Educational Resource Management during Pre & Post Pandemic Era of Indian Higher Educational Panorama- A Comparison

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Abstract

The process of education starting from primary stage to higher level has been changed dramatically and drastically due to the threat of COVID -19 pandemic. COVID forced the managements to close down normal face to face education in educational institutions at all levels. The action to tide over the emergent situation and to keep the light of education was not so easy for both teachers and students of India as well as for other countries also. Under this pressing situation the education system was forced to depend on online system which was not so mature at that time. However, the online system of education was given sufficient trials for upgrading during this time. It is now needless to say the pandemic has transformed the centuries old chalk-talk teaching model to technology (e-learning) driven teaching-learning. So, dealing education by digital means under compulsion during COVID-19 has, of late, become one of the prime activities among all educational activities. India was already struggling to reduce 'digital divide' between rural and urban areas and between rich and poor throughout the country. But it was automatically solved due to progress of digital education during pandemic era and gaining more importance in education in post COVID era. Learners are not familiar with management procedure of digital educational resources to continue their learning in future. To manage effectively educational fraternity need a proper management procedure to deal with digital educational resources. To sustain and making education more inclusive the present researcher proposed a model for managing educational resources. Two major dynamics of our country i.e., regional disparity and ICT centeredness are involved in giving shape to this model in the backdrop of pre and post pandemic era. The model may face some hindrances but overcoming and accepting it will enable us to continue education uninterruptedly in future. Concept of equity, sustainability, equality and inclusivity should be followed at every step by their teachers as well as institutions to ensure the vision of Indian education.

Keywords: Digital Divide, ICI, Educational Resources, Management Procedure, Sustainability, Inclusiveness.

Introduction

It is known to all that due to the world wars of 20th century, life and the development of society came to a halt for decades together. The 21st century life is usually marked by a life of technological challenge simultaneously with the political, social and cultural challenges (**Harari, 2018, p. 28-34)**.All challenges were suppressed by abrupt appearance of dreaded viral infection of COVID-19 in pandemic form which claimed lives and brought a large scale catastrophe in economic life. The pandemic affected human life by sudden closure of physical communication among different parts of the world, stoppage of production houses and social progression. So pandemic hit the country as well as world in completely unprepared situation. Particularly rural India was far from digital learning as well as use of ICT in learning at that moment. **(Roy, 2012, Government of India, July, 2020).**

To save and sustain the ongoing teaching learning in Pandemic situation there was all out efforts to accelerate and utilize digital learning. The pandemic situation gradually subsided but it left behind a legacy and scope of accelerated digital learning. The Post Pandemic situation compels students of all sectors to

be more dedicated to ICT which is enriched by digital learning. Post Pandemic era accelerates a great dependency on e-learning which is not always accessible to rural people by despite all sincere efforts. Around 40% universities and 60% colleges are located in rural areas of India. A large number of students are coming out every year from the different rural areas of India.(**MHRD, AISHE, 2018-19**).World Health Organization warns several times that we will face more situations like COVID era in future. Epidemiologists and virologists support these warnings. In that situation our education system needs to adopt digital education irrespective of all section. So, in that perspective the problem emerges that how the learners especially from the rural areas can manage the pool of digital educational resources individually.

Research Questions

What is the basic difference between the new management in post pandemic era with the traditional one exists prior to COVID-19?

How the management procedures of educational resources in post pandemic era help the students in higher education to escalate their academic progress?

The Terms Defined

Educational Resources: Educational resources are varied and diversified in nature. Their sources are also multiple. Educational resources encompasses from a small newspaper article to PhD thesis. The educational resources are used for both teaching and learning and research. Physical educational resources are Books, Journals, Magazines, Newspapers, Thesis of MPhil and PhD. A gradual shift from conventional resources to digital resources like e-books, e-journals, research papers, downloading data and images and software tools is necessary regarding the present situation. A domain specific data and images should be incorporated for effective transmission of specified knowledge.

Inclusiveness: Usually inclusiveness means all types of students in a classroom. Here inclusive means reducing regional as well as physical barriers in education and access of digital educational resources for all persons. Everyone can be included in E learning.

Procedure of the Study

Document Analysis

Data and information collected from the various books, research papers, reports and newspaper articles published by various national and international agencies on COVID-19 pandemic. Research papers of **Gulzer&Leema, (2015), Jena, (2020), Obino(2021),Roy &Brown, (2022),Alenezi, (2022) Pandey and Pandey, (2020), Government of India,(2020)** and many other has been analyzed for the traditional as well as post pandemic management procedure of educational resources considering two major dynamics of our country i.e. Rural-Urban divide and ICT Centeredness.

Management Procedure of Educational Resources in Pre Pandemic Era

Learners from urban areas were more equipped and more acquainted with digital resources than rural students but not habituated in using it regularly **(Gulzer&Leema, 2015, p. 96, Pandey and Pandey, 2020 and Government of India, July, 2020)**. Over several decades students used to visit library frequently. They would usually send their requirement to the library assistant and get the books or magazine and read it out for long time. Sometimes they used to make notes from their reading as required. (**Alenezi, 2022, p.80).** Books, magazines and newspaper everything was available in printed format at their library. (**Obino,C.D., 2021, p.9)** For more requirements they used to visit in National Library, seminar library or public library. Source was available through physical communication. Higher education in India was traditionally run through face to face mode and offline learning. (**Roy &Brown, 2022 p. 2)**. Only 45 universities used Moodle in 2015(**Gulzer&Leema, 2015 p. 98**).

Management Procedure of Educational Resources in Pandemic Era (2020-2022)

The lockdown had forced many educational institutions to with hold classes, internships, examinations and any other physical activities and compelled to shift to online mode. (**Jena, 2020 p.12582**).Suddenly the traditional four walls education system closed by the authorities to combat the challenges. So, the

unprepared shifting of the learners from traditional environment to digital environment made them confused and afraid of the future of their learning. A survey on 232 students of West Bengal presented that most of the students had no experience regarding online learning before pandemic but now almost eighty percent students are using online leaning. (**Kapasharia,N. et al 2020).**In spite of several challenges rural people continues their learning. Study of **Rahimoddin, T.S. ,Leenka, R., Dilder M. S. et al. (2021)** showed that 56% students of rural India have positive outlook towards online leaning but most of them use Smartphone as device. They did not found multimedia environment in online classes. Internet connectivity is one of the major challenges to online learning and most of them lack high speed internet connectivity. So they were deprived from online classes held during pandemic.

Data Presentation

Management Procedure of Educational Resources in Post Pandemic Era

The pandemic situation gradually subsided but it left behind a scope of accelerated digital learning. Digital resources multiply several times than traditional era. So, accumulating and using educational resources through digital means becomes one of the prime activities among all educational activities. Managing educational resources scientifically helps to grow learners significantly in positive direction.

Genesis of Resources

Various measures have been taken by the Government of India to combat challenges of digital leaning in pandemic (**Jena, 2020, 12583**). A big world of digital resources becomes so popular and accessible to all to continue their learning uninterruptedly but they required to know the different sources of digital educational resources. Some examples of digital library, platforms, resources are cited below:

SWAYAM: SWAYAM provides online courses at free of cost for young aspiring minds. If a student can enroll he/she can access to best teaching learning materials available on that course.

Swaym Prabha: The teachers and learners of diverse disciplines such as science, commerce, social sciences, law, and humanities   are immensely benefitted by SwayamPrabha, which provides a group of around 280 DTH channels with high quality curriculum based course contents. Besides school education and Higher education it is also available for competitive examination.

National Digital Library of India: NDL is a virtual repository of learning resources which is not just a repository with search/browse facilities but provides a host of services for the learner community. Here the students can access rare non copy righted books collected from various libraries of India. National digital library (NDL) is an initiative of IIT Kharagpur and aims to provide the students free access of digitized educational content in English and other Indian languages in a common platform. It is available in 10 mostly spoken language of India.

E-PG Pathsala: Like E Pathsala in school education, free books and curriculum based e-content on PG course are available on this platform with video contents.

Sodhganga: Shodhganga is the digital repository of Indian Electronic Theses and Dissertations set-up by the INFLIBNET Centre.

E ShodhSindhu: learners can access to more than 10,000 core and peer-reviewed journals and a number of bibliographic, citation and factual databases.

Digital Library of National and International Universities: Several universities have opened up and upgraded their digital central library. The access to the library is free for their learners and open for twenty four hours. As example one can access digital library of University of Calcutta and University of Bristol.

Digital Reports and Publications: Several national and international organizations like UNESCO, World Bank, OECD and WEF, NitiAayog published several research reports online and accessible for all at free of cost.

Government of India has taken initiative with three cardinal principal of education policy: access, equity and quality.

Types of Resources
Determining the types of resources is second step to deal with digital educational resources effectively. Types of resources mean different types of image files, data files, audio file, video file used in digital world. To deal with digital resource management learners need to be aware about the different types and formats of the resources. Students need to be aware about the ICT Terminology of resources. Some basic concepts about technology need to be prepared. Concept of Proprietary formats, Non-Proprietary formats; Open-Source format and Open Standard File Formats are now popular in use. File Types and their Associated Formats in Text Files, Graphics files, Vector based files, data files, spreadsheet files, video audio files etc. and also the marked up language which is very important. As for example there are mainly five types of digital images like IFF, JPEG,GIF, PNG and the raw images.E books format are: AZW, AZW3 (Amazon Kindle format) EPUBFB2 and MOBI.

Accessibility Protocol
Accessibility protocol means the authentic way to deal with the digital resources. Digital resources have different types of accessibility protocol and licensing factors. Digital educational resources are not easy to access without maintaining protocol.
Learners need to access digital resources through an individual login Id and password sometimes through institutional login ID and password. As many students of remote villages are not familiar with online platforms so the institutions should help them to create an ID and password. Then different resources contain different accessibility permission like attribution, attribution share alike, attribution non derivatives, attribution noncommercial and many others. There is colour permission like colours in different publishers like Green publisher, blue publisher etc. Simultaneously a small security is needed regarding those accessed data.

Sustainable Usage
For proper management of the educational resources, it is necessary to be sustainable. Sustainability includes the idea of accomplishing goal in addition to longevity. The educational resources must meet their goals i.e. resources must be shared in a format that operates equally well across hardware and in operating system platforms.
In the post pandemic era, learners need to save the downloaded materials and reuse them in future. The different types of reuses are As-is-reuse, Technical adaptations for reuse, Linguistic adaptations for reuse, Cultural adaptations for reuse, Pedagogical adaptations for reuse, Annotations as adaptation for reuse, access to source code, facilitating reuse and sustainability. As-is -reuse or making use of an educational resource without any modification or alternation is the primary method of reuse among instructional designers and teachers using copy right-encumbered materials having no rights to make any modification. An open resource incompatible with the local teaching and learning environment, technical adaptations is needed before using it. Linguistic adaptations to materials are the changes in the materials for different language speaking learners, according to learners' need. Cultural adaptations for reuse are the crucial factor for reuse as in some cultures teamwork is the norm of learning whereas for other cultures this group learning is interpreted as academic dishonesty. Pedagogical adaptations for reuse is the few changes made by teachers to the resource to make it better fit according to teaching style (**Wiley, 2007, p.12-14**). Different types of adaptations make educational resources friendlier to use for learners i.e., learner centric approach.

Analysis of the Data
Some major changes can be seen in the management procedure are,

Management procedure	Pre Pandemic Era	Post Pandemic Era
Genesis of Resources	Available in library and shops.	Available online. Different types of digital library like SWAYAM,

|		SwayamPrabha, NDL are available in 24x7 time frame.
Types of resources	Books, journal, magazine, newspaper, research paper, PhD and MPhil Thesis.	Besides that different File Types and their Associated Formats in Text Files, Graphics files, Vector based files, data files, spreadsheet files, video audio files etc. and also the marked up language which is very important.
Accessibility Protocol	Schedule time to access like 10 am to 5 pm.	Physical educational world may be closed after official timing but digital library is open now for us with 24x7 time frames with it different licensing factor and concept of user ID and passwords.
Sustainable Usage	Traditional way of sustainability like keeping in file and library for future use.	Different types of reuses, compatible for resources must be shared in a format that operates equally well across hardware and in operating system platforms.

Findings of the Study

1. In the pre pandemic era, learners generally used to manage educational resources by physical means. Use of ICT in that case was there but not so popular in use. But in Pandemic and Post Pandemic era digital educational resources become more available in diversified nature and learners felt urgent need to manage them properly to gain best outcome from it. Without the proper direction the learners especially from the rural areas would not be able to manage the resources and would be left behind it. If learners maintain proper accessibility protocol they can sustainably use them. The basic differences between the new management in post pandemic era with the traditional one exists prior to COVID-19 are flexibility in time frame, Multimedia environment; lessen regional disparity and physical barriers.

2. Time frame flexibility helps to increase their access to digital educational resources. As the new management procedure based on ICT it can automatically reduce regional disparity and physical barriers. The multimedia environment like images, graphs, videos etc. in teaching learning helps them to understand the topic or subject from different dimensions. So, the management procedures of educational resources in post pandemic era help the students in higher education to escalate their academic progress from different dimensions like access, quality and equity.

Proposed Model

So, two evident dynamics (i) Regional disparity i.e., Rural-Urban and ICT centeredness i.e., ICT familiarity, and (ii) not familiarity are involved in shaping this model. A suitable model of dealing with digital educational resources in post pandemic era can remove confusion and fear from the mind of the both teachers and learners. To protect the country from the curse of Digital Divide the present researchers tried to develop a suitable model of managing digital educational resources and its implications over the traditional one has been already analyzed in analysis of the data. The model of managing educational resources is as follows:

Genesis of Resources	Types of Resources	Accessibility Protocol	Sustainable Usage
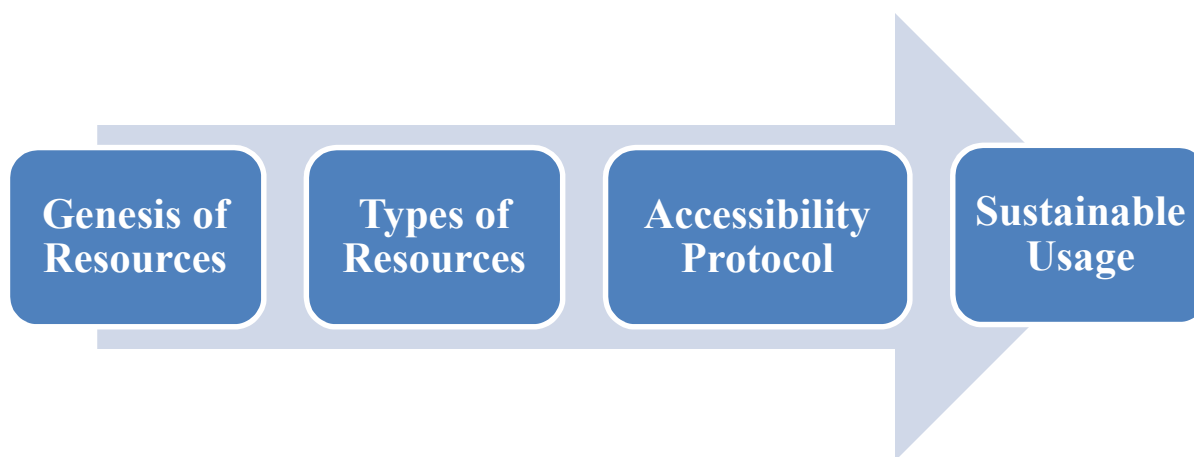
Discussion

Educational Implications of the New Management Procedure in contrast with Traditional Management Procedure

Studies proved that urban students are more equipped with ICT facilities and more habituated in using it than rural people**.** Students from both the areas are aware about blended mode of management procedure of educational resources but prefer physical communication and physical mode to dealing like visiting library, reading printed materials etc. Various measures have been taken by the Government of India to combat challenges of digital leaning in pandemic. Though teaching fraternity has started to use the large pool of digital educational resources, their effort lacks proper direction to mange it effectively. In spite of several challenges students especially from rural areas tried to continue their educational activities. The pandemic situation gradually subsided but it left behind a scope of accelerated digital learning. Several studies **(Gulzer&Leema, 2015, pp. 96, Kundu and Nath 2018, Pandey and Pandey, 2020 and Government of India, July, 2020)** have shown that students from both the areas have started their journey from pre pandemic era in managing educational activities digitally with a large gap in terms of infrastructure and equipments. Again educational community returned to blended mode of learning but leaning management system become so demandable and popular in different educational institutions (**Jena, 2020 pp12584).**They started to take part more in different types of online courses offered by SWAYAM platform and others. They have more accessed in digital resources from NDL, Sodhganga, Sodhsindhu, E-PG Pathsala and many more (**Jena, 2020 pp12584)**.

Bhattacharya and Sharma (2007) predicted in so many years before that digital opportunities may increase digital divide in future. Online education during COVID 19 may enhance the gap between rich poor and rural urban (**Jena, 2020 pp.12585).**

So, the present researcher suggests a proper management procedure for their best positive outcome from the system to deal with the digital educational resources.

With the new management procedure some questions may be arise on the mind of the readers. How does the neo system substitute the old system in maintaining the quality of education? What are the extra facilities of the neo system over the old system? Is the neo system favourable for physical skill oriented subjects?

The educational implications of the new management procedure over the traditional one are as follows;

- **Flexibility in Time Frame:** Teachers may motivate their students that physical educational world may be closed after a certain period of a day but digital library is open now for us with 24x7 time frames.
- **Multimedia Environment:** This environment can provide holistic understanding of the subjects. They can use audio explanation, videos for clarification, animation, graphics and interactive multimedia whatever desired by them for a specific topic or area of discussion.

- **Increasing GER in Higher Education:** Learners are already enthusiastic about the different types of regular, value added, certificate and skill enhanced courses through different types of recognized online portal or platforms (**Jena, 2020 pp12584)**. Traditional distance and open learning system opens more courses in recent days. So, if learners become habituated and gain advantage from new management procedure they can easily enroll in different types of courses which trend will increase GER in higher education system.
- **Making Education more all Inclusive:** The new management procedure helps to reduce regional as well as physical barriers which already exist. Teachers may help to access to all including the most disadvantaged to bridge the digital divide. If we can cater the students' accessibility properly it can surely reduce regional disparities. Unless the resources are properly accessible by the students these would not be of worth to its value.

The educational gap in terms of achievement and quality created by pandemic may hit the future in long run. The higher education institute may try to provide digital gadgets for all students and laptops with screen readers and special e-content for the visually and hearing impaired group of students to integrate them. It has a great barrier to teach physical skill orientation subjects. Virtual labs, simulation experiments may be the substitute for physical laboratory. The educational barriers of the new management procedure may be faced;

- **Infrastructure:** India need more robust infrastructure to run the process throughout the country. The present government has taken so many initiatives to uplift the present access of digital world but a large gap still remains in the rural urban dynamics.
- **Cost effectiveness:** Educational institutions needs to keep in consideration about the cost effectiveness of the usable items. Paper will be scare in future so we have to be habituated in digital format.
- **Physical skill oriented subjects:** Physical skill oriented subjects like physical education, yoga courses may face difficult to understand all level of learners. Educational institutions and teachers may solve the matter in future.
- **Personality Development:** Teaching style of the teachers in the classroom and group dynamics among students may affect the development of the personality of our learners.

Conclusion

Data from the various sources have shown that we need to strengthen our educational resource management in post pandemic era. Teachers need to guide their students in management procedure of the digital educational resources simultaneously supporting future of learning. Teachers should be aware about the digital divide can't affect the learners' community. Sustainability and inclusiveness must be ensured in management of educational resources unless a large amount of students would be left behind. The new management procedure may reduce disparity in terms of regional and educational.

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