid changes in information technology and the increasing emphasis on continuous education, libraries have evolved to become central hubs for accessing knowledge, fostering digital literacy, and supporting educational initiatives. This paper examines the historical context, current practices, and future trends of libraries in facilitating lifelong learning. It also analyzes the challenges and opportunities faced by these institutions in the digital age. Through a combination of literature review and case studies, the paper provides a comprehensive overview of how libraries contribute to individual and societal development.

Keywords: *Lifelong Learning, Literacy, Public Libraries, Academic Libraries, Digital Literacy, Education*

Introduction:

In today's rapidly evolving world, the concept of lifelong learning has become increasingly critical for personal and professional development. The shift from an industrial to a knowledge-based economy has heightened the demand for continuous education, where individuals are expected to adapt to new information, technologies, and skills throughout their lives. Libraries, both public and academic, are at the forefront of this educational transformation. Traditionally seen as repositories of books and information, libraries have evolved into vibrant community centers that foster learning and literacy at all stages of life.

Public libraries, with their mission to provide free and open access to information, play a crucial role in supporting the educational needs of the broader community. They offer a wide range of programs and resources, from early literacy initiatives for children to adult education and digital literacy workshops, making them indispensable to lifelong learners of all ages. Academic libraries, on the other hand, are integral to the educational infrastructure of higher learning institutions. They support the academic and research needs of students and faculty, providing access to specialized resources and fostering information literacy—a key component of lifelong learning.

This study aims to explore and analyze the significant roles that public and academic libraries play in promoting lifelong learning and literacy. By examining the services, programs, and resources these libraries offer, the study seeks to highlight how they contribute to the educational development of individuals and communities. The research will also identify the challenges these libraries face, particularly in the digital age, and propose strategies to enhance their effectiveness in promoting lifelong learning.

Understanding the role of libraries in promoting lifelong learning and literacy is essential for policymakers, educators, and library professionals. As the demand for continuous education grows, libraries must adapt to serve their communities effectively. This study provides valuable insights into how libraries can continue to be key players in the education

landscape, helping to bridge the gap between formal education and lifelong learning. By highlighting successful strategies and identifying areas for improvement, this research contributes to the ongoing discourse on the future of libraries in a knowledge-based society.

Objectives of the Research:

1) To analyze the contributions of libraries to lifelong learning.

2) To investigate the various literacy programs and resources offered by public and academic libraries, focusing on their effectiveness in improving literacy skills across different age groups and communities.

3) To assess the impact of digital technology on library services.

4) To identify challenges faced by libraries in promoting lifelong learning.

5) To propose strategies for enhancing the role of libraries.

6) To evaluate the role of librarians as educators.

Literature Review:

1) **Bhardwaj, R., & Kumar, S. (2018).**"Public Libraries and Lifelong Learning: A Case Study of Libraries in India." This study explores the role of public libraries in India in fostering lifelong learning. It highlights how these libraries have adapted their services to support continuous education and skills development among diverse populations. The research identifies key strategies employed by libraries to engage users in lifelong learning activities and discusses the challenges they face.

2) **Kapp, K. M. (2013).**"The Role of Libraries in Lifelong Learning: A Study of Academic Libraries." Kapp's work focuses on academic libraries and their role in supporting lifelong learning. The paper emphasizes how academic libraries contribute to personal and professional development through various educational programs, workshops, and resources. It also addresses the integration of technology and digital resources in enhancing lifelong learning.

3) **Greenhalgh, L. (2011).**"Libraries and Literacy: Understanding the Connection." This paper explores the impact of libraries on literacy development. It discusses various literacy programs and initiatives offered by libraries and their effectiveness in promoting reading and writing skills across different age groups.

4) **Lankes, R. D. (2011).**"The Atlas of New Librarianship." Lankes provides a comprehensive view of how libraries can adapt to meet the needs of lifelong learners. The book discusses innovative approaches and best practices for libraries to engage users in ongoing learning and skill development.

This review provides a comprehensive overview of how both public and academic libraries contribute to promoting lifelong learning and literacy, highlighting different perspectives and approaches from various researchers.

Research Methodology:

This study uses a mixed-method research design to explore the role of public and academic libraries in promoting lifelong learning and literacy. It includes a literature review, case studies, surveys, and interviews. The literature review identifies key themes and gaps in existing research. Case studies have been selected from diverse libraries, while surveys assess the effectiveness of library programs and user satisfaction. Interviews with stakeholders provide qualitative data. Thematic analysis and statistical methods have been used to analyze the data, ensuring accuracy and efficiency.

The Role of Public and Academic Libraries in Promoting Lifelong Learning and Literacy:

Public and academic libraries are essential institutions in promoting lifelong learning and literacy. They provide diverse collections of materials, digital literacy, support for formal education, and collaborate with schools to support K-12 education. Libraries offer early literacy programs, such as storytimes, reading clubs, and literacy programs for young children, as well as adult literacy programs like ESL classes, GED preparation, and adult reading groups. These initiatives empower individuals by enhancing their reading, writing, and communication skills, which are essential for personal and professional development.

Lifelong learning opportunities include continuing education through workshops, lectures, and courses on various topics, as well as self-directed learning through diverse materials. Libraries also promote cultural awareness and intellectual discourse through events, exhibitions, and discussion groups. They strive to be inclusive spaces that serve all members of the community, regardless of age, socio-economic status, or background.

Libraries teach information literacy, helping individuals evaluate the credibility and reliability of sources, especially in an era of misinformation. They guide users in developing research skills through workshops and one-on-one support. Libraries are also embracing technology by offering makerspaces, digital labs, and online learning platforms. They continually evolve to meet the changing needs of their communities, offering resources and programs that address current trends and issues, such as digital literacy, health information, and job search assistance.

Public and academic libraries play a crucial role in promoting lifelong learning and literacy by providing accessible resources, fostering educational partnerships, promoting literacy at all ages, and offering community-centered programs that support continuous intellectual and personal growth. By adapting to technological advancements and evolving community needs, libraries remain vital in ensuring that learning is an accessible and lifelong endeavor for everyone.

Case Studies of Public Libraries:

Public libraries worldwide have implemented innovative programs and services to promote literacy and lifelong learning within their communities. Notable case studies include the New York Public Library (NYPL), which offers community reading programs, digital literacy initiatives, and after-school homework help programs. The NYPL's "Summer Reading Program" encourages reading as a lifelong habit, while the Toronto Public Library (TPL) collaborates with local schools and educational organizations to offer after-school homework help programs, such as "Homework Help for Kids." The TPL's "Adult Literacy Program" supports adults in improving their reading, writing, and numeracy skills through one-on-one tutoring sessions.

Aarhus Public Libraries in Denmark have embraced the concept of makerspaces through their "Dokk1" library, which houses creative learning labs and digital fabrication workshops. These spaces provide community members with hands-on learning opportunities, explore new technologies, and develop skills in areas like 3D printing, robotics, and digital media production. The library also offers language learning programs for immigrants and refugees, providing language classes and cultural orientation sessions to help newcomers integrate into Danish society while promoting lifelong learning and literacy.

Case Studies of Academic Libraries:

Academic libraries play a crucial role in promoting research, academic success, and lifelong learning within higher education institutions. The University of Cambridge Libraries in the UK provides personalized research consultations to students and faculty, enhancing their skills in navigating complex databases and managing bibliographic data. The University of California, Los Angeles Library in the USA offers specialized databases, journals, and archives

to support diverse research needs across disciplines. The library's Digital Scholarship program offers tools and expertise in digital humanities, data visualization, and GIS, fostering innovation and lifelong learning in research practices. Singapore Management University Library in Singapore organizes workshops and seminars on academic integrity, data management, and effective research strategies, promoting a culture of continuous learning. The library's "Learning Commons" provide flexible and collaborative spaces for students to engage in group work, access resources, and participate in learning activities. Both public and academic libraries have developed targeted programs and services to promote literacy and lifelong learning.

Challenges Faced by Libraries:

Libraries play a vital role in promoting lifelong learning, but they face several challenges. These include budget constraints, which limit their ability to expand collections, upgrade technology, and offer new programs. Balancing priorities is another challenge, as libraries must balance traditional resources with the demand for new technologies and digital resources.

Real-time technological advancements present a challenge for libraries, as they must constantly update their infrastructure to meet user needs. Addressing the digital divide is essential, as not all patrons have equal access to digital tools. Libraries must provide access to technology and digital literacy training, which requires additional resources and expertise.

Serving diverse populations is another challenge, as libraries serve a wide range of users with different educational backgrounds, ages, languages, and learning styles. Meeting the diverse needs of these populations can be challenging, especially in areas with significant demographic shifts or multiple languages spoken.

Inclusive programming is also essential, as designing programs and services that are accessible to all community members, including those with disabilities, non-native speakers, and marginalized groups, requires careful planning and often additional resources.

Opportunities for Innovation:

Libraries have the potential to innovate and expand their role in lifelong learning despite facing challenges such as budget constraints, rapidly changing technology, and the need to serve diverse populations. By expanding digital collections, forming partnerships with educational institutions, and developing innovative programs, libraries can offer a broader range of materials to patrons, making lifelong learning more convenient and accessible.

Online learning platforms can be partnered with to provide access to courses, webinars, and certification programs, allowing users to acquire new skills at their own pace. Libraries can also partner with local schools, universities, and community organizations to develop joint programs that promote literacy and lifelong learning. Academic libraries can collaborate with educational institutions to support research and development projects, providing access to specialized databases and research tools.

Innovative programming and services can be fostered through makerspaces and creative labs, where patrons can experiment with new technologies like 3D printing, robotics, and digital media production. Mobile and pop-up libraries can reach underserved populations by bringing books, technology, and educational programs directly to communities without easy access to a physical library.

Embracing data and analytics can help libraries tailor their services to better meet individual user needs, such as personalized reading recommendations and targeted outreach. Data-driven insights can also help libraries evaluate the success of their programs and services, allowing for continuous improvement and strategic resource allocation. As libraries adapt to

changing circumstances and leverage new technologies, they remain vital institutions for education, literacy, and community engagement.

Discussion:

Library programs are essential for lifelong learning, providing accessible and diverse opportunities for personal and professional growth. They cater to a wide range of interests, skill levels, and age groups, ensuring that learning continues beyond formal education. Libraries offer free or low-cost access to resources such as books, online databases, educational workshops, and technology training, allowing individuals to pursue self-directed learning and explore new subjects at their own pace.

Librarians also play a crucial role in community engagement, serving as community hubs where people of all ages and backgrounds can come together to learn and share knowledge. This communal aspect fosters a culture of lifelong learning within the community, encouraging collaboration, innovation, and the exchange of ideas.

The role of librarians is evolving rapidly as they adapt to the changing landscape of information access and education. They now actively engage in teaching information literacy, research skills, and digital literacy, conducting workshops, providing one-on-one research assistance, and guiding patrons in navigating complex information systems. Modern librarians are also involved in community outreach, working closely with local organizations, schools, and other institutions to design and implement programs that meet the specific needs of their communities.

Future trends in library services include the expansion of digital offerings, the development of collaborative learning spaces, new partnerships with educational institutions, tech companies, and community organizations, and the introduction of personalized services based on data analytics and artificial intelligence. These changes will ensure that libraries remain vital institutions for lifelong learning, supporting learners of all ages in their pursuit of knowledge and personal growth.

Conclusion:

Public and academic libraries are crucial in promoting lifelong learning and literacy. They provide accessible resources, programs, and services to individuals of all ages and educational backgrounds, empowering communities through personal and professional development. Public libraries foster community engagement and inclusivity, offering programs addressing diverse needs. Academic libraries, on the other hand, are essential for students and researchers, providing specialized resources, research support, and information literacy training. They facilitate access to cutting-edge research and foster a culture of inquiry. Despite challenges like budget constraints and evolving technology, libraries continue to innovate and adapt, expanding digital offerings, creating collaborative learning spaces, and forming strategic partnerships. As they evolve, libraries will remain at the forefront of promoting lifelong learning and literacy, shaping informed, literate, and empowered individuals capable of navigating and thriving in an increasingly complex world.

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DIGITAL TECHNOLOGY INTEGRATION IN ACADEMICS LIBRARIES

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Abstract:

The paper investigates the depth of integration of technology into academia, paying particular emphasis to the benefits accruable from digital literacy. It emphasizes active learning and literacy promoted by digital technology. However, among the impediments cited in poor technology integration are inadequate technological infrastructure, a financial deficit, and limited access to resources. A part of these obstacles includes the lack of time to invest in obtaining the technical skills, resource constraints, and lack of knowledge and skills on the part of the instructors and supporting staff, whereby the administrative and teacher support is not adequate.Weak leadership in institutions of learning and poor structure, in general, lead to weak incorporation of the technology. The institutional heads hardly take into consideration the purpose of technology in education, and instructors sometimes find little time to use the technology appropriately. It suggests some ways, such as, training, developing shared vision, stakeholder involvement, cheaper alternative digital tools, grant and funds, handling change resistors, rotating and class and students for collaborative learning, student helper hire, more time allotment for teachers for technological competencies, scheduling meetings for technology integration, and ultimately, generating high quality reports of technology integration. These are some ways for any academic institution of integrating technology properly in their academic curriculums.

Key Words: technology, academia, collaborative learning

Introduction:

Digital Literacy essentially exponentially stimulates the intellectual capacity of a society and enables the active participation in practically all conceivable aspects of life. Many types of literacy can be generalized to classify digital literacy, such as ICT, online information retrieval, technology-related literacy, and digital literacy. Besides, it is necessary to have trust between students and their instructors or professional mentors for digital literacy. It is paramount for the academic learning since it allows for multiple options in learning to be possible, such as virtual learning, online classes, and full-time schools. Academia is powered by digital sources in the form of digital portfolios, e-books, instant response, and learning games. The research investigates how digital technology in academia works toward finding obstacles and providing

recommendations and findings. The education sector in general has assimilated the use of digital technology, and in this manner, it has created a lot of opportunities for learning through digital resources such as digital portfolios, e-books, and feedback that is in real time.

Objectives of the study:

- To study the concept of Digital Library
- To study the Integration of Digital Technology
- To give suggestions for Integration of Digital library

Methodology :

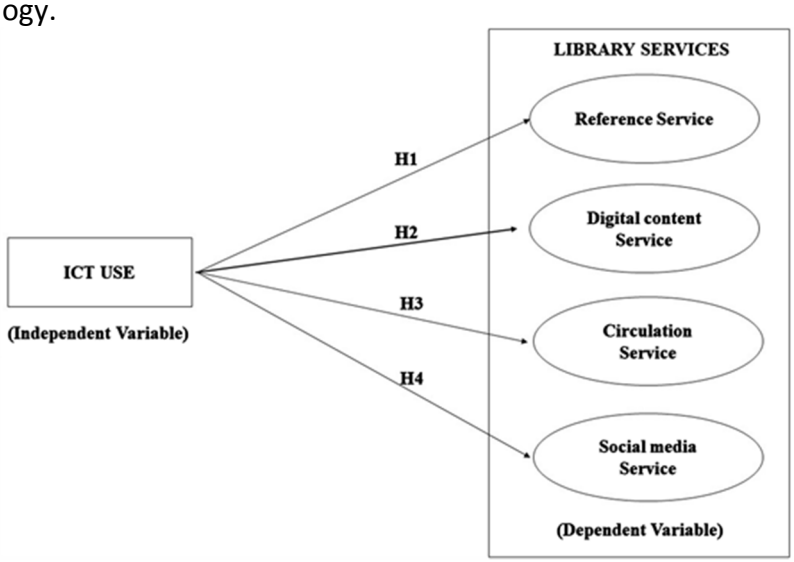
This research study is based on the secondary data. The secondary data has been collected from the various sources Like the Journals, Newspapers and other printed sources.

Students Attainment:

Digital technology improves the academic performance and achievements of pupils. There is a need for a rigorous review of its merits so as to assess its level of integration in academics. Digital technologies improve children's achievement and academic performance. Liao et al, 2008, Jewitt et al. 2011, confirm that digital technology has potential to improve learning and therefore, it should be used in academia. This active learning, done outside of class, could be achieved through digital tools providing safe spaces for feedback and evaluation. The digital technology that is available has potential to enhance learning and improve academic outcomes.

Digital Tool Effects:

Digital technology enhances students' reading, writing, listening, and speaking abilities, but it requires support from academicians, schools, and training; implementation is the key to its effective use. Digital learning positively affects writing. Interactive whiteboards and e-readers are some effective tools in learning, showing improved scores in reading comprehension and vocabulary comprehension. However, it requires support from academicians, schools, and training for its effective implementation. Benefit analysis revealed that a number of benefits are provided by the digital technology. Digital technology is found to provide more motivation to the learners. Study reveals that digital tools can improve literacy level of students. Many authors, such as Reed et al. 2013, and Zheng et al. 2014 find digital technology helpful for the students. In fact, these findings suggest that the digital technology is well integrated into academics. The next section examines the level of integration of digital technology.



Integration of Library with Technology:

The analogous signals transformation to digital transformation has allowed the teachers to use electronic equipment's for teaching. Knowledge management system has many components available such as internet, local area network, and intranet. The internet applications provide speedy transfer of information. The education system has integrated information and communication technology system in order to enhance understanding. It has been found that the digital technology use in the classroom setting is not yet at that level which can generate systematic change. The excellent approach of the teacher to teach through the application of ICTs is facilitating, but success of the digital technology in academics is determined by contextual factors such as trust factor, school climate, or network existence. It has been found that network existence to access knowledge and information, trust, and ICT coordinator create a positive impact on the teachers to use digital technologies. The incorporation of digital technology in education will involve training of teachers to enhance the collaboration as well as learning process. Most teaching practices involve basic or superficial digital technologies where a teacher cannot use ICT comprehensively. Digital technology will need teachers to learn asynchronous and synchronous technologies like online forums, video conference, and social network. Collaboration process will need to have participation from teachers, students, trainers, researchers, and specialists. A shared vision development regarding the role of ICT in education is required. Assimilation of digital technology requires contextualization in historical, political, and economic realities. Scalable and sustainable teacher training is further an essential requirement for the implementation of digital technology. Docential innovation is equally a challenge. What findings by the OECD relate to family support and continuous learning for students?. First and foremost, there exists a series of challenges that current education systems are likely to be faced with. Some of the major challenges include technological infrastructure and difficulties to adapt to new technologies.

Hurdles for the use of Digital Technology:

Lack of time is the second most important constraint to technology integration in academics. This does not allow materials to be developed or nurtured with creative ideas, strategies, and skills for curriculum integration. Generally, inappropriate training can also act as a barrier to integration because teachers lack sufficient expertise in the use of the technology. There is also a limitation of resources in the classroom, either for the lack of technology, time, or access. No fiscal resources are given for professional training, and access to technology is not provided to enhance expertise. The technical support is also poor to digest digital technology in academics. Budget cuts would further deteriorate the issues, specifically for educators working in poor socio-economic progressing districts, as they would have lesser amount of resources to back up the efforts taken by the educators. It means it is precisely the insufficiency of time, the lack of expertise, and the no delivery of resources within the academic environment that causes problems for educators in integrating technology effectively.

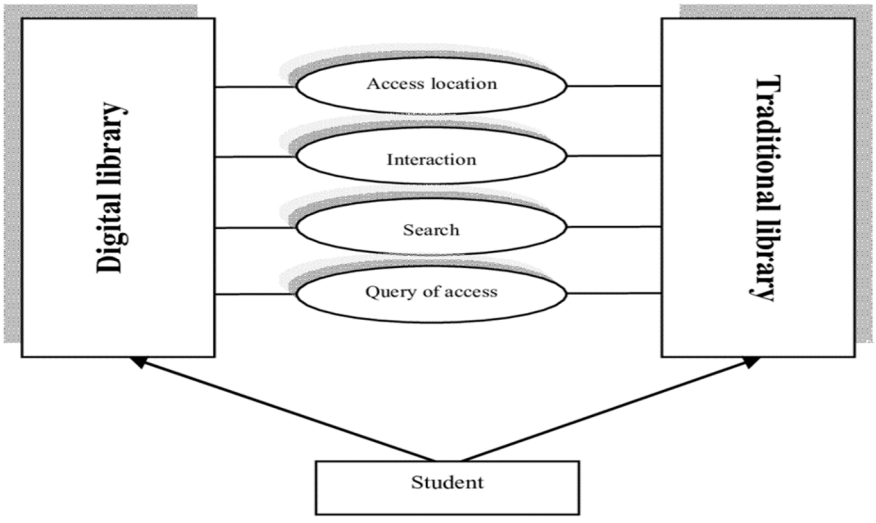
Digital technology:

For instance, due to the limited budgets, schools cannot surpass the other challenge of weak digital infrastructure. Limited access to technology due to lack of access to technology in some places also ends to weak integration of digital technology. According to one report, even schools have computers, but the teachers and learners cannot access it. It is also worth noting that limited access to the library can lead to students not assimilating digital technology (Harwood). Probably, time availability is a requirement in the integration of digital technology.

It is, however, a time-consuming process. Educators need to put in hours to be more familiar with the hardware and software, which is a difficult thing. They can face burn out issue while learning hardware and software, which are the main reasons of time wasting (Hew). The technical support is also found missing and schools and colleges are overwhelmed by the demands of teachers (Cuban). Lack of support the environment in the academics does not support for risk taking experimentation. There is lack of administrative and technical support to integrate technology in the class room settings. Value required for implementation of technology is also missing (Barriers to Technology Integration for Teaching and Learning). Insufficient skills and knowledge Teachers struggle due to lack of knowledge regarding specific technology use. They are not familiar with the technology pedagogy and management of technology related classroom. Such lack of information makes them overwhelmed when they use some specific technology. Learning new technology demotivates them to use any technology related activity. It is also found that teachers are concerned by the fact that pupils may become adept at using technology in which they themselves have no skills.

Suggestions for Technology integration:

The research proposes several strategies for integrating technology into academics. Firstly, there needs to be a vision shared by administrators, teachers, and others to encourage them to adopt technology in teaching. The shared vision needs to involve the usage of technology for improved knowledge and understanding of the student, according to the AASL standards for the 21st-century learner. Even the teachers need to be convinced regarding the use of technology in the classroom environment since through proper demonstrations, a shared vision can be built.Second, as schools are shackled by the limitation of resources, integration of technology should involve cheaper supplies and hybrid technology setups. For instance, Netbooks can be promoted since they offer basic features for educational purposes. In place of extensive computer laboratories that require many resources, for instance, laptops can be used to save costs; these can prove viable for teaching purposes.It can also allow students to rotate in groups to classes or vice versa, which aids access and can further enhance collaboration, especially within libraries. This will be assisted, more explicitly, by training for students. Technology use personal skills of student helpers can also be invited to integrate technology in academics.Finally, the professional development of teachers is important, for this positively changes attitudes and beliefs. Correct knowledge and skills to integrate technology call for provisions of professional training for the teachers. It is by so doing that schools will successfully integrate technology into their teaching practices.



Conclusion:

It was demonstrated that the integration of technology showed to be unsatisfactory into academics after a comprehensive discussion about different types of barriers such as lack of support, resources, motivation, beliefs, values, and resistance to change, insufficient knowledge, lack of training opportunities, and time that creates obstacles in the way of technology integration within academic institutions. Some of the recommendations for improving technology integration include the provision of adequate support, training and developmental opportunities, the provision of ample time for a teacher to acquire skills, finding resources at an affordable price, economic arrangements such as rotation policies and rallying around a shared vision through many ways. This paper availed the recommendations towards a better integration of technology within academics.

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EVOLUTIONARY TRANSITION INUNIVERSITYLIBRARIES: AN OUTLOOK OF MAHARASHTRAPUBLICUNIVERSITIESACT 2016.

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Abstract: Academic libraries have various characteristics in their history. It has evolved continuously into today's academic library system in Maharashtra. The overall development of academic libraries in Maharashtra has deliberated by citing the impact of contemporary acts, regulations and government policies in this article. We know that it has tolerated and adopted infinite impacts to adopt today's advanced nature as University libraries to be more suitable to cope with present needs. University libraries became 'Knowledge Resource Canters and librarians as a Director of Knowledge Resource Centre' by marking for appropriate changeover of the traditional University Libraries in Maharashtra. This study aims to unveil university libraries' journey as a storehouse of information resources to present vibrant Knowledge Resource Canters in the public universities in Maharashtra. This article envisages the overall development of remarkable changes in libraries in public Universities in Maharashtra and its gradual evolution from the post-colonial period to the present day.

Keywords: Knowledge Resource Centre (KRC), Library transition, Academic libraries, Maharashtra Public Universities Act-2016 and libraries, University library changeover.

Introduction:

Knowledge resource centres in public universities in Maharashtra have many dimensions of evolution from the British period to the contemporary phase. Various commissions and committees played a considerable role in shaping the present scenario in the knowledge resource centre in public universities in Maharashtra. This transition from a mere collection of print resources to a massive collection with databases made available in the KRCs today. The critical efforts measured the various bodies and library and information professionals individual in this article.

Genesis of University Libraries in Maharashtra:

The library system development in Maharashtra has had to travel a long way. Several commissions and committees were formed during the British period and after independence to determine the library policies. These committees and commissions played momentous roles in shaping the feasible development of today's Knowledge Resource Canters in public universities of Maharashtra. The Woods Dispatch (1854) played a significant role in establishing universities in India. The University of Bombay was established in 1857 in the province of Bombay State, and it is one of the first universities alongside Calcutta and Madras. The Maharashtra Public Universities Act 2016 governs 11 non-agricultural universities, and Knowledge Resource Canters in these universities have a diversified past. Gondwana University was established in 2011, 154 years after Mumbai University (1957).

Early Milestones of Library Development:

K.P. Sinha Committee (1957) point out three phases of library development generally considering the following periods;

- **Phase I – 1808-1900.**

-In 1808, the Bombay government introduced registered libraries and made provisions to receive copies of books published from government funds. Subscription libraries became accessible to the public. All provincial capitals and towns have established public libraries, and the Press and Registration of Books Act- 1867 was enacted. Libraries received due support and patronage from the government in this first phase, and the village library system was promoted.

- **Phase II- 1900-1937**

In the second phase, Indian authors and thinkers for library progress. Established Imperial Library Calcutta in 1900, now National Library of India. Sir Sayaji Rao-III developed the library system in Baroda state (1906-1911). Andhra provinces Library Association was established in 1914. Manindra Dev Rai shaped the Bengal Library Association with great efforts in 1927. Another Notable incident was the foundation of ILA by S.R. Ranganathan in 1933.

- **Phase III**

The third phase was entirely dependent on the previous two phases. The government played a substantial role in setting up the village libraries as demand was the primary trend. The beginning of Dr. S.R. Ranganathan's era has a remarkable milestone in this phase. Madras Library Act was enacted in 1948. Including the library development agenda in the first five-year planning (1951-1956) brought the library network to the grassroots level.

Evolution of Academic Library System: Genesis of University Knowledge Resource Canters.

The public Universities in Maharashtra were renamed University libraries "Knowledge Resource Canters" and librarians as directors after enacting the Maharashtra Public Universities Act 2016. A total of 11 non-agricultural public Universities came under the Maharashtra Public

Universities Act 2016.

r. No	Name of the University	Year of Establishment.
	University of Mumbai	1857
	Shreemati Nathibai Damodar Thackersey Women's University Mumbai.	1916
	Rastrasant Tukdoji Maharaj Nagpur, University, Nagpur.	1923
	Savitribai Phule Pune University, Pune.	1949
	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.	1958
	Shivaji University, Kolhapur.	1962

	Sant Gadgebaba Amaravati, Amaravati.	1983
	Swami Ramanand Teerth Marathwada, University, Nanded.	1994
	Kavayitri Bahinabai Choudhari North Maharashtra University, Jalgaon	1991
0	Punyashlok Ahilyadevi Holkar Solapur Puniversity, Solapur.	2004
1	Gondwana University, Gadchiroli.	2011

Table: 01. List of the Public Universities in Maharashtra.

Table No: 2. Various Committees and Commissions short briefings:

Year	**Commission/ Committees**	**Chairman**	**Key recommendations**
1939-40	Library Development Committee-Bombay	A.A.A. Fyzee	• Recommended the need of state central library to village libraries (Six stage system) in Bombay province • Partially implemented due to lack of funds.
1940	Central Advisory Board of Education	Sir, Maurice Gwyer	• Libraries were essential to the progress of adult education in India.
1948-49	University Education Commission	Dr. S.R. Radhakrishanan	• Point out the importance of libraries. • Present inadequate position. • Recommended annual grant for libraries. • Recommend open access system. • Assumes proper organization of the library. • Trained staff for reference assistance.
1956	University Grant Commission.	C.D. Deshmukh	• Played Key role in developing the university libraries. • Advised state government to ensurelibrary facilities in the universities. • Library was a key focal point UGC's program of study. • Proposed Bachelor's &

			Master's degree in Library Science. • Focus on adequate library facilities.
1957-58	Advisory Committee for libraries	K.P. Sinha	• Recommend 25 years library plan. • Formation of library networks in India. • Form of framework for sustainable library growth.
1964-66	Education Commission	Prof. D.S. Kothari	• Faithfully recommended financing of education sector. • Emphasized the higher education role in national development. • Recommend 6% national income to Education. • Assumed holistic and balanced system to education. • Emphases on higher education and research in true sense. •
1886	National Policy on Library and Information System	Prof. D.P. Chattopadhyaya	• Strong emphasis has given to strengthen the academic library system. • Recommended qualified librarian for higher institution. • Acclaim develop library system on the university campuses. • Encouraged adequate facilities to university libraries. • Presumed the U.G.C.'s role in academic libraries development.
1986 (Modified with NEP 1968)	National Education Policy	Acharya Ramamurti	• Establishment of good libraries to improve efficiencies of the universities. • Provide necessary attention to strengthen library services. Upgrade libraries with new equipment.

The intervention of the National Knowledge Commission and Libraries.

To some extent, the transformation of academic libraries in Maharashtra is based on the National Knowledge Commission's particular recommendation for libraries. National Knowledge Commission's second report highlighted in the XI th plan documents with the incorporation of suitable funding. Revitalizing entire libraries in the country was a core agenda for the National Knowledge Commission, expecting libraries to be dynamic centres for knowledge creation and exchange. The pivotal suggestions of NKC are as follows;

- Demand a national mission on libraries to eradicate information poverty.
- Modernization of libraries with people's participation.
- To boost Public-private partnerships.
- Recommended separate and autonomous National Commission on Libraries.
- Initiated the connection of all information organizations in the country.
- Recommended high-speed digital network.
- Promotion of ICT.
- To create separate funds.

These core endorsements by the NKC have become the critical pathfinder of the present academic KRC's transition.

The Maharashtra Public Universities Acts- 1994:

Before the Maharashtra Public Universities Act 1994, universities had separate acts. This "An act unify, consolidate and amend the law relating to the non-agricultural and non-technological universities in the State of Maharashtra". (Govt. of Maharashtra. 1994).

The principal officer of the university library was the librarian, and he was responsible for 'maintaining the standards, teaching, research and professional skills in the library'. The librarian was the 'custodian' of the library resources, and the library committee assigned the objective of providing modernization and improvement of library documentation and services.

Draft of Maharashtra Public University Act 2011.

The Government of Maharashtra established committees in 2010 to deliberate several concerns regarding the up-gradation of the higher education system in Maharashtra. The Maharashtra University Act results from the outstanding exertion of three committees set up by the government of Maharashtra. Committee **No. 2** was set up under the chair of Professor (Dr.) Arun Nigavekar and the committee prepared the Maharashtra Public University Act draft in 2011. The same draft was uploaded to the public domain for stakeholder's recommendations. The committee identified the transformational need of the conventional educational systems, all educational elements, and university libraries in Maharashtra. The root of the University Knowledge Resource Centre is based on the draft of Prof. Nigavekar's committee report. The draft report discusses all related issues in detail, which resulted in the Maharashtra Public Universities Act- 2016.

The Maharashtra Public Universities Act- 2016.

Maharashtra Public Universities Act 2016 has recommended and discussed various developmental aspects. It assumes dire changes in the collection development of the University's Knowledge Resource Centre, and it should be incorporated into the vision and missions of the KRC. Some of the focal elements in the Maharashtra Public Universities Act 2016 are as follows;

The University Knowledge Resource Centre should hold "in print, electronic and audio-video format material, monographs, reference volumes, text and review books, etc. for the user community.

- To perform knowledge creation, preservation and dissemination activities.

- To promote acquiring knowledge in a changing scenario, upgrading knowledge, and developing a higher educational network using modern and emerging ICT Technologies applicable to a learning community.
- To create, cultivate, and foster high-quality research by disseminating knowledge.
- To develop a centric approach for collection development.
- To share knowledge resources and link with other educational institutions at national and international levels to be part of the national knowledge grid.
- Knowledge Resource Canter should be a creator of content.

Discussion:

Knowledge Resource Canters in public universities in Maharashtra witnessed drastic changes in the service model, acquisition, storage and dissemination of knowledge resources. The emergence of digital technology brought drastic changes in the knowledge cycle. The draft of the Maharashtra Public University Act 2011 proclaimed the prime aim before the KRC, which was to focus on creating knowledge and promoting research investigation. "There are two functions that a system of higher education needs to focus on; one is to create new knowledge and sustain good research, and the other is to create enlightened youth who have a solid foundation in the basics and are also good in applying knowledge to address problems connected with human lives" (Arun Nigavekar, 2011, p. 16 **).**

Conclusion:

The Knowledge Resource Canters in public universities in Maharashtra (formerly university libraries) have a long history to consider, with many dimensions and geographical and demographical differences. The present article has a small historical review of the influence of the different committees and commissions set up by governments from time to time. The key focus of this perception is to understand the influences of various aspects, such as historical periods, government policies and contemporary issues, on the transition of university libraries into knowledge resource centres.

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ग्रंथालयामध्ये QR कोड चा वापर...

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सार :-

प्राचीन काळातील ग्रंथालयात बार कोड बहुतेक आधुनिक ग्रंथालय व्यवस्थापन प्रणालीमध्ये मोठ्या प्रमाणावर वापरले जात होतेपरंतु काही कालावधी नंतर QR कोड चा वापर मोठ्या प्रमाणात चालू झाला. QR कोड वापरून स्मार्ट ग्रंथालय व्यवस्थापन प्रणाली विकसित करणे हा या संशोधन प्रकल्पाचा उद्देश आहे. QR कोड हे द्विमितीय मॅट्रिक्स बारकोड आहेत. स्मार्ट फोनच्या वाढत्या वापरासह व्यावसायिक आणि संस्थांमध्येQR कोडचा मोठ्या प्रमाणावर वापर केला जात आहे, कारण स्मार्ट मोबाइल फोन योग्य डेटा स्कॅन करू शकतात. ग्रंथालय मॅनेजमेंट सिस्टीममध्ये QR कोड वापरणे खूप सोपे आहे परंतु अद्याप प्राथमिक अवस्थेत आहे. या आधुनिक युगात विविध तंत्रज्ञानासह डिजिटल जगाशी ताळमेळ ठेवण्याचा प्रयत्न ग्रंथालयाने केला पाहिजे. ग्रंथालय सिस्टिमचे महत्त्व आहे कारण या प्रणालींचा उपयोग अनेक लोकांकडून माहितीचा प्राथमिक स्त्रोत म्हणूनकेला जातो. बहुतेक ग्रंथालये सध्या दैनंदिन व्यवहार आणि देखरेखीसाठी मोठ्या संख्येने लोकांसह कार्यरत आहेतQR कोड आधारित ग्रंथालय व्यवस्थापन प्रणाली ग्रंथपाल, कर्मचारी आणि विद्यार्थ्यांसाठी अतिशय कार्यक्षम आणि विश्वासार्ह आहे. ही प्रणाली सर्व रेकॉर्डचा मागोवा ठेवण्यासाठी ग्रंथालय प्रक्रिया सुलभ करेल आणि ग्रंथालय त्याच्या वापरकर्त्यांसाठी अधिक थेट प्रवेशयोग्य बनवेल. ही प्रणाली रिअल टाइममध्ये कार्य करते आणि प्रणालीशी संबंधित प्रत्येक सदस्यापर्यंत माहिती सहज उपलब्ध होते. वापरकर्त्यांनी सिस्टम प्रशासनाकडे नोंदणी केलेली असणे आवश्यक आहे ज्यानंतर तेत्यांच्या खात्यांमध्ये आणि डेटाबेसमध्ये प्रवेश करू शकतात. हे ग्रंथपालावरील बोर्डन कमी करते कारण तेकोणत्याही पुस्तकासाठी उपलब्ध आणि जारी केलेल्या व्यक्तीचा आणि वृद्धत्वाच्या विश्लेषणासह पुस्तकांची एकूण संख्या ट्रॅक करण्यास मदत करेल.

शोध संज्ञा:-QR कोड, ग्रंथालय व्यवस्थापन प्रणाली.

प्रस्तावना :-

आज QR कोड सुरुवातीच्या टप्प्यात आहे आणि संपूर्णपणे डिजिटल जगाकडे वळण्यासाठी जगाचे आकलन होण्यास थोडा वेळ लागेल. इंटरनेट हे प्रत्येकाच्या जगण्याचा एक भाग बनले आहे त्याचप्रमाणे QR कोड देखील आवश्यक बनणार आहे. विशिष्ट माहिती. लायब्ररींनी विविध क्षेत्रांत त्याची अंमलबजावणी करण्यासाठी एक पाऊल उचलले पाहिजे आणि वापरकर्त्यांचे जीवन सुलभ करण्यासाठी ते लागू केले जात असल्याने ते वापरण्यास प्रोत्साहित केले पाहिजे. माहिती आणि ज्ञानाचे संप्रेषण आणि देवाणघेवाण करण्यासाठी हे नवीन मार्ग प्रदान करते, ICT टूल्सच्या मदतीने माहिती संग्रहित, पुनर्प्राप्त आणि प्रसारित करण्याच्या पद्धतींमध्ये बदल करण्याच्या क्रांतिकारक पायऱ्यांवर परिणाम करत आहेत, त्यांच्या क्रियाकलापांना स्वयंचलित करण्यासाठी, उपयुक्त वैशिष्ट्यांच्या संदर्भासह डायनॅमिक वेबसाइट तयार करणे, सहज उपलब्ध लिंक्स. इ. ते त्याच्या संरक्षकांच्या माहितीच्या गरजा पूर्ण करण्यासाठी अगदी वेळेत आभासी आणि भौतिक जागा उपलब्ध करून देत आहेत. या संदर्भात, क्यूआर कोड हे एक नवीन तंत्रज्ञान आहे जे ग्रंथालयांना त्यांच्या संरक्षकांना दृष्यदृष्ट्या आक्रमण न करता संदर्भसंवेदनशीलतेने परवडण्याजोगे जोडण्यास मदत करते. या तंत्रज्ञानामध्ये संरक्षकांनात्याच्या सामग्री आणि सेवांबद्दल माहितीशी जोडण्याची क्षमता आहे.

QR कोडचा इतिहास

1994 मध्ये टोयोटा उपकंपनी डेन्सो वेव्ह द्वारे इन्व्हेंटरी मॅनेजमेंटमध्ये ऍप्लिकेशनसाठी विद्यमान बारकोडमध्ये सुधारणा करण्यासाठी QR कोड विकसित केला गेला आहे. त्याच्या परिचयापासून, QR कोडला उत्पादन, वेअर हाउसिंग आणि लॉजिस्टिक्स, किरकोळ विक्री, अशा विविध उद्योगांमध्ये व्यापक मान्यता प्राप्त झाली आहे. हॉस्पिटल सेवा, वाहतूक आणि ऑफिस ऑटोमेशन इत्यादी.

आता स्मार्ट फोनच्या स्फोटक वाढीसह, ग्राहकांशी कनेक्ट होण्याचा आणि अंतिम वापरकर्ता सामग्रीप्रदान करण्याचा एक जलद आणि प्रभावी मार्ग म्हणून मोबाइल मार्केटिंगमध्ये QR कोड देखील वापरला जात आहे. आजकाल, ग्रंथालये देखील सध्याच्या परिस्थितीत हे तंत्रज्ञान झपाट्याने स्वीकारत आहेत.

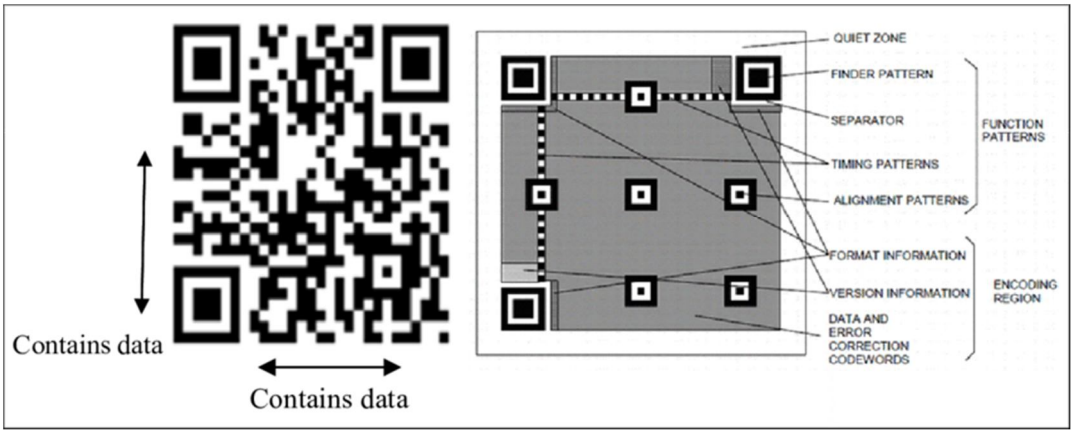
यूके, यूएसए, जपान यांसारख्या पाश्चिमात्य देशांमध्ये आणि आता भारतात देखील मोबाइल फोनवर माहिती मिळविण्यासाठी वापरकर्त्यांची सर्वात महत्त्वाची मागणी पूर्ण करण्यासाठी QR कोड वापरतात.

QR कोड म्हणजे काय?

QR (क्विक रिस्पॉन्स) कोड हा द्वि-आयामी बार कोडचा एक प्रकार आहे. टोयोटा उपकंपनी डेन्सो वेव्ह द्वारे QR कोड दोन उभ्या आणि क्षैतिज परिमाणांमध्ये माहिती राखण्यासाठी मॅट्रिक्स कोड म्हणून विकसित केले गेले. QR कोड 1994 मध्ये उत्पादन युनिट्समध्ये पात्रता शेल्व्हिंगसाठी एक पद्धत म्हणून मुक्तपणे सादर केले गेले. हे कोड ISO/IEC18004 च्या आंतरराष्ट्रीय मानकानुसार आहेत, जरी ते सर्व विद्यमान स्मार्ट फोनला समर्थन देत नाहीत. वर नमूद केलेली मानके QR कोडचे उत्पादक आणि वाचकांची संख्या वाढवतात आणि त्यांना एकमेकांशी सुसंगत बनवतात,जरी

स्मार्ट फोनमधील या मानकांच्या संभाव्य समस्यांचा विचार करणे आवश्यक आहे.QR कोडच्या वैशिष्ट्यांमध्ये उच्च वाचन गती, डेटा संचयन आणि हस्तांतरण, 360-डिग्री वाचनीयता, दूषितता आणि दोषांचा प्रतिकार आणि संरचनेत 16 चिन्हे जोडणे समाविष्ट आहे. QR कोड सामान्यतः काळा भौमितिक आकार, रंग आणि अगदी ब्रँडेड QR कोडसह एक लहान पांढरा चौरस म्हणून दिसतो, तरीही आता वापरला जात आहे. QR कोड नियमित बारकोडपेक्षा जास्त माहिती ठेवू शकतात.

QR कोड रचना: -



Structure of QR code Source: Adopted from http://www.onbarcode.com/qr_code/.

मोफत QR कोड कसा तयार करायचा?

सुरुवातीला क्रोम ब्राउझर वर जाऊन https://www.the-qrcode-generator.com/टाईप करून सअर्च करावे त्यानंतर च्या पुढील स्टेप्स खालील प्रमाणे आहेत

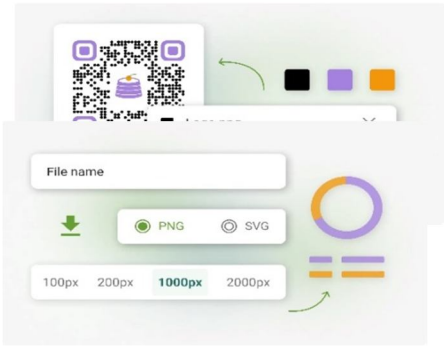
१. QR कोड प्रकार निवडा

तुमच्या गरजेनुसार सर्वात योग्य QR कोडचा प्रकार निवडा. लिंक (URL), PDF किंवा मल्टी-URL यासह अनेक पर्यायांमधून निवडा. स्थिर QR कोड तयार केल्यानंतर संपादित केले जाऊ शकत नाही, डायनॅमिक QR कोड कधीही संपादित केले जाऊ शकतात.

२. तपशील जोडा आणि सानुकूलित करा

प्रदान केलेल्या फील्डमध्ये माहिती प्रविष्ट करा. वैकल्पिकरित्या, तुमचा QR कोड वेगळा बनवण्यासाठी वैयक्तिकृत करा. लोगो जोडण्यासाठी, रंग बदलण्यासाठी आणि तुमच्या ब्रँडशी सरेखित करण्यासाठी शैली समायोजित करण्यासाठी सानुकूलित पॅनेल वापरा.

३. फाइल स्वरूप निवडा आणि डाउनलोड करा



तुमचे प्राधान्यकृत फाइल स्वरूप आणि आकार (PNG किंवा SVG) निवडा. एकदा निवडल्यानंतर, तुमचा सानुकूल QR कोड डाउनलोड करा. तुमची मोहीम सुधारण्यासाठी तुम्ही विश्लेषण करू शकता असा डेटा स्कॅन आणि व्युत्पन्न करण्यासाठी आता तयार आहे.

ग्रंथालयामध्ये क्यूआर कोड तंत्रज्ञानाचा वापर

ते विनामूल्य आणि वापरण्यास सोपे आहेत तसेच अनेक प्रकारचे मीडिया एम्बेड करतात. एकदा तुम्ही कोड लिहिल्यानंतर तुम्ही QR कोडमध्ये चित्र किंवा लोगो समाविष्ट करण्यासाठी देखावा देखील बदलू शकता. ग्रंथालयसाइट्सचा वापर वाढला आहे कारण वापरकर्त्याला लांब URL टाइप करण्याची आवश्यकता नाही. लायब्ररीमध्ये क्विक रिस्पॉन्स (QR) कोडचा वापर नुकताच विकसित होऊ लागला आहे, ज्यामध्ये वैविध्यपूर्ण आणि विशाल वैशिष्ट्य आहे. लायब्ररीमध्ये वापरकर्त्याच्या संदर्भ आणि स्थानाशी सुसंगत माहिती वितरीत करण्यासाठी ते प्रभावीपणे वापरले गेले आहेत. ग्रंथालयप्रदर्शने ज्यात गाणी, व्हिडिओ, वेब साइट्स, सर्वेक्षण, स्पर्धा इत्यादींसाठी QR कोड लिंक समाविष्ट आहे. ग्रंथालयस्टॅक/एंड कॅप्स किंवा मासिके/जर्नल क्षेत्रातील कोड जे प्रिंट सामग्री किंवा संबंधित विषय मार्गदर्शकांच्या ऑनलाइन इलेक्ट्रॉनिक होल्डिंगकडे निर्देश करतात.

लायब्ररीमध्ये काही महत्त्वाचे उपक्रम, QR कोड लागू केले जातात ते खालीलप्रमाणे आहेत:

- ग्रंथालय वेबसाइटशी लिंक करणे.
- ग्रंथालयई-संसाधनांचा दुवा साधने.

- ❖ मागील वर्षाच्या प्रश्नपत्रिकांमध्ये सहज प्रवेश मिळणे.
- ❖ ग्रंथालयऑडिओ टूर.
- ❖ विपणन/प्रमोशनल साहित्य सामग्री ठेवणे.
- ❖ प्रिंट ते इलेक्ट्रॉनिक जर्नल्स होल्डिंगशी लिंक करणे.
- ❖ भौतिक पुस्तकांसाठी इलेक्ट्रॉनिक पर्याय प्रदान करणे.
- ❖ ऑनलाइन ऑडिओ व्हिज्युअल सामग्रीचा प्रचार करणे.
- ❖ ग्रंथालयामध्ये बाह्य संसाधने आणणे.
- ❖ कॅटलॉग रेकॉर्ड आपल्यासोबत घेऊन जाणे.
- ❖ आसन आरक्षण वाय-फाय योग्य वापर करणे.

ग्रंथालयातील सेवांसाठीQR कोड अनुप्रयोगांचे फायदे:

- वापरकर्ता अनुकूल
- वैयक्तिकृत सेवा
- माहितीमध्ये प्रवेश करण्याची क्षमता
- वेळेची बचत
- वापरकर्ता सहभाग
- स्थान जागरूकता
- अमर्याद प्रवेश

लायब्ररी सेवांमध्येQR कोडचा वापर:-

- SMS अलर्ट आणिmobileOPAC
- ई-मेल आणि फोन नंबर
- संदर्भ आणि ग्रंथालय संसाधने
- वाय-फाय प्रवेश आणि GPS स्थान
- कायक्रम पत्रिका आमंत्रण आणि URL
- Facebook, Twitter आणि ट्विट्स, सोसीअल इत्यादी.

QR कोडचे फायदे: -

- हे विनामूल्य उपलब्ध आहे, कोणीही विनामूल्य सॉफ्टवेअर वापरून QR कोड तयार करू शकतो.
- कोडसह एम्बेड केलेल्या माहितीमध्ये प्रवेश करणे खूप जलद आहे.
- शेअरिंग.
- ग्रंथालयीन वापरकर्त्यांना मोबाईल फोन द्वारे संपर्क साधू शकता येतो.
- परस्परसंवादी आणि वापरण्यास सोपे.
- उच्च डेटा क्षमता व जास्त व अचूक डेटा वापरकर्त्यांना मिळतो.
- प्रत्येक डेटाची विविधता.
- लहान प्रिंटआउट आणि खर्चिक नसतो.

QR कोडच्या मर्यादा

- लोक आणि वापरकर्त्यांमध्ये ओळखीचा अभाव.
- स्कॅनिंग उपकरणाची आवश्यकता.
- तुम्हाला QR कोडमधील माहिती ऍक्सेस करायची असल्यास, तुमच्याकडे QR कोड स्कॅनिंग सुविधेला सपोर्ट करणारे डिव्हाइस असावे.
- QR कोडमध्ये एम्बेड केलेला कोड स्कॅन करण्यासाठी वेळ लागतो.

- तुम्हाला QR कोड रीडर सॉफ्टवेअरची आवश्यकता आहे.
- त्यासाठी इंटरनेट कनेक्शन आवश्यक आहे

QR कोड अर्जाच्या मर्यादा: -

- वापरकर्ता जागरूकता निर्माण करणे.
- तंत्रज्ञानाचा गैरवापर होण्यास टाळणे.
- स्मार्टफोनवर QRएप्लिकेशनइंस्टॉलेशन.

निष्कर्ष:-

QR कोड (क्विक रिस्पॉन्स कोडपासून संक्षिप्त) हा जपानमधील ऑटोमोटिव्ह उद्योगासाठी प्रथम डिझाइन केलेल्या मॅट्रिक्स बारकोडच्या प्रकारासाठी (किंवा द्विमितीय बारकोड) ट्रेडमार्क आहे. QRकोडमध्ये पांढऱ्या पार्श्वभूमीवर स्क्वेअर ग्रिडमध्ये काळ्या चौकोनांचा समावेश असतो, जो कॅमेरा सारख्या इमेजिंग यंत्राद्वारे वाचता येतो आणि प्रतिमेचा योग्य अर्थ लावला जाईपर्यंत रीडसोलोमन त्रुटी सुधारणेचा वापर करून प्रक्रिया केली जाते. आवश्यक डेटा नंतर डेटा स्टोरेज आणि ट्रान्सफरमध्ये उपस्थित असलेल्या पॅटर्नमधून काढला जातो, इमेजच्या क्षैतिज आणि अनुलंब दोन्ही घटक.QR कोडच्या वैशिष्ट्यांमध्ये उच्च वाचन गती, 360 अंश वाचनीयता, दूषितता आणि दोषांचा प्रतिकार आणि संरचनेत16 चिन्हे जोडणे समाविष्ट आहे.

विविध तंत्रज्ञानाच्या विकासामुळे ग्रंथालयांना आता खूप आव्हान दिलेजात आहे. सध्याच्या युगात क्यूआर कोड सारख्या नवीन तंत्रज्ञानामुळे लायब्ररीतील माहिती हाताळणीत बदल आवश्यक आहेत. वापरकर्त्याला QR कोड वापरून लायब्ररीशी संबंधित बऱ्याच वर्तमान आणि आवश्यक माहितीवर सहज प्रवेश मिळेल. त्यामुळे वापरकर्ता समुदायामध्ये QR कोडचा प्रभावी वापर करण्यासाठी, ग्रंथालय व्यावसायिकांनी वापरकर्ता जागरूकता कार्यक्रम, अभिमुखता कार्यक्रम इत्यादी आयोजित करणे आवश्यक आहे.

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IMPACT OF ARTIFICIAL INTELLIGENCE ON HIGHER EDUCATION

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Introduction

Artificial Intelligence (AI) are becoming more accepted in every aspect of our lives, including the use of artificial intelligence in higher education while there are things to be way of including academic, ethical and legal challenges. Artificial intelligence holds great promises for higher education as it can help students between prepare for the future in their higher education.

Artificial Intelligence can help students choose the right college, learn more efficiently, graduate on time, and enter the job market feeling confident and prepared. It can even help educators enhance learning through more effective individualized learning plans and efforts.

Artificial Intelligence focuses on creating intelligent machines and systems that perform tasks and solve problems that would otherwise require human intelligence. This technology relies on extensive computing power and massive amounts of data processed by algorithms in order to solve problems, automate routine tasks, streamline processes, recognize and classify images, pattern and speech recognition, make predictions, and even make decisions. Artificial Intelligence is being used in industries in a variety of ways, from self driving cars to digital assistants and the manufacturing of robots; candidates can find themselves working with artificial intelligence organizations small start-ups, and higher education institutions.

Artificial Intelligence in Higher Education

Higher education institutions are joining other companies and organizations in embracing the use of artificial intelligence for educators and students alike in a number of ways.

- **Personalized learning pathways:**

In the realm of student learning, artificial intelligence has been a game changer, enabling the creation of personalized learning pathways that adapt to each student's unique strengths, weaknesses and preferences. AI algorithms process individual learning styles, preferences; and performance data to tailor the learning process to each students needs. This level of personalization not only enhances student learning but also supports faculty in their teaching efforts.

The transformation of learning experiences through AI driven personalization ensures that education isn't a one-size-fits-all approach. Instead AI tools provide learning experiences tailored to each student's goals, interests and prior knowledge.

- **Intelligent systems for student support:**

Alongside personalized learning pathways. AI also plays a crucial role in enhancing student support. AI powered intelligent systems like virtual assistants and AI tutors, provide personalized support, and real-time feedback to students enhancing their learning experience. These intelligent tutoring systems utilize natural language processing to offer personalized support, respond to student's questions, provide access to resources and deliver tailored assignment feedback, by identifying individual learning patterns and preferences, the systems

can develop personalized learning plan; recommend tailored assessments, and offer real-time responses, significantly enhancing student performance and engagement.

- **Administrative Support:**

Colleges and universities are screaming their administrative process by using artificial intelligence tools to power student's record systems, transportation information technology (IT) maintenance, scheduling, budgeting and more. These tools are also used to budgeting and more. These tools are also used to interpret data on recruitment, admission and retention efforts to predict it student are in danger of falling or dropping a course. As a result, faculty and staff are alerted of potential problems to support and address a student's problems before they occur. Many schools are implementing artificial intelligence chat bots to address student questions, about financial aid, advising and career opportunities. This around the clock service provides additional answers and support to students in need outside of normal classroom or business hours.

- **Collaborative Tool in Research:**

AI is also providing to be an invaluable collaborative tool in research. It is fostering unprecedented levels of collaboration in academic research by uniting researchers from various disciplines, automating repetitive tasks, analyzing extensive data sets, formulating new research inquiries. Artificial intelligence tools like word vice AI chat GPT and typeset io are revolutionizing the way research is conducted enhancing team collaboration expediting data analysis improving knowledge search and identification and elevating research quality and efficiency.

- **AI impact on the learning and teaching process:**

AI is replacing the lecturer or tutor in many ways, such as blended learning and e-learning. AI offers various learners and links about the topics required by the subject matter and ease and inspires both learner and tutor by addressing different learning styles such as autonomous learning, visual learning, e-learning, audio-visual learning and deep learning. Equally, AI enables the tutor to select and apply the learning method taxonomy that the learner needs and highlights the areas of improvement to be focused on. Meanwhile, Artificial Intelligence reinforces independent learning as the learner becomes autonomous and free to across input anytime and anywhere. AI positively influences education by providing intelligent computer-assisted instruction that facilities learning intuition and provides expert systems to diagnose and assess learning outcomes.

- **Impact of AI on the assessment and classification process:**

Artificial Intelligence impacts the assessing and grading process for instance. AI checks assignments and research project through software such as turning against billions of resources in no time. Consequently similarities are easily generated to judge whether the learner plagiarized AI offers interactive way of providing constructive feedback to the learn easy access in a relaxed manner anytime and anywhere, with more privacy and autonomy.

Reforming to a study by Stanford university, AI is applied to evaluate students responses and create a computer model the endorses rules inferred from the tutor's grading decisions. What is specific about AI is that it improves learning instead of making a final authoritative decision.

- **AI impact on future careers of graduates:**

AI affects the world of education, but it also seems restricted to this area and follows the learner even after graduation. AI will impact the future job market of required skill sets. It will replace many other studies that involve routine tasks and structures that are easy to automate instead of unstructured disciplines that require complex cognitive interference. AI

or computer assessment is not limited to grading papers but can be the gate way to a future career.

- **Cognitive and ethical impacts of higher education on AI**

Dealing with ethics in AI is a lecturer in learning science and innovation at the institute of educational technology in the UK. Holemes (2018) discussing the impact of AI on education raised the importance of adopting ethics in AI education. AI is being deployed in higher institutions worldwide and significantly impact the future of higher education, similarly, by 2024 the global AIED market will be worth 4.5 billion pounds. Companies such as Google, Facebook and Amazon invest millions of dollars in developing AI in education. However, Holmes (2018) believes that 'adaptive' or personalized ethical learning systems are not entirely taken into account. He also stressed that there is a 'moral vacuum' without guidelines, policies, regulation or research done to stress the specific ethical issues raised by AI in education.

Challenges of Artificial Intelligence

1) Adverse outcomes:

The use of artificial intelligence in higher education also involves perils of course one is the peril of adverse outcomes. Despite the best intentions of those who develop and use these systems, there will be negative unintended consequences or that can even backfire. To avoid these adverse outcomes, several different factors should be considered. One of the first to consider is the data these tools draw upon. That data can vary in quality it may be old and outdated, or it may be drawn from a subset of the population that may not align with the students being targeted.

2) Comprehensiveness:

Another data aspect concern comprehensiveness in other words does the data include information about a variety of students. There has been much discussion about this recently in terms of facial recognition scholars looking at the use of facial recognition by companies.

3) Accuracy:

We face the issue of accuracy. Models are based on correlation; they are not reflective of causation. The point of AI tools and models is to show less intuitive. More attenuated correlation and patterns separating which correlation and patterns, separating which correlations and patterns are accurate and which are simply raise can be difficult.

4) Output:

An additional, often lover looked factor in adverse outcomes is output. Developers decisions, shape how the insights that AI systems of student learning or behavior that instructors and administrators can act upon. Other observation are not as useful in information interventions.

5) Implementation:

To use these systems responsibly, teachers and staff must understand not only their benefits but also their limitations. At the same time, school need to create very clear protocols for what employees should do when algorithmic evaluations or recommendations do not align with their professional judgement. They must have clear criteria about when it is appropriate to follow or override computer generated insights to present unfair inconsistencies.

Recommendations :

Appling artificial intelligence in higher education is a requirement for all higher institutions. However, AI appliance suggests that academic staff should be well trained in using AI to equip learners with the required skills to face future care challenges. Similarly, the researcher recommends ethics and humanity first when teaching AI as it threatens humankind without these values, privacy and dignity should be respected and protected by regulations and international laws as AI can be used without limitations and violate human freedom. Higher education institutions should control AI make it serve and not destroy and dehumanize humankind.

Conclusion

In education, AI remains a sleeping gaint 'break through' AI applications for teaching and learning are unlikely to merge from within mainstream higher education. A look at the AI model above highlights the key question whether technology should aim to replace teachers and instructors through automation or whether technology should be used to empower not only teachers but also learners. If AI does become immensely successfully in reducing the costs of teaching and learning, what will the cost be to us as humans.

Some countries are taking advantage of the abundance of educational data they came with the advent of the information age. These countries and their respective educational institutions have begun harvesting insights from large masses of data to provide more person alised learning experiences. The elephant in the room begs noticing i.e. the challenges around data accuracy and the implementation of AI. Education systems have also been actively reforming themselves to ensure that learners are acquiring the skills, required by an AI enabled future workplace. This lifelong learning orientation is appropriate in light of how fast AI technologies are evolving. As such this process of rethinking and redeveloping educational programs in response to AI might need to become a regular and continuous process.

AI is a field that spurs innovation and by doing so increased countries competitiveness. Countries will continue competing in such a rich and rapidly evolving arena yet; at least when it comes to education; there is also room for cooperation, the basis of which is knowledge sharing there is a need for more information about how counties are moving forward in this uncertain and constantly changing territory to promote the discussion and the relevance of adopting comprehensive of AI in education.

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नॅशनल डिजिटल लायब्ररी इंडिया : ओळख व सेवा

मोहिनी बसवराज वडिले
ग्रंथालय आणि माहिती शास्त्र बी. ए., एम. लिब.,सेट. संशोधक विध्यार्थी

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सार/ गोषवारा –

सदर लेखांमध्ये डिजिटल ग्रंथालयाची सुरुवात, संकल्पना, फायदे /आवश्यकता, नॅशनल डिजिटल लायब्ररी ची माहिती याचा परिचय दिलेला आहे.

शोध संज्ञा-

माहिती तंत्रज्ञान ,डिजिटल लायब्ररी ,ऑनलाइन ,ऑफलाइन, इंटरनेट.

प्रस्तावना –

प्राचीन काळातील ग्रंथालय म्हणजे सुरुवातीच्या काळात अभिलेखागार व वस्तुसंग्रहालय या प्रकारची होती ,व त्यातील मानवी वाचन साहित्य हे इष्टिका ग्रंथ ,भूर्जपत्र पत्र चर्म पत्र अशा प्रकारची होती.

त्यानंतर कागदाचा व छपाई चा शोध लागला नंतर छपाईचा शोध लागला व त्यानंतर ग्रंथ व इतर वाचन साहित्य यांच्या साह्याने ग्रंथालय विकसित होऊ लागली.

विविध विषयातील संशोधन विशेषीकरण आंतरविद्याशाखीय संबंधात झालेली वाढ शिक्षणातील वाढ व तंत्रज्ञानातील विकासामुळे पारंपारिक माहिती साधना बरोबर डिजिटल ज्ञानसाधनाचा उदय झाला व ग्रंथालयात नवीन सेवांचा उदय झाला विविध ग्रंथालयामध्ये एकमेकांच्या सहकार्याने नवीन पद्धत सुरू होऊन त्यात वाढ होत गेली व धार्मिक ग्रंथालयापासून सुरू झालेला हा त्याचा प्रवास त्याच्या सध्याचे युग डिजिटल ग्रंथालयापर्यंत येऊन पोहोचला आहे.

डिजिटल लायब्ररी -

व्याख्या

आर आर लार्सन यांच्यामते- डिजिटल ग्रंथालय म्हणजे विश्वव्यापी किंवा जागतिक व्हर्च्युअल ग्रंथालय हजारो नेटवर्कअसणाऱ्या इलेक्ट्रॉनिक ग्रंथालयाचे ग्रंथालय.

टेरेन्स स्मिथ- शास्त्रशुद्ध पद्धतीने तयार केलेले व डिजिटल तंत्रज्ञानाचा वापर करून त्यांच्या व्यवस्थित मांडणी करून ते वापरण्यासाठी विविध पद्धतीने व विविध अंगांनी वाचण्यायोग्य असणाऱ्या मार्गाने उपलब्ध डिजिटल साहित्यसंग्रह.डिजिटल ग्रंथालय इतिहास थोडक्यात- व्हॅनेवर बुश वJCR lick Linderहे दोन योगदान करते यांनी डिजिटल लायब्ररीचे दर्शन एका शतकानंतर इंटरनेटच्या मोठ्या वाढीमुळे लक्षात आले .प्रथमयु एस ए, ए आर फोर्स ने 1967 मध्ये लागू केली .1972 मध्ये डायलॉग ही पहिली व्यावसायिक ऑनलाईन सेवा बनली.

भारतातील डिजिटल ग्रंथालय सुरुवात–

डिजिटल लायब्ररी म्हणजे एक मोठी शैक्षणिक भांडार आहे हा भारत सरकारचे शिक्षण मंत्रालयाच्या अंतर्गत एन एम ई आय एस टी -(नॅशनल मिशन ऑन एज्युकेशन थ्रू इन्फॉर्मेशन अँड कम्युनिकेशन टेक्नॉलॉजी) च्या साह्याने एन डी एल आय(नॅशनल डिजिटल लायब्ररी इंडिया) हा प्रकल्प अनेक विषयातील व कोणत्याही स्तरावरील सामग्री ठेवण्यासाठी तयार केले आहे हे एकलखिडकी प्लॅटफॉर्म द्वारे महत्त्वपूर्ण भारतीय डिजिटल आणि नॉन डिजिटल लायब्ररी एकत्रित करण्याच्या उद्देशाने प्रत्येक व्यक्तीसाठी केंद्रीय मनुष्यबळ मंत्री प्रकाश जावडेकर यांनी मोफत 19 जून 2018 रोजी सुरुवात केला.

याचा उपयोग मोफत करून घेता येतो नोंदणी केल्यानंतर प्रत्येकास ब्लॉग इन व पासवर्ड मिळतो .

39 भारतीय भाषा व 423 एकूण भाषा 100 दशलक्षाहून अधिक सामग्री प्रदान करत असलेला हा प्लॅटफॉर्म आहे.

याचे मुख्यालय - आयआयटी खरगपूर हे आहे.

वाचन साहित्य वृत्तपत्रे ,प्रबंध ,सीबीएससी व एनसीआरटी ,मंडळाची सामग्री व्हिडिओ ,ऑडिओ बुक ,प्रेझेंटेशन, सिम्युलेशन वगैरे अनेक प्रकारचे साहित्य उपलब्ध आहे.

शैक्षणिक साधने,ट्युटोरियल ,प्रश्नपत्रिका ऑडिओ व व्हिडिओ व्याख्याने इत्यादी उपलब्ध आहेत.

तसेच भारतातील व परदेशातील अनेक संशोधन संस्था मधील लेख नियतकालिके शोधनिबंध प्रबंध वृत्तपत्र नियतकालिके संग्रहअनेक प्रकारची साधने उपलब्ध आहेत इंटरनेटचा वापर करून आपण यावरील माहिती उपलब्ध करू शकतो .

सेवा –

- **NDLI Club**

संस्था आणि नोडल बॉडीजमध्ये NDLI क्लब स्थापन केले जातात आणि हे क्लब विद्यार्थ्यांना नियमित अभ्यासक्रमाच्या पलीकडे ज्ञान, कौशल्य आणि गुण विकसित करण्यासाठी कार्यक्रम आयोजित करतात जे त्यांच्या संबंधित व्यावसायिकक्षेत्रात त्यांच्या प्रगतीसाठी आवश्यक आहेत.

- **IDR - institutional Digital Repositor,**

संस्थात्मक डिजिटल भांडार (IDR) होस्टिंग सेवा

नॅशनल डिजिटल लायब्ररी ऑफ इंडिया (NDLI), राष्ट्रातील लोकांमध्ये ज्ञानाची निर्मिती, सहयोग आणि प्रसार सुलभ करण्यासाठी आणि प्रोत्साहन देण्यासाठी त्यांच्या सतत प्रयत्नांमध्ये विविध संस्था आणि संस्थांना त्यांची डिजिटल मालमत्ता तयार करणे व्यवस्थापित करणे, देखरेख करणे आणि सामायिक करणे यासाठी समर्थन दिले आहे.

संस्था आणि NDLI यांच्यातील हे ऐच्छिक सहकार्य मेटाडेटा आणि काही प्रकरणांमध्ये यासंस्थांकडून कॉपीराइट मुक्त मालमत्तेची संपूर्ण सामग्री उपलब्ध करून विद्यार्थी, शैक्षणिक संघ आणि संस्थांच्या व्यवस्थापनामध्ये वाचन, संशोधन आणि चौकशीच्या भावनेला प्रोत्साहन देण्याचा प्रयत्न करते. ' मोठ्या पोहोच आणि प्रसारासाठी भांडार.

IT संसाधनांमध्ये आव्हानेआणि मर्यादा असलेल्या संस्थांसाठी, NDLI समर्पित होस्टिंग URL, रिपॉझिटरी ॲप्लिकेशन (Dspace) कॉन्फिगरेशन सपोर्ट आणि स्टोरेज स्पेस प्रदान करण्यासाठी होस्टिंग आणि पायाभूत सुविधांचा विस्तार करते.तथापि, संस्थेला खालील बाबींमध्ये NDLI सोबत सहकार्य करावे लागेल:

IDR मध्ये प्रवेश करण्यासाठी संस्थेला एक समर्पित सार्वजनिक URL (प्रशासक वापरकर्त्याच्या क्रेडेन्शियल्ससह) प्रदान केली जाईल.

सामग्रीच्या व्यापक प्रसारासाठी NDLI रिपॉझिटरीमध्ये इन्स्टिट्यूशनल डिजिटल रिपॉझिटरी (IDR) ची कॉपीराइट मुक्त सामग्री (मुक्त आणि खुली) समाविष्ट करू शकते.

- **DPC - Digital Preservation center,**

डिजिटल संरक्षण केंद्र (DPC)

NDLI ने 2019 मध्ये सॉल्ट लेक येथे स्वतःचे डिजिटल संरक्षण केंद्र स्थापन केले आहे.सुरुवातीला, "प्रेसिडेन्सी ॲल्युमनी असोसिएशन" ची सामग्री तेथे डिजीटल करण्यात आली आणि NDLI मध्ये समाकलित केली गेली. यात काही मनोरंजक सामग्री आहे जसे की:प्रेसिडेन्सी कॉलेज रजिस्टरमध्ये 1858-1925 च्या पदवीधरांची यादी आहे.ओटेन ऑन नेताजी - सुभाषचंद्र बोस यांच्यावरील इतिहासाच्या प्राध्यापकाची कविता.बंकिम चंद्र चट्टोपाध्याय, प्रेसिडेन्सी कॉलेजच्या पहिल्या पदवीधरांपैकी एक, 1858-59 च्या वर्गाच्या उपस्थिती नोंदीमध्ये अनुपस्थित असल्याचे चिन्हांकित केलेदिवंगत नबनिता देब सेन यांनी संपादित केलेले "शरद ऋतूतील वार्षिक", माजी विद्यार्थ्यांचे जर्नलचे खंड.त्यानंतर 'ज्ञान ओ बिज्ञान' या प्रतिष्ठित बंगाली विज्ञान नियतकालिकाचे अंक डिजीटल करण्यात आले. बंगिया बिज्ञान परिषद ही एक विज्ञान संस्था आहे ज्याची स्थापना सत्येंद्र नाथ बोसयांनी 1948 मध्ये केली होती. स्थापनेपासून, बंगिया बिज्ञान परिषद बंगाली भाषेत "ज्ञान ओ बिज्ञान" नावाचे लोकप्रिय विज्ञान मासिक प्रकाशित करते.NDLI सध्या 1948 ते 2020 पर्यंतच्या विज्ञान मासिकाचे सर्व अंक होस्ट करत आहे.

"प्रेस इन्फॉर्मेशन ब्युरो, कोलकाता" द्वारे योगदान दिलेली काही पुस्तके आता स्कॅन आणि क्युरेट केली जात आहेत आणि लवकरच NDLI मध्ये समाकलित केली जातील.

उद्बोधन कार्यालयाने योगदान दिलेले "श्रीमद्भगबद्गीता" चे बंगाली भाषांतर एकत्रित होण्यासाठी तयार आहे.ईमेल ,बुलेटीन बोर्ड सर्विस ,फाईल ट्रान्सफर प्रोटोकॉल ,डब्ल्यू डब्ल्यू डब्ल्यू ,ऑटोमेटेड वेब सर्च इ. तसेच या वेबसाईटवर- DOAJ (Directory of open Access Journals,ही पाठशाला, ओ सी एल सी ,जे स्टोर, युरोपियन दि युरोपियन , प्रोजेक्ट गुटेन बर्ग, ओपन लायब्ररी ,दि ऑनलाईन लायब्ररी ,द ब्रिटिश लायब्ररी, वर्ल्ड डिजिटल लायब्ररी न्यूयॉर्क ,पब्लिक लायब्ररी इंटरनेट अर्काईज ,ट्रेडिशनल नॉलेज डिजिटल लायब्ररी, डिजिटल रिसर्च इन युरोपियन स्टडीज, इत्यादी अनेक साधने उपलब्ध आहेत.

NDLI ची संभाव्यता

* प्राथमिक शाळेपासून ते पदवीधर शाळेपर्यंत, शैक्षणिक साहित्य उपलब्ध आहे.

* 60 पेक्षा जास्त विविध प्रकारची अध्यापन संसाधने उपलब्ध आहेत

शिस्त

* आयटम जवळजवळ 70 भिन्न भाषांमध्ये प्रवेशयोग्य आहेत.
* 1.5 लाख लेखकांनी 15,00,000 पेक्षा जास्त तुकड्यांमध्ये योगदान दिले आहे.
* रेपॉजिटरी अनेक भारतीय संस्थात्मक भांडारांमधून डेटा एकत्र आणते.
* व्हिडिओ व्याख्याने, क्लासिक पुस्तके, जर्नलसह वाचन साहित्याची विस्तृत श्रेणी लेख, प्रबंध आणि ऑडिओ पुस्तके.
* संस्थात्मक नोंदणी देखील प्रवेशयोग्य आहे, जी विनामूल्य आणि पूर्ण करणे सोपे आहे.
* एकाच विंडोमध्ये शोध कार्यक्षमता. माहिती नुसार तयार केली जाऊ शकते

वापरकर्त्यांची शैक्षणिक पातळी.

* भाषा पर्याय, विविध स्तर आणि वैयक्तिक सेवा
* माहिती 24x7 आधारावर उपलब्ध आहे. वापरकर्ते डिजिटल संसाधने येथे प्रवेश करू शकतात कधीही आणि कुठेही.
* मेटाडेटा हा डेटा आहे जो वापरकर्त्यांना ओळखू शकतो, शोधू शकतो, अर्थ लावू शकतो आणि व्यवस्थापित करू शकतो

साहित्य

* प्रत्येक वस्तूसाठी, भिन्न आणि योग्य मानकांचा वापर केला जातो.
* Android साठी मोबाइल फोन ॲप देखील उपलब्ध आहे.

शनल डिजिटल लायब्ररी ऑफ इंडिया

NDLI ही एक सर्व-डिजिटल लायब्ररी आहे ज्यामध्ये विविध प्रकारच्या मेटाडेटा आहेत डिजिटल सामग्री, जसे की ई-पुस्तके, लेख, चित्रपट, ऑडिओ, प्रबंध आणि इतर शैक्षणिकसंसाधने, विविध शैक्षणिक स्तर आणिकौशल्ये वापरकर्त्यांसाठी. यात एकल-विंडो शोध आहे. वैशिष्ट्य जे विद्यार्थ्यांना कमीत कमी परिश्रमाने योग्य साहित्य शोधू देते व सर्वात कमी वेळ.

शालेय शिक्षण

भारतात, शालेय शिक्षणाचे चार टप्पे आहेत: निम्न प्राथमिक (वय 6 ते 10), उच्च प्राथमिक (वय 11 आणि 12), उच्च (13 ते 15 वर्षे) आणि उच्च माध्यमिक (17 आणि 18).

गरज व फायदे-:

विद्यार्थ्यांना कमी वेळेत कमी प्रयत्न व औपचारिक आणि अनौपचारिक शिक्षण घेताना स्पर्धा परीक्षा संशोधक व सामान्य शिक्षण घेणाऱ्यासाठी भिन्न प्रकारचे विद्यार्थी यांना कोठेही बसून माहिती उपलब्ध करून घेण्यासाठी तसेच अपंग विद्यार्थ्यांना तर सर्व शैक्षणिक स्तरावर समर्थन प्रदान करण्यासाठी तयार केले आहे व कोणत्याही प्रकारच्या वाचकांना याचा उपयोग करून घेता येतो. व या प्रयत्नामुळेच कोणीही माहिती पासून दूर राहणार नाही याची सोय होते.

व त्यामुळे बहुतांश ग्रंथालय ही आता डिजिटल म्हणजेच ग्रंथालयाचे डिजिटायझेशन होणे आवश्यक आहे.

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Role of Academic Libraries: In National Education Policy 2020

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Keywords: Libraries, New Education Policy, Digital Resources

Abstract

The National Education Policy(NEP) 2020 aims to transform the education system in India by focusing on holistic and multi-disciplinary education, promoting critical thinking, and creating a learner centric approach. The new policy focused on infrastructure, services and the working of the libraries. The new policy also includes Information Communication Technology (ICT) digital, online, unique kinds of facilities and services to all types of readers of the nation.

Introduction

EP-2020 refers to the New Education Policy of India that was announced on July 29, 2020. The policy aims to transform the Indian education system by introducing several changes at all levels of education, from primary to higher education

National Educational Policy 2020 is given by the Ministry of Human Resources and Development, Government of India, after a long research and development work on the old education policy and the current education need of the society. This is the first education policy of the 21st century to replace thirty four year old national educational policy i.e.1986 and modified in 1992. The new policy addresses the challenges faced by the Indian education system and align it with the changing needs of 21st century.India is continuously changing the system and has a key position in leadership on the global stage in terms of economic growth, social justice and equality, scientific advancement, national integration, cultural preservation and Universal high-quality Education. India is the second highest populated country in the world.

The national educational policy 2020 will be very useful for the country development.This National Education Policy 2020 is the first education policy of the 21st century. The aim of NEP 2020 is to address the many growing developmental imperatives of our country. This NEP policy proposes the revision and revamping of all aspects of the current education structure, including the regulations and governance, to create a new system that will be aligned with the inspirational goals of the 21st-century education system at the school level and higher education level.

Need of NEP 2020 in Libraries

Libraries can promote equitable access to education by formulating strategies to mitigate the digital divide and providing resources such as computer labs, internet connectivity, and diverse materials. A transparent and consistently enforced education policy is crucial for anation's progress.The NEP of 2020 in India highlights the importance of digital transformation in education. Libraries must adapt to the digital era and embrace technology to meet the dynamic needs of students and faculty.. Libraries, as important sources of information, should align their operations with these objectives and provide access to digital resources such as online databases, electronic books, and other educational materials. The

policy provides a framework for libraries to enhance their digital infrastructure, develop digital literacy programs, and leverage technology to optimize learning experiences.

Objectives of the study

Libraries play a vital role in the execution of the NEP 2020 in higher education in India. They serve multiple essential objectives that contribute significantly towards achieving NEP's goals in the higher education sector.The objectives pertinent to the function of libraries in implementing NEP 2020 in higher education in India are as follows.

Facilitating access to quality educational resources:

NEP-2020 emphasizes the importance of providing quality education to students. Academic libraries can support this objective by providing access to a wide range of educational resources, including books, journals, research papers, e-resources, etc.

Promoting research and innovation:

NEP-2020 aims to promote research and innovation in education. Academic libraries can support this objective by providing resources and facilities to researchers and students. Libraries can also collaborate with other institutions and organizations to promote research and innovation.

Supporting multi-disciplinary education:

NEP-2020 emphasizes the importance of multi-disciplinary education. Academic libraries can support this objective by providing resources related to different fields of study. Libraries can also organize interdisciplinary events and activities to promote collaboration between different departments and faculties.

Encouraging lifelong learning:

NEP-2020 emphasizes the importance of lifelong learning. Academic libraries can support this objective by providing resources and facilities for continuing education and professional development. Libraries can also organize workshops and events to promote lifelong learning.

Fostering digital literacy:

NEP-2020 recognizes the importance of digital literacy in the modern world. Academic libraries can support this objective by providing access to digital resources and tools. Libraries can also provide training and support to students and faculty members to develop digital literacy skills.

Role of Libraries

Academic libraries have a significant role in supporting the NEP 2020 by providing access to diverse and quality resources, promoting lifelong learning, facilitating research and innovation, fostering collaboration and networking, and enhancing digital literacy skills.

To build an education for an individual, schools and libraries must provide a safe, welcoming place, where he/she/is intellectually stimulated and where the library becomes a learning hub.where the learning environment exists and can engage and provide a variety of learning experiences to the students. Where the focus is on the 21st-century skills with the dispositions that form the core of the individual's character and personality. Librarians instructional practices and curriculum, therefore, must include a variety of dispositions in an informal setting to help students develop the dispositions cited in the NEP are: Values like empathy, respect for others, cleanliness, courtesy, democratic spirit, the spirit of service, responsibility, pluralism, equality and justice.

Challenges of academic library in achieving goal of NEP 2020

National Education Policy 2020 (NEP-2020) is a comprehensive policy that aims to transform the Indian education system. Academic libraries play an important role in achieving the goals of NEP-2020, but they face several challenges. Some of the challenges are:

Changing Needs of Users:

The NEP-2020 focuses on developing critical thinking, problem-solving, and communication skills, which require a diverse range of resources and services. Academic libraries must adapt to the changing needs of their users and provide the resources and services that support the development of these skills.

Outreach and Engagement:

Academic libraries need to reach out and engage with the student and faculty community to understand their needs and promote their resources and services. However, outreach and engagement require significant resources and efforts, which can be a challenge for libraries with limited staff and budgets.

Funding:

Academic libraries require a significant amount of funding to purchase and maintain resources, upgrade technology, and provide services. However, libraries often struggle to secure sufficient funds from their institutions or government.

Limited Physical Space:

Academic libraries often have limited physical space to store their collections and provide study spaces. This limitation poses a challenge as they need to balance the physical space requirements with the demand for services.

Digital Divide:

The NEP-2020 emphasizes the importance of digital resources and online learning, but not all students have access to the internet and digital devices. This digital divide creates a challenge for academic libraries as they need to ensure equitable access to their resources and services.

Suggestions for the Success of NEP-2020 in the Academic Library

NEP-2020 encourages academic libraries to promote research, innovation, and lifelong learning. In this context, the following discussion points and suggestions can be helpful for academic libraries to achieve the goals of NEP-2020:

Creating a culture of innovation and experimentation:

NEP-2020 encourages experimentation and innovation in education. Academic libraries should embrace this culture by adopting new technologies, exploring new methods of service delivery, and collaborating with diverse stakeholders. The libraries can also create spaces for innovation and creativity, such as maker spaces, and encourage users to experiment with new ideas and concepts.

Strengthening digital infrastructure:

NEP-2020 emphasizes the importance of digital technologies in education. Academic libraries should focus on building a robust digital infrastructure to support e-learning and remote access to library resources. They should provide access to digital resources such as e-books, e-journals, databases, and online archives and create platforms for digital collaboration and communication.

Strengthening outreach and engagement:

Academic libraries should engage with their users and communities through outreach programs and activities. They can organize book clubs, reading groups, and other cultural

events to promote reading and literacy. The libraries can also partner with schools, colleges, and community organizations to expand their reach and impact.

Promoting research and innovation:

Academic libraries should facilitate research and innovation by providing access to the latest research tools and resources. They should also offer training and support for research methods, data analysis, and citation management. The libraries can collaborate with research institutions and organizations to create repositories of research data and promote open access to research findings.

Fostering lifelong learning:

Academic libraries should create programs and initiatives to promote lifelong learning among students, faculty, and the community. They should provide access to a range of learning resources such as textbooks, reference materials, and multimedia resources. The libraries can also organize workshops, seminars, and conferences to enhance the skills and knowledge of library users.

Conclusion:

NEP 2020 recognizes the need for academic libraries to provide access to digital resources, including e-books, journals, and databases, to support teaching, learning, and research. The policy emphasizes the importance of open access to research outputs and encourages academic libraries to promote open access publishing and to support the development of institutional repositories. Furthermore, the NEP 2020 highlights the importance of academic libraries in promoting interdisciplinary research and collaboration among faculty, students, and researchers.The policy recognizes academic libraries as key players in promoting research and innovation and encourages them to collaborate with other institutions to promote interdisciplinary research and innovation.

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The Impact of Artificial Intelligence on Research

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Introduction:-

Artificial Intelligence (AI) has rapidly evolved from a niche field of study to a transformative force across various industries. Its impact on research is profound, revolutionizing how scientists approach problems, conduct experiments, and analyse data. Here are some key areas where AI is making a significant difference in research:

1. Data Analysis and Interpretation:-

One of the most significant contributions of AI to research is in the realm of data analysis. Traditional methods of data analysis are often time-consuming and limited in their ability to handle large datasets. AI algorithms, particularly machine learning (ML) and deep learning, can process vast amounts of data quickly and identify patterns that might be missed by human researchers. This capability is particularly valuable in fields like genomics, where the volume of data is enormous.

2. Accelerating Discoveries:-

AI-powered tools can speed up the discovery process in various fields. For example, in drug discovery, AI can predict how different compounds will interact with biological targets, significantly reducing the time required for experimental testing. Similarly, in materials science, AI can help identify new materials with desirable properties by predicting molecular behaviours and interactions.

3. Enhanced Precision and Accuracy:-

AI enhances the precision and accuracy of research findings. In fields such as astronomy, AI algorithms are used to analyse images and detect celestial bodies or phenomena that might be too faint or complex for traditional methods. This leads to more accurate mapping of the universe and a better understanding of cosmic events.

4. Personalized Research:-

AI enables personalized research approaches, particularly in healthcare. By analysing patient data, AI can help develop personalized treatment plans and predict individual responses to various therapies. This not only improves patient outcomes but also aids in the design of more targeted and effective clinical trials.

5. Automation of Repetitive Tasks:-

Many research tasks are repetitive and time-consuming. AI can automate these tasks, freeing researchers to focus on more complex and creative aspects of their work. For example, AI-driven robots can perform high-throughput screening in laboratories, manage data entry, and even conduct preliminary analysis of experimental results.

6. Cross-Disciplinary Innovation:-

AI facilitates cross-disciplinary innovation by providing tools that can be applied across various fields. For instance, natural language processing (NLP) can analyse scientific literature across disciplines, identifying trends and connections that might not be apparent within a single field. This promotes interdisciplinary collaboration and innovation.

7. Ethical and Bias Considerations:-

Despite its many benefits, the integration of AI in research also raises ethical concerns. Bias in AI algorithms can lead to skewed results, particularly in social sciences and healthcare research. It is crucial for researchers to ensure that their AI tools are transparent, unbiased, and ethically designed. This includes using diverse datasets and regularly auditing AI systems for bias.

8. Democratization of Research:-

AI has the potential to democratize research by making advanced tools and techniques accessible to a broader range of researchers. Open-source AI platforms and cloud computing services allow researchers from smaller institutions or developing countries to access cutting-edge technology and contribute to global research efforts.

Artificial Intelligence (AI) has rapidly evolved from a niche field of study to a transformative force across various industries. Its impact on research is profound, revolutionizing how scientists approach problems, conduct experiments, and analyze data. Here are some key areas where AI is making a significant difference in research:

1. Data Analysis and Interpretation:-

One of the most significant contributions of AI to research is in the realm of data analysis. Traditional methods of data analysis are often time-consuming and limited in their ability to handle large datasets. AI algorithms, particularly machine learning (ML) and deep learning, can process vast amounts of data quickly and identify patterns that might be missed by human researchers. This capability is particularly valuable in fields like genomics, where the volume of data is enormous.

2. Accelerating Discoveries:-

AI-powered tools can speed up the discovery process in various fields. For example, in drug discovery, AI can predict how different compounds will interact with biological targets, significantly reducing the time required for experimental testing. Similarly, in materials science, AI can help identify new materials with desirable properties by predicting molecular behaviors and interactions.

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Conclusion:-

The impact of AI on research is transformative, offering unprecedented opportunities to advance knowledge and solve complex problems. By enhancing data analysis, accelerating discoveries, improving precision, and automating repetitive tasks, AI is redefining the research landscape. However, it is essential to address ethical considerations and ensure equitable access to AI technologies to maximize their benefits. As AI continues to evolve, its role in research will undoubtedly expand, leading to even more ground-breaking discoveries and innovations.

The impact of AI on research is transformative, offering unprecedented opportunities to advance knowledge and solve complex problems. By enhancing data analysis, accelerating discoveries, improving precision, and automating repetitive tasks, AI is redefining the research landscape. However, it is essential to address ethical considerations and ensure equitable access to AI technologies to maximize their benefits. As AI continues to evolve, its role in research will undoubtedly expand, leading to even more ground-breaking

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IMPACT OF DIGITAL TECHNOLOGIES ON LIBRARIES AND INFORMATION SCIENCES

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Introduction

The Digital library aims to give access to information' on demand' anyhow of the position of the computer, where it's stored. The part of digital libraries in the present day information terrain and new challenges and pledges for library services especially in the India. A Digital Library is to be an electronic collection of real or virtual coffers, which may also be available away. These coffers must be whole workshop with which human can have a complete cognitive effective engagement. A Digital library may allow either online or offline access to the rudiments it organizes and houses, and may include multimedia as well as multilingual data. Although accessible online, a digital library isn't identical to a website or a portal still while doors, specialized websites and search machines cover a wide range of subject areas, digital libraries are more hardly focused around one or a specific group of disciplines.

Concept of Digitization

According to International Encyclopedia of Information & Library Science(2003) " Digitization of information accoutrements is the process of converting analogue information to a digital format "(p. 138) currently, libraries borrow digitization with the purpose of conserving information and dispersion knowledge. There are numerous reasons for libraries to go for digitization but the main profit is to save the rare and fragile objects; especially these particulars of high quality similar as old calligraphies. As the material digitized can be fluently penetrated by anyone; libraries, institutions, individualities; from anywhere at any time without hindrances.

Fabunmirecognizes three reasons for digitization

- preservation of risked library coffers,
- effectiveness of information hunt medium,
- enhancement of access to library coffers.

Whilst, Mauyraadds to these

- the new generation requirements,
- the cost reduction, and
- the preservation of the purity of the terrain

Information Technology refers to anything which is related to calculating technology. Presently maturity of libraries are easing with web OPAC,E-journals,E-books, Depositories, Digitization & Digital Library. The perpetration of information technology in the libraries has demanded new forms of library services to get further stoner satisfaction. Digital library service has evolved after the perpetration of Information Technology in the library and information centers. thus to study of use of information technology andE-resource in Academic libraries I choose this content for exploration paper.

Requirements of information technology on Library Services

Stated that "to increase the productivity of advanced education in university & sodalities, it should case to be class centered& textbook book centered. It should come-centered& there should be a close & willing cooperation between Libraries, scholars & preceptors." one of the primary points of information service is putting knowledge to work. In order to put knowledge to work, one has to understand not only the characteristics of knowledge but also to know how knowledge is observed & assimilated, the provocation it induces & how it must be canalized for utmost effective & effective application. Therefore application of information is principally a communication process. Due to information explosion it's veritably delicate to handle large information with traditional library tools like homemade roster, bibliographies, etc. In moment's library terrain, to give the right way, isn't possible without information technology operation. Information technology has come necessity and need.

Need ofE-Resources in LibraryE-Resources enable the librarian to give better service to the stoner community? The many considerable points are mentioned bellow;

- To get access to an information source by the further than one druggies.
- E-Resources can be searched snappily.
- These can be set up fluently by the stoner.
- These coffers can be stored in huge quantum.
- quantum of time spent on theE-Resources use.
- Analyses the purpose of usinge-resources by replier
- Know different types ofe-resources generally used by repliers
- To collect, store, organize information in digital form.

Characteristics ofE-Resources

- Access to every document by anyone; from any where
- Retrieval ofe-resources is quicker than print coffers
- The druggies can be guided to the document by furnishing a link.
- Easy to search the textbook
- The collection available in electronic format can be of any media.
- Power not that important
- In electronic terrain the commerce between stoner and librarian is frequent.
- No defined stoner group
- The software can help the druggies in reacquiring the asked information; hardly intermediate can help druggies.

Impact of information technology on Library Services

In old days library was considered as bare storage of knowledge. But these days information technology has reshaped the functioning and services of libraries. The conditioning which was carried out manually are being carried out effectively and easily with the help of information technology. Information technology has changed the way of accession, specialized processing, journal subscription, and rotation conditioningetc. in such a way that library compendiums can get asked information and services effectively in shortest time with lower man power involvement. Information has always been high factor for the development of society and is frequently regarded as a vital public resource. Information services try to meet this ideal. Information has come important part of our lives and should be available when demanded. Information services are generated using new tools and ways to grease the right druggies to the right information. This is the information age because information technology is growing presto. Traditional libraries are changing their part and functions

according to the new trends in the society. Library is furnishing information through the computers and internet. It can be said that without the help of the computers and internet any library information Centre can not satisfy the druggies.

Conclusion

Information technology has converted library services encyclopedically. Utmost current information are recorded in electronic format, Information Technology has also contributed immensely to the performance of librarians in the discharge of their duties similar as in cataloguing, reference etc. Information technology has also made an impact on the waking services, substantially by furnishing speedy access to information that appears originally

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IMPACT OF INTERNET IN ACADEMIC LIBRARIES

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ABSTRACT :

At the early phase internet as known now a days, was not conceived as information superhighway or networking of computer networks to swim in the cyberspace. Internet contains a large amount of information resources from all fields. However, the information available on Net may be reliable and authentic in nature. In the present age, the librarian as a custodian of knowledge also owns the responsibility to weigh the information resources available on net in addition to his tradition duties. Information plays a significant role in the socioeconomic, scientific and technological development of a country. The development of computers and communication technology has brought radical changes in the modes and methods of information, storage retrieval and transmission. Computer technology reprographic technology, audio-visual media. Telecommunication technology and information technology are the effective technologies for library and Information services. The advent of internet and its world wide web has created a greater impact on the library and information centers to have access to various information sources and disseminate it to users. The services available in internet can be utilized by the library and information centers for acquisition, collection development and various services. The paper discusses the importance of the internet. And its impact on library and information services.

Introduction :

Library is a social structure to serve the -community. By its definition it is expected to provide the documents to its users. Thus the function of a library is to develop a document collection to meet the requirements of its clientele. But in the context of recent developments in IT, a mere development of collection is meaningless because much of the information can be accessed through various networks and the users can be satisfied. In this context an attempt has been made to discuss the potentials of networks, particularly the Internet.

Information is considered to be fundamental resources. Social development and for the progress of individuals. The modern society is information based society. Information is an ingenious sources of scientific and economic progress in the present information age, internet has made it possible that almost any one put information on the Web and hence the quality of information sources various tremendously. However the quality and the authenticity of the internet resources always remain in question. Therefore, there should be some criteria for evaluating the internet information resources. Communication and information access technologies are bringing revolutionary changes in the modes and methods of information storage, retrieval and transmission. In olden days the function of the library were merely the collection and preservation of the documents, but in the modern age the books are not our means of preservation but also for dissemination of the information contained in them. Now a day most of the function carried out by the libraries have been modernized with new technology.

Importance of Internet to Libraries :

Internet has become a part of library environment today, it has added a great value to the library and information services.

Internet is playing an important role in transforming the library system and the way in which we view the library resources and the library services with the help of web based library services in developed countries. Internet provides links to various library sites specializing in almost every topic and they can be accessed directly from part of the world.

The net there fore, provides instant access to billions of information sources, which includes books, reports, journals, video, films, sound receding and wide variety of other sources.

Characteristics of Internet Resources :

The salient characteristics of the internet resources are as follows :

- Resources are not indexed or ranked using uniform techniques.
- No use of control vocabulary system for indexing
- Time lag in indexing resources by search engines.
- Calls for new security mechanism because Internet is a public media.
- Troubles in network affect the access to information.

Changing Role of Librarians :

Recent developments like internet and the emergence of digital libraries have forced to change the way the librarian functions at present. They have to think of 'access' rather than simply 'possession' of documents.

Every librarian has to keep himself aware of how to search information in the networks, besides he has to act as a navigator/ intermediary, etc. His function is not to identify a document but to deliver the actual information to cater to the needs of the users.

Internet and Collection Development :

Internet is a network of networks providing access to the remote databases full text or bibliographic) housed elsewhere. Nobody owns Internet. It is a co-operative effort.

Previously, it was on-line information retrieval using remote login to a fewer number of databases pertaining to a subject domain, but now due to internet was can have access to a large number of databases both bibliographical and full text located anywhere in the world.

Internet in Catering Information Needs of Rural Masses :

Rural people are not only in need of information regarding for rural people, the internet shall be a valuable communication tool to add to the current suit of communication took which typically includes the telephone, mail and the mobile. They now have an extremely powerful and adaptable communication tool that can reduce isolation and provide access to a vast range of services and information it can be a very convenient method for quickly accessing a large volume of information without being impeded by geographic barriers.

Internet Among College Libraries :

Internet is not a part of library. The purpose of which it is used general sending e-mail etc. use of internet purely for academic reasons is absent in a nut shells the internet is being uses like a cyber café without any financial implications.

Internet and its use in Library :

Physically the internet is a lot of computers connected to each other taking a common language or protocol known as transmission control protocol / internet protocol (TCPIP) basically the internet is used for following activates.

User Education on the Internet :

As the web is increasingly becoming the first place that students will look for materials the role of information professionals as intermediary will also grow in importance. As libraries working with this medium it is up to us to introduce the strengths and weaknesses of the internet as any other library resource during out user education programme.

Formation of Acceptable Internet use Guidelines :

Educational institutions play a unique role in promoting intellectual freedom internet access has to be made available to students faculty and staff. They serve as a point of access to information and ideas and as a learning laboratory for students as they develop the critical thinking and problem solving skills needed in a pluralistic society. The internet allows such institutions to expand and expedite access to information. The students faculty and staff shall be allowed to access internet resources. The college shall not be held accountable for the accuracy or decency of data retrieved via the internet.

Communication :

In the modem world of information explosion, the effective and speedy communication of information is very necessary. The internet provides electronic message and exchange services through electronic mail popularly known as E-mail. E-mail is used to send messages to other people or programmers on other computers. It is the most extensive and commonly used service on internet.

Resource Sharing In Libraries Through Internet :

Internet is playing a very significant role in the resource sharing. The Internet Provides a whole host of speed of publication speed of access wide distribution sharing of information resources feed back online and others. The Internet has enabled global connectivity of computer and techniques for net worked information Provision and access E-mail, FTD, TICNET, USENET, World Wide Web etc, are examples. These tools have been used for Providing access to a variety of scholarly Information Sources and tables of contents, preprints, technical reports, software and data achieves, among libraries serve co-operation by Providing for the sharing and exchange of bibliographic and reference services and text Document Delivery is a very important facility of the Internet. Which has given new meaning to the inter library loan service availability of a document en be Known by accessing OPACS on the Internet .He has facilitated the speedy delivery of full text articles on the net at much cheaper rate.

Impact of Internet :

Yet mother development in it application is the emergence of internet its impact on libraries is considerable. Internet is popular known as the network of networks. It is being used world-wide for personal and group communication, file transfer and for accessing databases on remote computers.

Information sources on internet one all stored as computers files of some kind or the other they have a location on at least on internet site, may be duplicated at other site in such a case, it is called a minor image of the original.

These files on the internet contain varied materials, sources like electronic journals, pre-prints, technical reports, numerical and graphical data, software, campus-wide information system. Databases, library catalogues, educational materials, company profiles, patents, standards information on societies, institutions, associations, etc. one available on internet.

The internet has potential to improve communications efficiency and overall productivity of uses it facilitates.

- Better, Faster, timelier communication with colleagues and sources of information.
- Enhanced collaboration.
- Better dissemination of Information.
- Instantaneous peer review.
- Reduction in barriers to publication.
- Access to public databases.
- Free access to abstracts and or tables of contents of periodical literature.

Basic Facilities of Internet :

Internet simply can be defined as the global network of network. It is a network of interconnected worldwide webs of different types of orgnizations like universities, business define and science organization etc. It has emerged not only as an important search device of the research and development community but also of political activists, farmers, librarians, journals, scientists and many other.

Disadvantages of Internet :

1. Noise in telecommunication
2. Slow response line
3. Lack of expertise to use the technology
4. Poor quality of data and poor organisation of the information, one may lost in the net.
5. Lack of single protocol, lack of uniformity, lack of proper indexing etc.

Role of Libraries and Librarians :

In this changing scenario, libraries and librarians will continue to play on important role in handling traditional/conventional and electronic resources. Unless this is recognised and acted upon other professions and professionals will usurp own roles and functions. Libraries must be quick to recognise and realise the advantages of it and must try to adapt and adopt it for their operations. Nevertheless, in attempting to introduce new technologies, regardless of how marvelous they may be and regardless of how the enable us to create new innovative services one should not forget they are only the tools of our trade. We should not be over whelmed and over powered by them.

Role of librarians will have to initiate the transition to an access based model of service based upon electronic networks that will provide bibliographic, numeric and full text information to scholars and researchers. They will have to creation environment where access to collective scholarly resources super cedies the historic quest for the great comprehensive collection other roles identified are that of gatekeeper, one who identifies that potion of the universe of information resources that is likely to be of greatest value to a particular user or group of users whatever happens to the library as an institution, shrives believes that clearly gatekeepers of this type will still be needed in the future.

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H-Index: An Useful Tool in Research Metrics

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Abstract:

The h-index is an index that attempts to measure both the productivity and citation impact of the published work of a scientist or scholar. The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other publications and on the distribution of citations received by a given researcher's publications. The h-index is not only important for individual users but it is also beneficial for the scientific research institutions, universities and main journal editors. Present paper focus on the concept of H- index, along with its pros and cons and it also suggest some ticks to improve h-index.

Keywords: Research Metrics, Scientific Productivity, H-Index.

Introduction:

Now days, biblometrics and research metrics these two terms found as a corollary of each other. Research Metrics a newly evolved concept, which is the quantitative analysis of scientific and scholarly research outputs and their impacts. Research Metrics include a variety of measures and statistical methods for assessing the quality and broader impact of scientific and scholarly research. It also tracks the impact of researcher in the specific field and provides insight into the influence of specific journal publications, individual articles, and authors. Since a very long time, the only tool for assessing journal performance was the Impact Factor. Now days,there are a range of different research metrics available. From the traditional Impact Factor range of research metrics slanted towards Altmetrics, h-index, and beyond. Research metrics are the fundamental tools used across the publishing industry to measure performance, both at journal- and author-level. For the evaluation of individual impact of research work of a scientist, an effective tool which can easily computable the achievements of the scholar's research paper in form of its usage. H-index is such tool to measure the impact of research publication of a scholar.

H-Index:

. The h-index is an author-level research metric, which attempts to measure both the scientific productivity and the apparent scientific impact of the scientists. The h-index evaluates the cumulative scholarly impact of an author's performance. It measures the quantitative (productivity) and qualitative (citations) research work of a researcher as a single number meaning that neither few papers which are highly cited nor too many papers with very few citations will produce a high h-index. The concept h-index is based on the set of scientists most cited papers and the number of citations these papers received in others people's publications. The index can also be applied to the productivity and impact of a group of scientists.**(Sangam, &Mogali, 2009).**The concept of h-index is evolved by JorgeE.Hirsch,

Professor of Physics belongs to University of California. He published an article which describing the h-index, he called it as "a useful index to characterize the scientific output of the researcher." Hirsch proposes a scalar index, an original simple new indicator to characterize the cumulative impact of the research work of individual scientists. It is the highest number of publications of the scientists that received 'h'or more citations.

According to Hirsch, "A scientist has index 'h'if 'h' of his/her Np papers have at least h citations each and the other (Np-h) papers have no more than h citations each".**Hirish(2005).**In other words, a scholar with an index of h has published h papers each of which has been cited in other papers at least h times. The first part of definition counts that number of papers which have minimum the same number of citations for each papers and that number is postulated to be the exact value of h. The second part of the definition considers the rest of the papers published by the scholars. These papers are the sum of the papers minus h papers and each of them does not have equal or more citations than h papers. (**Rajesh Singh)**Eg an h-index of 20 tells us that an author has written 20 papers which have each been cited at least 20 times.In the given definition, the term NP represents number of papers of a scholar.

How to calculate H-Index?

In order to calculate the h-index there are databases which often show you how an article has been cited. There are three databases in which you can easily see how a person has been cited , these database are namely:

1. Web of Science
2. Scopus
3. Google Scholar

Publish or Perish is a free software program that calculates h-index for authors who do not have a profile account in Google Scholar. The calculation of h-index may be different in different databases or resources because each database covers different journals and years of indexation meaning that the same author will not have same h-index value across all databases. The publication record and citation record of an individual denotes the usefulness of his or her research. This information includes the number of papers (Np) published over number of (n) years, the number of citations (Nc) for each paper (j), the journals where the papers were published, their impact parameter, etc. Google Scholar Citations provide a simple way for authors to keep track of citations to their articles. You can check who is citing your publications, graph citations over time, and compute several citation metrics.The h-index can be calculated using Google Scholar. In the Web of Science h-factor only scientific articles published in journals which have ISI-recognition (determined by Thomson-Reuters) are considered citable (so not articles in other journals, chapters in books, etc.). In the Scopus h-factor a larger pool of journals is included.

Example of H-Index:

Author: A

Papers										0	1	2
No. of Citations	3	7	4	6	7	2						

Author: B

Papers		2								0

No. of Citations	2	8	1 6							

In the first example, author A written total 12 papers to his credit. If we go through these details, we found that author A has written at least 8 research papers and these 8 research papers has at least 8 citations. In other words, out of his total papers there are 8 papers which received minimum 8 or more citations hence h index of this author can be treated 8 in the above example. The 9th paper or 9 is not h index because 9th paper does not receive 9 or more citations.

In the second example, author B written total 10 papers to his credit. If we go through these details, we found that author B has written at least 5 research papers which having has at least 5 or more citations. In other words, out of his total papers there are 5 papers which received minimum 5 or more citations. Hence h index of this author can be treated as 5.

Applications of H-index:

Jorge Hirsch, suggested that the h-index will be applicable at the micro level that is, as a measure to quantify the scientific output of a single researcher. The h-index can be used not only for the lifetime achievements of a single researcher but can be applied to any publication set.

Advantages of H-index

- H-index combines a measure of quantity (publication) and impact (citations).
- Assistance while making decisions about promotions, fund allocations and awarding prizes. Because it allows us to characterize the scientific output of a researcher with objectivity.
- The H-index can be easily obtained by anyone with access of science and in addition it is easy to understand.
- It performs better than other single-number criteria commonly used to evaluate the scientific output of a researcher (impact factor, total number of documents, total number of citations, citation per paper rate and number of highly cited papers). **(Costas and Maria, 2007).**

Disadvantages of H-index

- In typical 'h' values, there are inter-field differences due to differences among fields in productivity and citation practices. Soit is difficult to compare on h-index base scientists from different disciplines.
- The h-index depends on the duration of each scientist's career because the pool of publication and citation increases over time.
- Highly cited papers are important for the determination of the h-index, but once they are selected it belongs to top h papers, it is unimportant that numbers of citations they receive.
- Artificial increase in the number of self-citations or other similar kind of practices may increase for achievement of better h-index. In short, changes in the publishing behavior of scientists may found.
- There are also technical limitations, such as the difficulty to obtain the complete output of scientists with very common names, or whether self-citations should be removed or not.
- **How to Improve h-index**

(Masic,2016) in his research paper highlight some points which will found helpful to increase the h-index.h-index has become an important measure of career development. A good way to increase citation index is self-citation. To use more number of self-citations can double the h-index very fast. The citation should be relevant but irrelevant citation can also increase h-index.Some practices like double publication of the some paper for a conference, and later with slightly different name in a paper, can also increase citation index. Both papers should have many self-citations. Another important way is cooperation with colleges. If you cite your college and he also cites you then bothresearchers significantly increases of number of citations. This cooperation can be expanded to a larger unit of people, promoting larger scientific communities and increasing the value and number of citations considerably. Collaboration with a famous first author can gain more citation. Every time your co-author gets cited, or self-cites, you also get cited.Attending the conferences and research meetings may help you to promote your work and search for new collaboration opportunities. Writing a blog can also be the way to promote your work. Whatever work done by your same should be available for search and download. The paper should be searchable, that means that paper can be found using the search tools like Google Scholars, PubMed, ResearchGate, etc. Mostly give the emphasize to Publish your work in open access journals.With this way h-index can be increased more or less manner.

Conclusion:

While calculating the h-index, both quantity and impact of publications are taken into account.But the number of publications plays a very important role, since it is the maximum h-index an author can obtain. The h-index tends to underestimate the achievement of scientists with a "selective publication strategy", that is, those who do not publish a high number of documents but who achieve a very impaortant international impact.

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आर्टिफिशियल इंटेलिजेंस (AI) और उच्च शिक्षा: एक विश्लेषण

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प्रस्तावना :

एक तकनीकी क्षेत्र है जो मशीनों और सॉफ़्टवेयर को मानव जैसी बुद्धिमत्ता और सोचने की क्षमताओं से लैस करता है। इसका उद्देश्य कंप्यूटर और अन्य मशीनों को ऐसे कार्यों को निष्पादित करने के योग्य बनाना है जो सामान्यतः मानव बुद्धि की आवश्यकता होती है, जैसे कि समस्या सुलझाना, निर्णय लेना, और सीखना।

आर्टिफिशियल इंटेलिजेंस (AI) का इतिहास:

1. प्रारंभिक अवधारणाएँ और खोजें (1950-1970):

- **1950:**एलेन ट्यूरिंग ने "ट्यूरिंग टेस्ट" का प्रस्ताव किया, जो AI की एक महत्वपूर्ण अवधारणा बन गई। इसका उद्देश्य यह था कि मशीनें मानव जैसी बुद्धिमत्ता प्रदर्शित कर सकें।
- **1956:** "डार्टमाउथ कॉन्फ्रेंस" को AI के जन्म के रूप में माना जाता है, जिसमें जॉन मैकार्थी, मार्विन मिंस्की, नाथनियल रोचेस्टर और क्लेमेंट ड्यूरिंग ने AI के अध्ययन की शुरुआत की।

2. प्रारंभिक AI विकास (1970-1990):

- **1960 और 1970:** AI के शुरुआती वर्ष में, विशेषज्ञ प्रणालियाँ (expert systems) विकसित की गईं, जो विशेष क्षेत्रों में निर्णय लेने में मदद करती थीं। उदाहरण के लिए, MYCIN नामक एक चिकित्सा सलाह प्रणाली।
- **1980:** "AI सर्दी" का दौर आया, जब AI अनुसंधान में मंदी आ गई और परियोजनाओं को अपेक्षित परिणाम नहीं मिले।
- **1987-1993:** AI में पुनरुत्थान हुआ, विशेष रूप से "न्यूरेल नेटवर्क" और "डिप लर्निंग" के विकास के साथ।

3. आधुनिक AI युग (1990-वर्तमान):

- **1997:** IBM का डीप ब्लू सुपरकंप्यूटर ने शतरंज के विश्व चैंपियन गैरी कास्परोव को हराया, जिससे AI की क्षमता की पुष्टि हुई।
- **2000 के दशक के मध्य:** AI में मशीन लर्निंग और बिग डेटा का उपयोग बढ़ा, जिससे AI के अनुप्रयोगों में तेजी से वृद्धि हुई।
- **2011:** IBM का वाटसन ने "जेपार्डी!" में जीत दर्ज की, जो AI की भाषा समझ और सामान्य ज्ञान की क्षमता को दर्शाता है।
- **2018 और उसके बाद:** AI में प्राकृतिक भाषा प्रसंस्करण (NLP) और अन्य उन्नत तकनीकों के क्षेत्र में महत्वपूर्ण प्रगति हुई, जैसे कि गूगल के बर्ट और ओपनएआई के GPT मॉडल।

4. वर्तमान और भविष्य (2020-वर्तमान):

- AI अब विभिन्न क्षेत्रों में, जैसे कि चिकित्सा, वित्त, शिक्षा, और परिवहन में महत्वपूर्ण भूमिका निभा रहा है।
- AI का भविष्य में और भी अधिक अनुप्रयोग, नैतिक मुद्दे और समाज पर प्रभाव होंगे, जिससे इसके विकास और प्रबंधन के तरीकों को समझने की आवश्यकता है।

इस प्रकार, AI का इतिहास विभिन्न युगों में महत्वपूर्ण घटनाओं और खोजों से भरा हुआ है, जिसने आज के अत्याधुनिक AI प्रणालियों की नींव रखी है।

आर्टिफिशियल इंटेलिजेंस (AI)

एक कंप्यूटर विज्ञान की शाखा है जो मशीनों को "बुद्धिमत्ता" देने का प्रयास करती है। इसका मुख्य उद्देश्य कंप्यूटर सिस्टम को ऐसी क्षमताएँ प्रदान करना है जो सामान्यतः मानव बुद्धि से जुड़ी होती हैं, जैसे कि सीखना, सोचने, समझने और निर्णय लेना। यहाँ AI की कुछ मुख्य विशेषताएँ और अवधारणाएँ दी गई हैं:

1. AI की परिभाषा:

आर्टिफिशियल इंटेलिजेंस (AI) वह तकनीक है जिसके माध्यम से मशीनों और कंप्यूटर सिस्टम को मानव जैसी बुद्धिमत्ता और सोचने की क्षमताएँ प्रदान की जाती हैं। AI का उद्देश्य ऐसे सिस्टम विकसित करना है जो सामान्यतः मानव बुद्धि की आवश्यकता वाले कार्य कर सकें, जैसे कि समस्या सुलझाना, निर्णय लेना, और भाषा को समझना।

AI की परिभाषाएँ विभिन्न संदर्भों में

1. **शोध पत्रों और अकादमिक संदर्भ:**
   - **"आर्टिफिशियल इंटेलिजेंस: ए मॉडर्न एप्रोच"** (Stuart Russell और Peter Norvigद्वारा):
     - "आर्टिफिशियल इंटेलिजेंस (AI) उन एजेंटों का अध्ययन है जो वातावरण से परसेप्ट प्राप्त करते हैं और क्रियाएँ करते हैं। AI का लक्ष्य ऐसे सिस्टम बनाना है जो ऐसे कार्य कर सकें जो सामान्यतः मानव बुद्धि की आवश्यकता होती है, जैसे कि प्राकृतिक भाषा को समझना, पैटर्न की पहचान करना, समस्याओं का समाधान करना, और निर्णय लेना।"
   - **संदर्भ:** Russell, S. J., &Norvig, P. (2010). *Artificial Intelligence: A Modern Approach*. Pearson.
2. **तकनीकी वेबसाइटों पर परिभाषा:**
   - **MIT Technology Review**के अनुसार:
     - "आर्टिफिशियल इंटेलिजेंस एक कंप्यूटर विज्ञान की शाखा है जिसका उद्देश्य ऐसे मशीनों का निर्माण करना है जो बुद्धिमान व्यवहार दिखा सकें। AI सिस्टम मानव संज्ञानात्मक कार्यों की नकल करने के लिए डिज़ाइन किए जाते हैं, जैसे कि सीखना, समस्या-समाधान, और नई स्थितियों के अनुसार अनुकूलन।"
   - **संदर्भ:***MIT Technology Review*, What is AI?
3. **AI के संस्थापक द्वारा परिभाषा:**
   - **John McCarthy**, जिन्होंने AI शब्द को गढ़ा:
     - "आर्टिफिशियल इंटेलिजेंस एक ऐसा विज्ञान और इंजीनियरिंग है जिसका उद्देश्य बुद्धिमान मशीनों का निर्माण करना है, विशेष रूप से बुद्धिमान कंप्यूटर प्रोग्रामों का। यह मानव बुद्धि को समझने के समान कार्य है, लेकिन AI को जैविक रूप से प्रेक्षित विधियों तक सीमित नहीं होना पड़ता।"
   - **संदर्भ:** McCarthy, J. (2007). *What is Artificial Intelligence?* Stanford University.
4. **आधिकारिक संगठनों द्वारा परिभाषा:**
   - **European Commission**के अनुसार:
     - "आर्टिफिशियल इंटेलिजेंस उन सिस्टमों को संदर्भित करता है जो सामान्यतः मानव बुद्धि की आवश्यकता वाले कार्य करते हैं, जैसे कि दृश्य पहचान, भाषण मान्यता, निर्णय-निर्माण, और भाषा अनुवाद। ये सिस्टम विशिष्ट कार्यों को निष्पादित करने के लिए प्रोग्राम किए जा सकते हैं या नई जानकारी के आधार पर सीख और अनुकूलित कर सकते हैं।"
   - **संदर्भ:** European Commission, Artificial Intelligence
5. **Techopediaकी परिभाषा:**
   - "आर्टिफिशियल इंटेलिजेंस (AI) मानव बुद्धिमत्ता की नकल करने वाली मशीनों की अनुकरण प्रक्रिया है, जिन्हें इस प्रकार प्रोग्राम किया गया है कि वे मानव जैसी सोच और क्रियाएँ कर सकें। AI सिस्टम दृश्य पहचान, भाषण मान्यता, निर्णय-निर्माण, और भाषा अनुवाद जैसे कार्य कर सकते हैं।"
   - **संदर्भ:***Techopedia*, Artificial Intelligence

2. AI के प्रकार:

- **नैरो AI (Narrow AI):**यह AI का सबसे सामान्य रूप है जो एक विशिष्ट कार्य को करने में सक्षम होता है। उदाहरण के लिए, वॉयस असिस्टेंट्स (जैसे कि सिरी और गूगल असिस्टेंट) या चैटबॉट्स।
- **जनरल AI (General AI):**यह एक विकसित रूप है जो किसी भी बौद्धिक कार्य को मानव स्तर पर करने की क्षमता रखता है, लेकिन वर्तमान में यह केवल सिद्धांत में है और इसे अभी तक वास्तविकता में नहीं देखा गया है।
- **सुपरइंटेलिजेंस (Superintelligence):**यह AI की वह स्थिति है जिसमें मशीनें मानव से अधिक बुद्धिमान और सक्षम हो जाएँ। यह भविष्य में संभावित है, लेकिन यह अभी विकास की शुरुआत में है।

3. AI की तकनीकें:

- **मशीन लर्निंग (Machine Learning):**यह AI का एक उपक्षेत्र है जिसमें मशीनें डेटा से सीखती हैं और समय के साथ अपने प्रदर्शन में सुधार करती हैं बिना विशेष रूप से प्रोग्राम किए। उदाहरण: संज्ञानात्मक वाणिज्य।
- **डीप लर्निंग (Deep Learning):**यह मशीन लर्निंग का एक उपक्षेत्र है जो न्यूरल नेटवर्क्स पर आधारित है और जटिल समस्याओं जैसे कि छवि पहचान और प्राकृतिक भाषा प्रसंस्करण (NLP) को हल करता है।

- **प्राकृतिक भाषा प्रसंस्करण (NLP):**यह तकनीक मशीनों को मानव भाषा को समझने और उत्पन्न करने की अनुमति देती है। उदाहरण: भाषा अनुवाद सेवाएँ, वॉयस असिस्टेंट।

4. AI के अनुप्रयोग:

- **स्वायत्त वाहन:** AI का उपयोग सेल्फ-ड्राइविंग कारों में किया जाता है जो सड़क पर चलने के लिए बुद्धिमान निर्णय लेती हैं।
- **चिकित्सा:** AI का उपयोग रोगों का निदान करने, उपचार की सिफारिश करने और स्वास्थ्य डेटा का विश्लेषण करने के लिए किया जाता है।
- **वित्त:** AI वित्तीय बाजारों में व्यापारिक निर्णयों को अनुकूलित करने, धोखाधड़ी का पता लगाने और ग्राहक सेवाओं को सुधारने के लिए प्रयोग किया जाता है।
- **शिक्षा:** AI के माध्यम से व्यक्तिगत शिक्षा अनुभव, स्वचालित ग्रेडिंग और अध्ययन की योजनाओं को अनुकूलित किया जा सकता है।

आर्टिफिशियल इंटेलिजेंस (AI) और मानवी जीवन

के बीच का संबंध तेजी से बढ़ रहा है, और इसका प्रभाव हर क्षेत्र में महसूस किया जा सकता है। AI का मानव जीवन पर प्रभाव कई स्तरों पर होता है, जिसमें दैनिक जीवन, कार्य क्षेत्र, स्वास्थ्य देखभाल, शिक्षा, और सामाजिक संरचनाएं शामिल हैं। यहाँAI के मानवी जीवन पर प्रभाव की एक विस्तृत चर्चा दी गई है:

1. कार्य क्षेत्र पर प्रभाव

- **स्वचालन:** AI और रोबोटिक्स उद्योगों में स्वचालन की प्रक्रिया को बढ़ावा देते हैं, जिससे कई मैनुअल और पुनरावृत्त कार्य स्वचालित हो जाते हैं। इससे उत्पादन की दक्षता बढ़ती है और मानव संसाधनों का उपयोग रणनीतिक कार्यों में किया जा सकत है।
- **डेटा विश्लेषण:** AI डेटा विश्लेषण और पूर्वानुमान में महत्वपूर्ण भूमिका निभाता है , जिससे कंपनियों को बाजार रुझानों और ग्राहक प्राथमिकताओं को समझने में मदद मिलती है। यह निर्णय लेने की प्रक्रिया को अधिक सटीक और प्रभावी बनाता है।

2.. स्वास्थ्य देखभाल पर प्रभाव

- **निदान और उपचार:** AI-संचालित चिकित्सा उपकरण और सॉफ्टवेयर रोगों का निदान करने, उपचार की सिफारिश करने, और स्वास्थ्य डेटा का विश्लेषण करने में मदद करते हैं। उदाहरण के लिए, AI आधारित इमेजिंग तकनीकें कैंसर और अन्य बीमारियों का शीघ्र निदान करने में सक्षम होती हैं।
- **स्वास्थ्य निगरानी:**व्यक्तिगत स्वास्थ्य निगरानी उपकरण और ऐप्स, जो AI का उपयोग करते हैं, स्वास्थ्य संकेतकों की निरंतर निगरानी और विश्लेषण प्रदान करते हैं, जिससे उपयोगकर्ताओं को स्वास्थ्य समस्याओं के बारे में समय पर जानकारी मिलती है।

3. शिक्षा पर प्रभाव

- **व्यक्तिगत शिक्षा:** AI-संचालित प्लेटफॉर्म और टूल्स व्यक्तिगत शिक्षा अनुभव को अनुकूलित करते हैं, जो छात्रों की ताकत और कमजोरियों के आधार पर अध्ययन सामग्री और सुझाव प्रदान करते हैं।
- **स्वचालित ग्रेडिंग:** AI ग्रेडिंग सिस्टम शिक्षकों को उत्तरपुस्तिकाओं और असाइनमेंट्सकी त्वरित और सटीक ग्रेडिंग में मदद करते हैं, जिससे शिक्षकों को अधिक समय मिल जाता है।

4.. सामाजिक संरचनाएं और नैतिक मुद्दे

- **नैतिक और सामाजिक चुनौतियाँ:** AI के बढ़ते उपयोग के साथ-साथ गोपनीयता, डेटा सुरक्षा, और पूर्वाग्रह जैसी नैतिक चिंताएँ भी उत्पन्न होती हैं। AI प्रणालियाँ यदि पूर्वाग्रहित डेटा पर आधारित होती हैं, तो वे भेदभावपूर्ण परिणाम उत्पन्न कर सकती हैं।
- **रोजगार में बदलाव:** AI के कारण कुछ पारंपरिक नौकरियों की मांग घट सकती है, जबकि नई नौकरियों और भूमिकाओं का निर्माण हो सकता है। इससे रोजगार की संरचना में म्हत्वपूर्ण परिवर्तन आ सकते हैं।

5.. भविष्य की संभावनाएँ

- **सुपरइंटेलिजेंस:**भविष्य में, AI की संभावनाएँ और अधिक विकसित हो सकती हैं, जिसमें सुपरइंटेलिजेंस (AI जो मानव बुद्धि से अधिक सक्षम हो) का विकास हो सकता है। यह मानव समाज और जीवन पर बड़े प्रभाव डाल सकता है।
- **मानव और AI के बीच सहयोग:** AI के साथ मानव सहयोग की संभावनाएँ बढ़ रही हैं, जहाँ AI और मानव मिलकर कार्य करेंगे, जिससे नई संभावनाएँ और समाधान उत्पन्न होंगे।

आर्टिफिशियल इंटेलिजेंस (AI) और उच्च शिक्षा

आर्टिफिशियल इंटेलिजेंस (AI) के विकास ने उच्च शिक्षा के क्षेत्र में महत्वपूर्ण बदलाव लाए हैं। AI की तकनीकें शिक्षा की गुणवत्ता, पहुंच और प्रबंधन में सुधार कर रही हैं। इस आलेख में हम AI के उच्च शिक्षा पर प्रभाव की गहराई से समीक्षा करेंगे, जिसमें AI की प्रमुख तकनीकों, अनुप्रयोगों, और उनके संभावित लाभ और चुनौतियाँ शामिल हैं।

1. AI की प्रमुख तकनीकें और उनके अनुप्रयोग

1.1. मशीन लर्निंग और डीप लर्निंग

- **मशीन लर्निंग (ML):** AI का एक महत्वपूर्ण घटक है जिसमें कंप्यूटर सिस्टम डेटा से सीखते हैं और समय के साथ अपने प्रदर्शन में सुधार करते हैं। उच्च शिक्षा में, ML का उपयोग व्यक्तिगत अध्ययन योजनाओं को अनुकूलित करने, छात्रों के प्रदर्शन का पूर्वानुमान करने, और स्वचालित ग्रेडिंग सिस्टम विकसित करने में किया जाता है।
- **डीप लर्निंग (DL):**यह ML का एक उन्नत रूप है जो जटिल डेटा संरचनाओं को समझने में सक्षम है। उच्च शिक्षा में, DL का उपयोग प्राकृतिक भाषा प्रसंस्करण (NLP) और छवि विश्लेषण के लिए किया जाता है, जैसे कि स्वचालित पाठ्यक्रम सामग्री निर्माण और छात्र फीडबैक विश्लेषण।

1.2. प्राकृतिक भाषा प्रसंस्करण (NLP)

NLP तकनीकें AI को मानव भाषा को समझने और उत्पन्न करने की क्षमता प्रदान करती हैं। उच्च शिक्षा में, NLP का उपयोग चैटबॉट्स और वर्चुअल असिस्टेंट्स में किया जाता है, जो छात्रों के सवालों का उत्तर देने, शैक्षिक सामग्री तक पहुँचाने, और एडमिनिस्ट्रेटिव कार्यों को स्वचालित करने में मदद करते हैं।

2. AI के उच्च शिक्षा में लाभ

2.1. व्यक्तिगत शिक्षा अनुभव

AI-संचालित टूल्स और प्लेटफॉर्म्स व्यक्तिगत शिक्षा अनुभव प्रदान कर सकते हैं। ये सिस्टम छात्रों की ताकत और कमजोरियों का विश्लेषण करते हैं और उनके लिए अनुकूलित पाठ्यक्रम और अध्ययन योजनाएँ तैयार करते हैं। इससे छात्रों की संलग्नता और सीखने की प्रभावशीलता बढ़ती है।

उदाहरण:

- **Knewton:**एक AI-आधारित लर्निंग प्लेटफॉर्म जो व्यक्तिगत अध्ययन सामग्री और सुझाव प्रदान करता है।

2.2. स्वचालित ग्रेडिंग और मूल्यांकन

AI का उपयोग स्वचालित ग्रेडिंग सिस्टम में किया जा सकता है, जो परीक्षा पत्रों और असाइनमेंट्स की त्वरित और सटीक ग्रेडिंग में मदद करता है। इससे शिक्षकों का समय बचता है और ग्रेडिंग प्रक्रिया अधिक पारदर्शी और निष्पक्ष होती है।

उदाहरण:

- **Gradescope:**एक AI-संचालित ग्रेडिंग टूल जो परीक्षा और असाइनमेंट्स की स्वचालित मूल्यांकन में सहायक होता है।

2.3. अनुसंधान और डेटा विश्लेषण

AI का उपयोग बड़े पैमाने पर डेटा विश्लेषण और अनुसंधान में किया जा सकता है। इससे अनुसंधानकर्ताओं को जटिल डेटा सेट्स को समझने, ट्रेंड्स का विश्लेषण करने, और नए अनुसंधान क्षेत्रों की पहचान करने में मदद मिलती है।

उदाहरण:

- **IBM Watson:** AI का उपयोग शोध डेटा विश्लेषण और नई अनुसंधान प्रवृत्तियों की पहचान के लिए किया जाता है

3. AI के उच्च शिक्षा में चुनौतियाँ

3.1. गोपनीयता और डेटा सुरक्षा

AI सिस्टम बड़े पैमाने पर व्यक्तिगत और शैक्षिक डेटा को प्रोसेस करते हैं, जिससे डेटा सुरक्षा और गोपनीयता की चिंताएँ उत्पन्न होती हैं। संस्थानों को यह सुनिश्चित करना होता है कि डेटा सुरक्षा उपाय लागू किए जाएं और छात्रों की गोपनीयता की रक्षा की जाए।

उदाहरण:

- **GDPR:**यूरोपीय संघ का सामान्य डेटा संरक्षण विनियमन जो डेटा सुरक्षा और गोपनीयता सुनिश्चित करता है।

3.2. पूर्वाग्रह और निष्पक्षता

AI सिस्टम पूर्वाग्रहित डेटा पर प्रशिक्षित हो सकते हैं, जिससे भेदभावपूर्ण निर्णय और परिणाम उत्पन्न हो सकते हैं। उच्च शिक्षा में, यह सुनिश्चित करना महत्वपूर्ण है कि AI प्रणालियाँ निष्पक्ष और समानता की दिशा में काम करें।

उदाहरण:

- **BIAS:** AI में पूर्वाग्रह से संबंधित समस्याओंके समाधान के लिए अनुसंधान और प्रोटोकॉल का विकास।

3.3. शिक्षक और छात्र का डिजिटल विभाजन

AI और तकनीक की पहुंच में असमानता से डिजिटल विभाजन उत्पन्न हो सकता है। उच्च शिक्षा संस्थानों को यह सुनिश्चित करना होता है कि सभी छात्रों और शिक्षकों को समान तकनीकी संसाधन और अवसर मिलें।

उदाहरण:

- **Bridging the Digital Divide:**टेक्नोलॉजी तक समान पहुँच सुनिश्चित करने के लिए नीतिगत प्रयास और संसाधन आवंटन।

4. भविष्य की संभावनाएँ

4.1. AI के साथ मानव सहयोग

भविष्य में, AI और मानव सहयोग को बढ़ावा दिया जाएगा, जहाँ AI सिस्टम शिक्षकों और शोधकर्ताओं को उनकी क्षमता को बढ़ाने में मदद करेंगे। AI के साथ मानव सहयोग से नए अवसर और सुधार उत्पन्न होंगे।

उदाहरण:

- **AI-Enhanced Teaching:**शिक्षकों को शैक्षिक सामग्री, पाठ्यक्रम विकास, और छात्र साक्षात्कार में सहायक AI टूल्स।

4.2. जनरल AI और शिक्षा

जनरल AI का विकास भविष्य में शिक्षा क्षेत्र को पूरी तरह से बदल सकता है। इसमें AI सिस्टम होंगे जो किसी भी बौद्धिक कार्य को मानव स्तर पर करने में सक्षम होंगे, जिससे शिक्षा के तरीकों और प्रक्रियाओं में बड़ा बदलाव आ सकता है।

उदाहरण:

- **Artificial General Intelligence (AGI):**एक ऐसी AI जो मानव स्तर की बुद्धिमत्ता प्राप्त कर सकती है और शिक्षण प्रक्रियाओं को क्रांतिकारी रूप से बदल सकती है।

निष्कर्ष

AI ने उच्च शिक्षा के क्षेत्र में महत्वपूर्ण बदलाव लाए हैं और इसके लाभों के साथ-साथ चुनौतियों का भी सामना करना पड़ रहा है। व्यक्तिगत शिक्षा अनुभव, स्वचालित ग्रेडिंग, और अनुसंधान के क्षेत्र में AI की भूमिका ने शिक्षा की गुणवत्ता और पहुंच में सुधार किया है। हालांकि, गोपनीयता, पूर्वाग्रह, और डिजिटल विभाजन जैसी चुनौतियाँ भी हैं जिन्हें संबोधित करने की आवश्यकता है। भविष्य में, AI के साथ मानव सहयोग और जनरल AI के विकास से उच्च शिक्षा में और भी बड़े बदलाव की संभावना है।

संदर्भ:

1. **Knewton:**https://www.knewton.com/
2. **Gradescope:**https://www.gradescope.com/
3. **IBM Watson:**https://www.ibm.com/watson
4. **GDPR:**https://ec.europa.eu/info/law/law-topic/data-protection_en

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Innovative Teaching and Learning Methods in the Indian Context: A Focused Analysis of Urban and Rural Areas

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Abstract

India's educational landscape is characterized by a vast diversity in resources, access, and outcomes between urban and rural regions. This research paper examines the innovative teaching and learning methods that are currently being employed in both urban and rural areas of India. It highlights the specific needs of each context, the challenges faced, and the strategies that have been effectively implemented. The aim is to provide actionable insights that can be applied to both urban and rural schools to improve educational outcomes and bridge the existing gaps.

Introduction

India's education system is vast and diverse, serving millions of students across different regions and socio-economic backgrounds. The disparity between urban and rural education is significant, with urban schools generally having better access to resources, technology, and trained teachers, while rural schools often struggle with basic infrastructure. However, innovative teaching and learning methods can offer solutions that are adaptable to both contexts, ensuring that students across India receive a quality education.

This paper explores the innovative methods being used in urban and rural schools, examines their effectiveness, and offers recommendations for enhancing these approaches in ways that are tailored to the unique needs of each setting.

The Educational Landscape in India

India's education system is governed by a complex framework that includes public and private schools, with significant variation in quality and access between urban and rural areas. Urban schools, particularly in metropolitan cities, often have access to better infrastructure, technology, and educational resources. In contrast, rural schools may face challenges such as inadequate infrastructure, a shortage of trained teachers, and limited access to modern teaching tools.

Despite these challenges, there is a growing recognition of the need for innovation in education across the country. Both urban and rural schools are exploring new methods to make learning more engaging, effective, and relevant to students' lives.

Innovative Teaching Methods in Urban Areas

Urban schools in India, particularly those in large cities, have been at the forefront of educational innovation. The availability of resources, infrastructure, and access to technology has enabled these schools to adopt a variety of innovative teaching methods.

1. Technology-Enhanced Learning

Urban schools have increasingly integrated technology into the classroom, using digital tools to enhance the learning experience. Interactive whiteboards, tablets, and online learning platforms allow teachers to provide personalized instruction and engage students in a more interactive way. The flipped classroom model, where students learn new content at home

through digital resources and apply their knowledge in class, has also gained popularity in urban areas.

2. Experiential and Project-Based Learning

Experiential learning, where students engage in hands-on activities and real-world problem-solving, is widely adopted in urban schools. Project-Based Learning (PBL) encourages students to work on projects that integrate multiple subjects, fostering critical thinking, creativity, and collaboration. These methods are supported by access to laboratories, libraries, and other resources that urban schools are more likely to have.

3. Collaborative Learning

Collaborative learning is another innovative approach that has found success in urban classrooms. Group activities, peer tutoring, and team-based projects help students develop social skills and learn from each other. Urban schools often have the flexibility to rearrange traditional classroom setups to facilitate group work and discussions.

4. Continuous Professional Development for Teachers

Continuous Professional Development (CPD) programs are essential in urban schools, where teachers are regularly trained in the latest pedagogical strategies and technological tools. This ongoing training helps teachers stay updated and effectively implement innovative teaching methods in their classrooms.

Innovative Teaching Methods in Rural Areas

In contrast to urban schools, rural schools in India face unique challenges that can make the adoption of innovative teaching methods more difficult. However, there are several innovative strategies that have been successfully implemented in rural settings, tailored to the specific needs and constraints of these areas.

1. Community-Based Learning

Rural schools often rely on community-based learning, where local knowledge and practices are integrated into the curriculum. This approach makes learning more relevant to students' lives and can involve activities such as agricultural projects, crafts, and local history studies. By connecting education to the community, students are more engaged and see the value in their learning.

2. Low-Cost Teaching Aids

In resource-constrained environments, rural schools have developed low-cost teaching aids that utilize locally available materials. For example, teachers may create educational games and models using everyday items, making learning more interactive and accessible without relying on expensive technology.

3. Mobile Learning Units

Mobile learning units, such as buses equipped with educational resources, have been deployed in some rural areas to bring learning to students who may not have access to well-equipped schools. These units provide students with exposure to technology, digital content, and interactive learning experiences, helping to bridge the gap between urban and rural education.

4. Multi-Grade Teaching

In many rural schools, multi-grade teaching is a necessity due to the shortage of teachers. Innovative approaches to multi-grade teaching involve grouping students of different ages and levels together and using differentiated instruction to meet the needs of each student. This approach requires careful planning and training, but it can be effective in ensuring that all students receive quality education.

5. Use of Local Language and Culture

Incorporating local language and culture into the curriculum is an innovative strategy that has been effective in rural schools. By teaching in the local language and integrating cultural practices into lessons, educators make learning more relatable and easier for students to grasp. This approach also helps preserve local traditions and knowledge.

Challenges and Barriers to Innovation

While innovative teaching methods have shown promise in both urban and rural areas, several challenges remain.

1. Infrastructure and Resource Gaps

The disparity in infrastructure and resources between urban and rural schools is one of the most significant barriers to innovation. Urban schools often have access to the latest technology, while rural schools may lack even basic necessities such as electricity and internet connectivity. Addressing these gaps is crucial for ensuring that all students benefit from innovative teaching methods.

2. Teacher Training and Support

Adequate teacher training is essential for the successful implementation of innovative methods. However, rural teachers often have limited access to professional development opportunities, which can hinder their ability to adopt new teaching strategies. In urban areas, while training is more accessible, there is still a need for ongoing support to help teachers integrate innovation into their daily practice.

3. Cultural and Socio-Economic Factors

In rural areas, cultural and socio-economic factors can also pose challenges to innovation. For example, parents may prioritize work over education, or there may be resistance to new teaching methods that differ from traditional practices. Addressing these cultural barriers requires community engagement and awareness-building efforts.

4. Assessment and Evaluation

Traditional methods of assessment may not adequately capture the skills and knowledge gained through innovative teaching methods. Both urban and rural schools need to develop new ways of evaluating student learning that align with these approaches, such as portfolio assessments, project evaluations, and peer reviews.

Strategies for Successful Implementation

To overcome these challenges and promote the adoption of innovative teaching methods across urban and rural India, several strategies can be implemented.

1. Infrastructure Development

Investing in infrastructure, particularly in rural areas, is essential for supporting innovative teaching. This includes not only building and maintaining physical facilities but also ensuring access to electricity, internet, and digital devices.

2. Contextualized Teacher Training

Teacher training programs should be tailored to the specific needs of urban and rural educators. In rural areas, this might include training on low-cost teaching aids and multi-grade instruction, while in urban areas, the focus could be on integrating technology and project-based learning.

3. Community Engagement

Engaging the local community in rural areas is crucial for the success of innovative methods. Schools should involve parents, local leaders, and other stakeholders in the education process, making them partners in innovation. This can help overcome resistance to change and ensure that education is seen as valuable and relevant.

4. Policy Support and Funding

Government policies and funding should support the adoption of innovative teaching methods across the country. This includes not only providing resources but also creating a regulatory environment that encourages experimentation and innovation in education.

5. Monitoring and Evaluation

Continuous monitoring and evaluation of innovative teaching methods are essential to understand what works and what doesn't. Schools should implement feedback mechanisms to assess the effectiveness of new approaches and make adjustments as needed.

Conclusion

Innovative teaching and learning methods have the potential to transform education in India, making it more engaging, effective, and relevant for students in both urban and rural areas. While urban schools have made significant strides in adopting these methods, rural schools face unique challenges that require tailored solutions. By addressing these challenges through targeted strategies, it is possible to bridge the gap between urban and rural education and ensure that all students have access to high-quality, innovative learning experiences.

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Harnessing ICT for Enhanced Teaching and Learning: An Initiative under NEP 2020

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Abstract:

The digital era has revolutionized the way knowledge is constructed, distributed, and accessed globally. To stay ahead, digital literacy is being fostered through the integration of Information and Communication Technology (ICT) in educational institutions. ICT significantly enhances teaching and learning, empowering teachers to create engaging pedagogical environments. By adopting ICT, teachers can present their teaching in an attractive and learner-friendly manner, making learning more effective. The National Education Policy 2020 (NEP 2020) recognizes the potential of ICT and has launched initiatives to leverage it for improved teaching and learning outcomes.

Keywords: Digital Literacy, National Education Policy 2020, NEP2020, ICT, Teaching-Learning, etc.

Introduction:

The National Education Policy of India 2020 (NEP 2020), approved by the Union Cabinet on July 29, 2020, envisions a transformed education system for India. Replacing the 1986 policy, NEP 2020 provides a comprehensive framework for elementary to higher education and vocational training across rural and urban India, aiming to revolutionize the education system by 2040. A key initiative under NEP 2020 is the adoption of Information and Communication Technology (ICT) for teaching and learning. ICT encompasses a range of tools and technologies, including radio, television, telephone, computers, satellites, internet, and wireless technologies, which facilitate information management, production, storage, and distribution. In today's digital era, information is presented in various forms - audio, video, images, and text - and ICT has expanded to include computers, email, MMS, and other communication modes. When teachers are digitally literate and trained to use ICT, it can significantly impact student learning, fostering higher-order thinking skills, creativity, and individualized expression, ultimately preparing students for a rapidly changing technological landscape.

Benefits of Using ICT in Education:

- **Enhanced Interest in Learning:** Digital resources like videos, websites, and graphics make traditional subjects more engaging and interactive, increasing students' interest in learning.
- **Interactivity:** ICT promotes active and participatory learning, encouraging students to take a more hands-on approach to education.
- **Collaboration:** Digital tools facilitate teamwork, cooperation, and peer-to-peer learning, making it easier for students to work together on projects and share knowledge.
- **Creativity Enhancement:** ICT stimulates imagination and initiative in students, helping them develop essential creative skills.

❖ **Improved Communication:** ICT enables spontaneous and informal communication between students and teachers through various channels, fostering a more open and supportive learning environment.

❖ **Personalization and Up-to-Date Content:** Digital environments allow for real-time updates, ensuring that students have access to the latest information and resources, tailored to their individual needs.

These benefits highlight the potential of ICT to transform the learning experience, making it more engaging, interactive, and effective.

Common Educational Applications of ICT:

➢ **Tablets:** Portable, wireless personal computers with touch screen interfaces, ideal for learning on-the-go.

➢ **Interactive Whiteboards/Smart Boards:** Digital devices that enable users to project and manipulate files on a board's surface, enhancing classroom engagement.

➢ **E-readers:** Devices designed for screen-based reading of books and periodicals, promoting digital literacy.

➢ **Flipped Classrooms:** A pedagogical approach where instruction is delivered online and homework is done in class, reversing traditional teaching methods.

➢ **Blogs and Social Networks:** Online platforms facilitating sharing, interaction, and relationship-building among students and teachers.

➢ **Planning Tools and Techniques:** Methods using external comparisons to evaluate performance and plan for future improvements.

➢ **Cloud Storage:** Off-site data storage solutions maintained by third-party providers, ensuring secure and accessible data management.

➢ **One Device One Child:** Initiatives providing personal devices for students, such as laptops or tablets, to enhance digital access and learning.

➢ **E-Books:** Digital book publications accessible on various electronic devices, offering convenient and portable learning resources.

➢ **E-Databases:** Systematic collections of information, including peer-reviewed articles, allowing for efficient searching and access to knowledge.

These applications demonstrate the diverse ways ICT can support and enhance teaching, learning, and educational management.

NEP 2020 Key Initiatives:

✓ **Pilot Studies for Online Education:** Conduct series of pilot studies to evaluate benefits and challenges of integrating online education, including device addiction and preferred e-content formats.

✓ **Digital Infrastructure Development:** Invest in creating open, interoperable, and evolvable public digital infrastructure for education, addressing India's scale, diversity, and complexity.

✓ **Online Teaching** Platforms and Tools: Enhance existing e-learning platforms like SWAYAM and DIKSHA with user-friendly tools for teachers to monitor student progress.

✓ **Content Creation and Digital Repository:** Develop a digital repository of coursework, learning games, simulations, AR, and VR content, with user ratings for effectiveness and quality.

✓ **Addressing Digital Divide:** Utilize mass media like TV, radio, and community radio for educational programs in multiple languages to reach underserved populations.

✓ **Virtual Labs:** Leverage e-learning platforms to create virtual labs for equal access to quality practical learning experiences.

✓ **Teacher Training and Incentives:** Provide rigorous training for teachers in learner-centric pedagogy and online content creation.

✓ **Online Assessment and Examinations:** Design and implement assessment frameworks, including competencies, portfolio, rubrics, and assessment analytics.

✓ **Blended Models of Learning:** Identify effective blended learning models for replication, recognizing the importance of face-to-face learning.

✓ **Setting Standards:** Establish standards for online/digital teaching-learning, including content, technology, and pedagogy, to guide e-learning guidelines for states, boards, schools, and HEIs.

These initiatives aim to transform India's education system by leveraging technology, addressing accessibility, and enhancing teaching and learning experiences.

Conclusion:

Information and Communication Technology (ICT) plays a vital role in empowering teachers to acquire new knowledge, skills, and digital tools, enabling them to become effective educators. By harnessing the power of ICT, student teachers can transform into dynamic facilitators of learning. As a key driver of societal change, ICT has the potential to revolutionize education, altering the traditional roles of students and teachers in the teaching-learning process. By embracing ICT, we can unlock new possibilities for education, making it more accessible, engaging, and effective for all. Ultimately, ICT integration in education can lead to a more informed, skilled, and connected society, better equipped to thrive in the digital age.

ICT has the potential to transform the education sector by providing access to quality education, enhancing the learning experience, and preparing students for the digital age. The initiatives outlined in NEP 2020 will help harness the power of ICT in education and create a more inclusive and effective education system.

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NEP 2020: A Roadmap for Library and Information Science Education in India

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Abstract:

The National Educational Policy 2020 (NEP 2020) has been introduced by the MHRD to reform the education system in our modern nation. The present paper deals with an overview of NEP-2020 and how it provides more value to libraries at all levels, including public and academic libraries. The new policy focused on infrastructure, services and the workings of the libraries and librarians. The new policy also includes LIS Education in India, Information Communication Technology (ICT), Digital literacy, online, and unique kinds of facilities and services to society.

Keywords: National Education Policy, LIS Education, Development of Libraries, Digital literacy,

Introduction:

The National Education Policy (NEP) **2020** represents a major shift in India's education system, aiming to enhance inclusivity, innovation, and global competitiveness. Approved in July **2020** under Dr. K.K. Kasturi Rangan, it replaces the **10+2** system with a **5+3+3+4** structure and calls for both central and state governments to invest **6%** of GDP in education, targeting major reforms by **2030.**

NEP 2020 introduces several key reforms in India's higher education sector:

1. **Unified Regulatory Body:** A single commission will oversee all higher education, excluding legal and medical fields.
2. **Flexible Entry/Exit:** Students can enter or exit courses at various stages, with credits stored in an Academic Bank of Credit (ABC).
3. **Diverse Learning Resources:** Online courses, TV channels, and other tools will support adult education.
4. **Multilingual E-Courses:** Technology courses will be available in eight major Indian languages.
5. **Top Global Universities:** India will host the world's top 100 universities.
6. **Standardized Entrance Exam:** A common entrance exam will be administered by the National Testing Agency (NTA), supported by various councils.

Principles of this National Education Policy 2020:

1. **Encouraging Holistic Development:** Teachers and parents are encouraged to recognize and nurture the unique capabilities of students. This principle emphasizes the holistic development of students.
2. **Foundational Literacy and Numeracy:** Ensuring that every student achieves foundational literacy and numeracy skills by Grade 3 is a fundamental goal.

3. **Flexible Learning Pathways:** NEP 2020 promotes flexible learning pathways and programs. It acknowledges that every student is different and, therefore, allows learners to choose their own paths based on their interests and talents.

4. **Integration of Learning Fields:** The policy emphasizes breaking down traditional barriers between different learning fields such as arts and sciences, curricular, and extracurricular activities.

Comparative Study of National Education Policies: Historical Analysis (1968, 1986, 2020):

	The National Education Policy 2020	**The National Education Policy 1986**	**The National Education Policy 1968**
Formation	➢ On 29 July 2020The Union Cabinet of India launched the National Education Policy of India 2020 (NEP 2020).	➢ The "National Policy on Education 1986" was examined and adopted by the Parliament during the 1986 budget session. The MHRD announced the Implementation in the Monsoon Session.	➢ The Kothari Commission's recommendations led to the creation of the National Education Policy in 1968.
Approach	➢ The multidisciplinary approach to the educational system. ➢ The principle of the education system is to build up good human beings capable of rational thought and action, possessing compassion and empathy, courage and spirit, scientific temper, and creative imagination.	➢ It has emphasized the value of higher education. It emphasized the need for colleges to adopt a more communitarian attitude toward education. It has focused on enhancing the reputation of institutions across the nation.	➢ The strategy further focused on the practical approach to vocational education, which encompasses agricultural and industrial education.
Educational structure	➢ The 5+3+3+4 formula in school, the multiple entry and exit options in higher education along with the academic credit bank . ➢ This model is adopted by western nations, and as a result the policy is intended to connect education with worldwide education.	➢ The new policy represents a notable improvement over the old one. This strategy also placed emphasis on the 10+2+3 educational model being used.	➢ It has made it possible for youngsters under 14 to receive free and mandatory education.
Educational opportunity	➢ One advantageous aspect of the education policy for luring foreign students and internationalizing higher education in India .	➢ To eliminate inequalities and equalize educational possibilities, the National Education Policy of 1986 was proclaimed. The	➢ Addi tionally, it aims to give men and women the same chances

	➢ Students from other nations will be drawn in by the fostering of innovation, creativity, and research and development.	purpose of the policy action plan was to offer an educational system to all pupils, regardless of caste, creed, sex, or religion	
Employment	➢ The new policy aims to improve teaching and learning systems, research and development, programme outcomes, and course outcomes in order to create jobs.	➢ In accordance with the Policy, a university degree will no longer be a requirement for employment in positions for which it is not required. Additionally, it is anticipated that this action would result in a redesign of job-specific	➢ More importance is given to equalization of education progressively weight age is given to education. Not significant importance is given to relating education and employment.
Development of Languages	➢ The recommendation for mother tongue as a medium of education was to ensure a robust foundation for learning in children.	➢ No option is available to teach in local languages	➢ In order to draw talent from the region's language belt, it has implemented the three-language formula at the secondary education level, which consists of Hindi, English, and a regional language.
Research & Development	➢ To encourage research activities, fund them through the approval of seed money and grants, and coordinate and advance research across the nation.	➢ Research and Development are apprehensive with all areas of natural and social science, humanities, engineering, agriculture and medical science.	➢ Research and development in the fields of science, technology, and mathematics have received special attention in policy.
Learning process	➢ Another focus towards interdisciplinary learning and attracting international students is the conversion of the current single-discipline universities and	➢ It has focused on enhancing the reputational institutions across the nation. The development of educational quality.	➢ With a focus on social and moral principles, it aspired to increase educational

	institutions.		possibilities and raise academic standards.

Examining the Impact of NEP 2020 on Development of Transforming LIS Education in India:

The NEP 2020 has a significant impact on Library and Information Science (LIS) education in India.

Here are some of the key changes brought about by the NEP 2020:

- By promoting interdisciplinary studies, encouraging LIS students to discover fields like computer science and social sciences for a broader perspective.
- Skill-based training, and technological integration, will enhance job readiness for LIS graduates.
- It introduces a flexible curriculum that allows students to tailor their learning
- Eemphasizes research-oriented learning through projects and internships.

Examining the Impact of NEP 2020 on Development of Libraries:

The National Education Policy **2020 (**NEP **2020)** in India highlights the importance of improving libraries as key educational resources. It advocates for leveraging technology, expanding access to digital resources, and developing library infrastructure. Additionally, a national book promotion policy will be created to encourage reading among students, recognizing the critical role of libraries in education.

The NEP 2020 aims to enhance and contemporize public libraries, while also guaranteeing a sufficient provision of books that align with the requirements and preferences of various communities.

- The policy places considerable emphasis on the crucial role of Libraries in achieving the full potential of humanity and promoting a society that is characterized by fairness and justice. This highlights the importance of libraries and information science in offering assistance for educational and research endeavors.
- The NEP 2020 places significant emphasis on the collaboration between educators and librarians in promoting the fundamental principles outlined in the policy.
- In its entirety, the NEP of 2020 presents avenues for Libraries to actively contribute towards the advancement of education in India.
- Digital libraries and e-books will be enhanced to broaden access to reading materials. Libraries must embrace digital technologies to address the evolving needs of learners in the digital era.
- Public libraries will be upgraded and fortified to function as community learning hubs.
- Special libraries, including those in universities, will be encouraged to collaborate and share resources.
- The National Digital Library of India (NDLI) will be expanded to offer a broader array of digital resources.

Adequate Library employees

In NEP 2020 (21.9), it is emphasized that ensuring the availability of adequate library staff is crucial for effectively running library services for the public, educators, and other users. It is essential to establish appropriate career pathways and continuous professional development (CPD) for library personnel.

The policy also outlines several key initiatives**:**

- Strengthening existing libraries, setting up rural libraries and reading rooms in underserved areas, increasing the availability of reading materials in Indian languages, and establishing children's libraries and mobile libraries. Additionally, it advocates for the creation of social book clubs across India and across various subjects, and encourages greater collaboration between educational institutions and libraries.
- Moreover, NEP 2020 highlights the need for libraries to build substantial and high-quality collections to serve diverse readerships effectively.
- The policy notes that many schools and organizations lack adequate space and facilities for libraries, calling for the development of well-organized library spaces and resources by 2025 to enhance the value of libraries for the public and society.

Infrastructure and Resources of a Library

Ensuring appropriate and adequate infrastructure is crucial to providing access to adult education, study, and lifelong learning opportunities.

- A key initiative in this regard involves utilizing school facilities, including school complexes, after school hours and on weekends, as well as public library spaces for adult education courses.
- These spaces should be equipped with Information Communication Technology (ICT) and designed to support community engagement and enrichment activities when feasible.
- Efficient use of physical and human resources will be achieved through the shared infrastructure for various educational sectors.
- This approach fosters synergy among these diverse educational areas. Consequently, Adult Education Centers (AECs) might also be integrated into other public institutions, such as higher education institutions (HEIs) and vocational training

Availability and accessibility of books:

- NEP 2020 emphasizes enhancing the availability and accessibility of high-quality books and resources to support quality education and research development. Ensuring that books are readily available is crucial for fostering a reading culture within communities and educational institutions.
- The policy recommends that all educational institutions—schools, colleges, universities—and public libraries be strengthened and modernized to provide a sufficient supply of books tailored to the diverse needs and interests of students.
- Additionally, NEP 2020 includes provisions for making books and resources accessible to various special groups, including individuals with disabilities and differently-able persons

Availability of Non-Book Materials and Integration of Technology in Libraries

The Policy highlights the use of library technology to enhance and implement various initiatives.

- It emphasizes incorporating high-quality technological tools for adult learning, including apps, online courses, modules, satellite TV channels, digital books, and ICT-equipped libraries and Adult Education Centers.
- This approach enables quality adult education to be delivered through online platforms and other digital formats.

Role of Librarians:

NEP **2020** has expanded the role of librarians beyond traditional boundaries, positioning them as crucial players in the educational landscape.

- **Educational Partners:** Librarians are now integral to education, collaborating with teachers on curriculum development, research, and information literacy.
- **Digital Literacy:** They also teach digital literacy, guiding students and faculty in using digital resources, databases, and evaluating online content.
- **Continuous Learning:** NEP **2020** emphasizes ongoing professional development for librarians to stay updated on digital resources, IT, and teaching strategies.
- **New Skills:** Librarians need skills in digital library management, e-learning support, and data analytics.
- **Remote Access:** Librarians play a crucial role in providing remote access to resources, ensuring availability for all users.
- **Research Facilitation:** Librarians support research by providing access to academic resources, guiding literature reviews, and managing repositories.
- **Decision-Making:** Librarians are gaining more autonomy in library management, acquisitions, and aligning services with NEP **2020**'s educational goals, increasing their responsibilities.

Conclusion:

"The NEP 2020 emphasizes the importance of libraries, the role of librarians, and the development of LIS education in India, advocating for library employees, improving library infrastructure and resources, ensuring availability and accessibility of books, access to study materials, integration of technology in libraries, and promoting digital literacy."

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