DIGITISED EDUCATIONAL EFFORTS (DEE): EFFECTIVENESS AND USERS PERCEPTION

Dangi Pooja Arun
Research Scholar, Department of Extension Education, Chaudhary Charan Singh Haryana Agricultural University, Hisar , India 9673059397
pd967305@gmail.com
ORCiD iD: https://orcid.org/0000-0002-4605-3912

Basavaprabhu Jirli
Professor and Head, Department of Extension Education, Institute of Agricultural Sciences, BHU, Varanasi, India, 9450542832
bjirli@gmail.com,
ORCiD iD: https://orcid.org/0000-0003-1739-7238

ABSTRACT
Digitized educational efforts are growing steadily worldwide because of the continuous development of educational technologies. Global adoption of e-environment and exasperating demand for workforce indicates the need for trained specialists for the ever-evolving virtual economy. The present study was conducted to understand the perception and effectiveness of Digitized Educational Efforts (DEE) by the female students of Banaras Hindu University. The sample comprised 544 female students belonging to eight faculties of Banaras Hindu University. The data were subjected to appropriate statistical analysis for arriving at logical conclusions. Besides, the study concluded that the majority of the respondent's perceived Digitized Educational Efforts as easily accessible and affordable than that of the traditional education system. Further, the majority of 487(89.52%) are satisfied with teaching and learning by digital mode. It was found that 109 (20.03%) agreed that there was more than 50% increase in marks and the majority of respondents found Digitized Educational Efforts found effective.
Keywords: Accessibility, Affordability, Digitized Educational Efforts, Perception, Effectiveness.

Introduction:

Background:

In the 21st century there is a growing demand for Information and Communication Technologies (ICTs). It is emerging as one of the prime source of knowledge for today's youth. Digital platform has readily provided numerous sources for education and developing knowledge. Many researchers and learners have found slew of content through technology to enhance this knowledge. The only drawback of digital platform is that most of the information is encrypted through passwords and hence not available for future purpose. In terms of the history of Digitized Educational Efforts, learning objects popularised the idea that digital materials can be designed and produced so that they can be easily reused in a variety of pedagogical situations. Wiley (1998) invented the expression "open content" which caught the attention of Internet users and popularized the idea that the principles of the open-source software movement could be productively applied to content. Wiley also created the first widely adopted open license for content.

India, after independence, has made a great progress in its education structure. These advancements led to initiate more & more educational institutions, colleges, and universities by various state governments. The rapid growth of higher education in the country was required to ensure quality education & success. To provide quality education to all, distance education emerged as an innovative alternative. The first ever distance learning in India for higher education was initiated in the form of Correspondence Courses in 1962 after that the Delhi University established a School of Correspondence Courses and Continuing Education in 1962. The establishment of IGNOU at New Delhi in 1985 has proved to be a significant milestone in the development of Distance Learning in India. It provides a central Organisation for guiding and coordinating the activities of all distance education institutes and state open universities in the country.

Context:

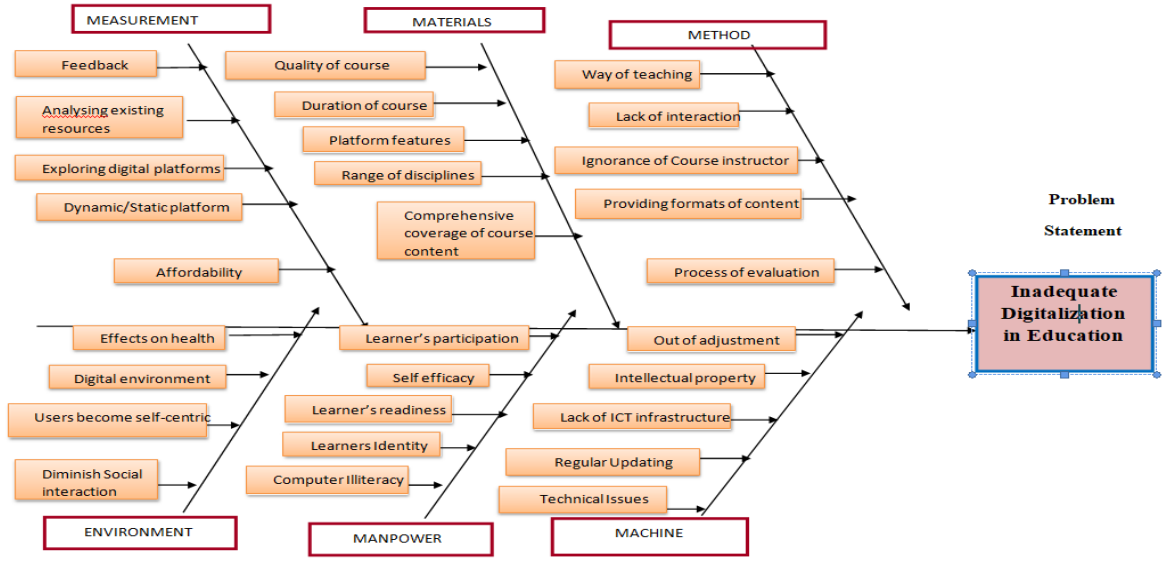
Digitized Educational Efforts refered to as the resources which are available in digital format. They can be read and scanned using electronic Medias. These digitised resources can be stored in a computer locally or remotely and do not require lagre space as books. Digitally formated resources includes PDFs, graphics images, or photos, audio and video.

The Research problem:

The proposed study is focusing on the effects of Digitized Educational Efforts on students of Banaras Hindu University, how the students perceive the efforts of various institutions was an issue. The implications of the

digitized educational efforts on students' performance was also a question of inquiry. Keeping the issue in view an effort has been made to present the views through cause and effect diagram.

Fig.1. Fishbone diagram depicting factors leading to inadequate digitalization in education



Conceptual framework:

It is opportune time for educators to work on digital modes of delivery of education and to adopt educational innovations. The purpose of educational innovations must not only lead to an improvement in grades or cutting costs but offer learners a more fulfilling educational experience. Traditionally, digitized opportunities in education perceived as a shortfall of face to face communication. It is mainly due to the lack of social presence, social interaction, and instant feedback. Consequently, online learning sources are at an early stage of development, developers and deliverers of digitized educational efforts need an deep understanding of student's perception about the sources to develop the appropriate technologies. Indeed, the student's perceptions and attitudes are critical for the involvement of learners in education. Documenting the quantum of knowledge gained with e-mediation, the extent of usage of technology, usefulness, and its benefits and challenges. A majority of respondents (80.2%) are going to accept the online mode of education followed by conventional education (19.8%), 73.0% respondents opined that online mode of education is moderately advantageous over conventional mode followed by low degree (13.5%) and high degree (13.5%) of relative advantage so a total of 86.5% respondents had medium to a high level of opinion towards the relative advantage of online education. (Jirli et al. 2006).

An effort has been made to present the views through the Logical Framework Approach as follows.

Fig.2. Logical Framework Approach

	Intervention Logic	Objectively measurable and verifiable indicators	Sources of verification	Important Assumptions
objectives/Goals	To measure perception and effectiveness of Open Educational Resources on students academic performance	Socio-economic profile of respondent, Access and usage pattern of respondents, Attitude towards Open Educational Resources and effect on academic performance	Primary data, Review of related literature, Reports from secondary data (Books, websites)	Open Educational Resources help students to improve academic performance
Purpose	Documenting and verifying how Open Educational Resources helping students	Percentage of respondents utilizing Open Educational Resources, analyzing effect of Open Educational Resources as Positive/negative	Interaction with respondents,	Respondents who have higher socio-economic status and who can afford ICT infrastructure use Open Educational Resources
Results/Output	Appropriate reception of information, increased interest in subject taught, reduce dependency and self reliance, improvement in grades, develop, appropriate perspectives about the issues	Change in existing practice, Change in skills, Development of scientific temperament	Utilization of experienced gain, improvement in output, change in attitude, change in skills	Open Educational Resources leads to better performance
Activities	Collection of data by Distributing interview schedules	Proper distribution and collection of interview questionnaires, Nature of response given by respondent	Sincerity of respondents, Level of understanding of questions by respondents	Respondents are sincere in filling the questionnaires
Inputs/Resources	Measures of central tendency, Measures of dispersion, Chi-square test Kendall's tau b, Garret ranking	Proper selection of variables and statistical tools	Outcomes of questionnaires	Adequate sample size

Review of Literature:

Biranvand & Khasseh, (2014) investigated that since the early 1990s modern information sources such as electronic books, virtual libraries, and e-library, have caused rapid progress in educational media. Digital opportunities like e-books indicate the development of education structure which provides the possibility to learn for everyone, anywhere, and anytime.

Gibson & Gibb, (2011) concluded that students get more attracted towards digitalized educational resources; this may be because readers of electronic books can find a certain topic in an electronic book much easier and effective than in a printed one.

Jayesh M. Patel, (2017) stated that many web-based tools can be used for digital education in the classroom, such as Twitter, Glogster, Prezi, Diigo, Dropbox, and Moodle. Teachers and students are interested in web-based digital learning, but due to lack of knowledge, they did not initiate the same activities. Web-based tools will make learning fun and students will gain motivation that normal classrooms cannot. Today's teacher-centred approach makes learning boring. Even for interesting chapters, the use of digital technology makes boring content interesting and fun. The concept of a child-cantered approach can only be realized with the help of digital technology

Jewitt, (2006) observed that the development of digital technology and the entry of resources into multiple modes of expression have created new opportunities for learning, but they have also further complicated these connections and require a broader re-understanding of literacy.

Jones (2002) researched "The Internet Goes to College: How Students Are Living in the Future with Today's Technology" at Washington.D.C results of the study examined that the impact of internet on college students' daily lives and their academic and social routines. He collected information from students from 27 colleges and universities and found that about 79 per cent of college internet users said that the internet had a positive impact on their college academic experience and 73 per cent of the students used the internet more than the library to search for information.

Kumar and Kumar (2010) conducted a study on "Perception and usage of e-resources and the internet by Indian academics" in Bangalore, they compared e-resources with print sources and observed that almost 50 per cent of respondents found information locating and identifying is easier while the same percentage believed that accessing information in electronic format is slightly easier. In case of engineering students about 57 per cent believed that information locating and identifying on internet is easier while 48 per cent of medical science and management studies students considered that information locating and identifying on internet is slightly easier.

Landouni and Diaz (2003) believed that electronic textbooks are educational tools prepared electronically, to aid teaching and learning. E-learning provides easier and broader access to information for education because it promotes coordination and collaboration between experts and students, and also shows a higher success rate compared to traditional methods.

A study by **Thanuskodi (2012)** showed that 76.66 per cent of respondents use electronic resources to write articles. Regarding the impact of electronic resources on the academic performance of students, the majority (48.6%) agreed that electronic resources have a positive impact on the academic performance of students. The number of people who strongly agree and agree is 118 (81.9%). 24 (16.7%) undecided, only 2 (1.4%) do not agree that electronic resources have a positive effect on students' academic performance

The research mentioned above showed that the use of digital education efforts has a positive impact on the academic performance of respondents and helps to improve writing and communication skills. They believed that electronic resources are valuable educational resources that help improve academic achievement. The survey also showed that respondents had a positive attitude towards electronic resources and agrees that electronic resources provide high-quality information. Most respondents find information easier to locate and identify with the help of the Internet.

Research questions:

1. How do students perceive Digitized Educational Efforts?
2. Is there any effect of Digitized Educational Efforts on student's academic performance?
3. Is there any relationship between the uses of Digitized Educational Efforts and gain in marks?

Objectives:
The objective of the study was to understand and measure the female student's perception towards Digitized Educational Efforts and to measure its effectiveness based on the improved academic performance.

Research Methodology:

Population and sample:
The study was conducted on female students of BHU(Banaras Hindu University) towards Digitized Educational Efforts perusing graduation, Post-Graduation, and Ph.D. as they are involved in the utilization of digitized educational efforts. The method of the whole enumeration was used for selecting the sample of the study. The sample comprised 544 female students from eight faculties of BHU. The emphasis was given to get the response of PG and Ph.D. girl students residing in hostels inside the campus. In many faculties, there were very few girls who stayed in the hostel, under such circumstances UG girls were respondents. The response received is presented in table 1. With the whole enumeration method, 544 respondents were selected, of which 100 respondents from the faculty of Agriculture and Arts, 78 respondents from faculty of Medicine, 52 from the IIT(BHU) and 50 from the faculty of Law, whereas,34, 80 and 50 respondents were from the faculty of Management, Science and Commerce respectively.

Table No.1 Selection of respondents

Sl. No.	Name of the faculty	Number of students						Total number of students	
		Graduate		Postgraduate		Research scholars			
		A	B	A	B	A	B	A	B
1	Agriculture	-	-	80	80	20	20	100	100
2	Arts	37	37	42	42	21	21	100	100
3	Medical	30	40	39	40	9	20	78	100
4	IIT(BHU)	-	-	31	60	21	40	52	100
5	Law	36	36	14	14	-	-	50	50
6	Management	-	-	32	40	2	10	34	50
7	Science	-	-	30	40	50	60	80	100
8	Commerce	41	41	6	6	3	3	50	50
Total								544	650

* Filled in Questionnaire received = A, Questionnaires distributed = B

The procedure of data collection and analysis:
To collect information regarding Digitized Educational Efforts, we surveyed by distributing questionnaires among the respondents. Purposive sampling method has been employed. The questionnaire was distributed personally to ensure the excellent response rate and to avoid any misunderstanding while responding. A total of 650 questionnaires were distributed out of which 544 received back duly filled in. Collected data were subjected to statistical analysis by using frequency and percentage, Henry Garret Ranking. To measure the effectiveness of the Digitized Educational Efforts Chi-square test and Kendall's tau b test was carried out between the use of Digitized Educational Efforts and its effect on the academic performance of respondents.

Result and discussion:
Research Question #1: How do students perceive Digitized Educational Efforts?
Survey Result
The perception of students towards Digitized Educational Efforts was measured by distributing questionnaires among them. The survey includes questions regarding access to the internet, affordability of Digitized technologies, perception regarding saving of money due to the use of Digitized Educational Efforts, and how they perceive open educational resources if users need to pay fees to access educational content.

Easy accessibility of internet

Access to personal computers and laptops is a common feature. Access to the internet is almost universal nowadays, which has changed the lives of millions of people. Among internet users, students utilized the internet for different purposes other than entertainment, shopping, or business.

Table: 2 Distribution of respondents based on agreement on easy accessibility of the internet:

Institute of Agricultural Sciences (n=100)	Institute of Arts (n=100)	Institute of Medicine (n=78)	IIT(BHU) (n=52)	Institute of Law (n=50)	Institute of Management (n=34)	Institute of Science (n=80)	Institute of Commerce (n=50)	**Overall (N=544)**
Percentage								
99	76	78.20	92.30	100	100	90	84	**89.52**

Table 2 shows that all the respondents (100%) from the faculties, i.e. faculty of Law and Management agreed on easy accessibility of internet, followed by 99 percent from faculty of Agriculture, 92.30 percent from IIT, more than three-fourth (78.20%)from the faculty of Medicine and 76 percent of faculty of Arts were found ease in internet access. Among overall respondents, the majority (89.52%) settled on the agreement of easy accessibility of the internet.

Individual affordability of Digital services

Digital technologies, mobile, and computers have easy access to the majority and are cost-effective. Students use mobile to access educational resources anytime, anywhere, which involves cost. To what extent students can invest in such amenities? It is evident from Table-3 that 84 percent of the respondents of Medical sciences are spending more than Rs.250 per month for accessing the internet followed by more than 75 percent from faculty of Law and Science respectively. More than 58 percent possessed UPS/Inverter/Generator for backup of the computer.

Table 3: Distribution of respondents based on individual affordability of Digital services:

Individual affordability of digital services	Agriculture (n=100)	Arts (n=100)	Medical (n=78)	IIT (n=52)	Law (n=50)	Management (n=34)	Science (n=80)	Commerce (n=50)	**Overall (N=544)**
	percentage								
On mobile spending more than 250 per month for accessing Internet on mobile	68	59	84.61	69.23	76	67.64	75	56	69.48
Have UPS/Inverter/Generator/backup for computer	40	31	24.35	30.76	40	58.82	46.25	52	38.41
Cost of Respondent mobile									
Less than Rs. 5000	8	3	3.84	13.46	-	5.88	8.75	8	06.25
Rs.5001 – 10,000	34	60	48.71	34.61	46	26.47	47.5	44	44.48
More than 10,000	58	36	47.43	51.92	54	67.64	38.75	48	48.34
Cost of Respondent Computer/Laptop									
Less than Rs. 25000	8	-	15.38	9.61	18	11.76	17.5	18	11.21
Rs.25001 – 50,000	83	67	47.43	80.76	40	67.64	71.25	34	63.60
More than 50,000	9	2	12.82	1.92	30	14.70	13.75	18	11.39

Hardly six per cent of respondents possessed mobile of price less than Rs.5000, while more than 48per cent possessed mobile of more than 10,000, about 44 per cent possessed mobile of price less than Rs.10,000. The trend reveals that the majority of students possess high-end phones with many applications. It has many benefits also. Apart from entertainment, several educational inputs can be accessed through these devices.

In the case of Computer/Laptop, more than 11 per cent of respondents possessed gadgets worth less than Rs.25,000 and an equal number of them possessed gadgets worth of more than 50, 000. While about 63 per cent of respondents were possessing gadgets worth 25 to 50 thousand. Looking into the present-day market, in the range of 25 to 50 thousand rupees, we can get either desktop or laptop with the majority of advanced features.

Savings due to Digitized Educational Resources

It was found (Table 4) that 87.5 per cent respondents from faculty of Science agreed that they saved money by using Digitized Educational Resources, followed by 85.29 per cent of the respondents from faculty of Management and 84 percent from the faculty of Agriculture accepted that they saved money by using Digitized Educational Resource. Total, 41 (80%) of the 51 faculty stressed that reducing the cost of education for college students was their priority.

Table 4: Distribution of respondents based on their perception of financial saving due to Digitized Educational Resources:

Agreement of respondents on money saved by using open educational resources	Agriculture (n=100)	Arts (n=100)	Medical (n=78)	IIT (n=52)	Law (n=50)	Management (n=34)	Science (n=80)	Commerce (n=50)	**Overall (N=544)**
	percentage								
	84	63	61.53	78.84	76	85.29	87.5	74	75.36

Henry Garrett's Ranking Technique:

Henry Garrett's ranking technique was used to evaluate the rankings given by respondents as what they more or less likely to do as a result of using online educational resources. This technique helps to find the most preferred factor by the respondents. As per this method, respondents have been asked to assign the rank for all factors and converted into score value with the help of the formula:

Percent position =100 (Rij – 0.5)/Nj

Where,

Rij = Rank given for the ith variable by jth respondents.

Nj = Number of variables ranked by jth respondents.

Table 5: Garret ranking of perception of learners regarding adopting DER

Reasons for adopting DER	**Total**	**Average**	**Rank**
Study a free course/study a free open educational resource	34,378	63.19	1st
Enroll on a paid-for course	26,223	48.20	4th
Enroll in a paid-for course and work towards a qualification	28,972	53.25	3rd
Ready to pay only if the certificate is awarded	30,686	56.40	2nd

It is evident from Table 5 that learners want to go for a free course/study a free open educational resource received the first rank. Next in the order was learners were ready to offer the course or any services, only if they are offered certificates for the same. Third, in the order was the interest of learners was to enroll a paid course and work towards a qualification, acquiring qualifications through educational efforts is a welcome perception for policymakers. Existing efforts are for improving the quality of current educational efforts and quench the thirst of interested learners by providing quality learning materials and sources.

Research Question #2: Is there any effect of Open Educational Resources on student's academic performance?

The effectiveness of Digitized Educational Resources is measured by calculating the association between the use of Digitized Educational Resources and their effects on improved academic performance of students. Chi-square test and Kendall's tau b test was followed to measure the association.

Effect of Digitized Educational Resources on academic performance:

Table 6 depicted that the effect of increased participation in classroom discussions (85.29%), increased interest in the subject taught (100%), gaining confidence (100%), increased enthusiasm for future study (100%), becoming interested in a wide range of subjects than before (100%), is more likely to complete course of my study (100%) and helped to know various subjects without anybody's help (100%) was found to be more in the Faculty of Management as compared to the other faculties. However, the effect of increased satisfaction with learning experience (98%), increased experimentation with new ways of learning (95%), and assignment given during course study (95%) was maximum in the Faculty of Agriculture. On the other hand, the effect of improvement in grades (88%), feedback system strong enough to clarify and resolve various doubts and problems that arise during the course (82%) and having increased independence and self-reliance (100%) was found be highest in the Faculty of Law.

Table 6: Distribution of respondents based on the effect of Digitized Educational Resources on academic performance:

Effect of Digitized Educational Resources on respondents studies	Agriculture (n=100)	Arts (n=100)	Medical (n=78)	IIT (n=52)	Law (n=50)	Management (n=34)	Science (n=80)	Commerce (n=50)	**Overall (n=544)**
	percentage								
Increased participation in classroom discussions	81	68	84.61	82.69	72	85.29	78.75	70	85.84
Increased interest in the subjects taught	95	72	84.61	90.38	82	100	95	72	84.84
Increased satisfaction with the learning experience	98	77	82.05	84.61	76	88.23	96.25	90	86.94
Improvement in grades	82	70	75.64	84.61	88	73.52	83.75	74	78.67
Gaining confidence	96	71	79.48	88.46	94	100	88.75	76	85.47
Having increased independence and self-reliance	97	72	76.92	86.53	100	94.11	96.25	84	87.31
Increased experimentation with new ways of learning	95	71	83.33	75	94	88.23	93.75	82	85.11
Increased enthusiasm for future study	93	72	76.92	86.53	94	100	95	82	86.02
Becoming interested in a wider range of subjects than before	93	56	71.79	80.76	88	100	86.25	72	79.04
Being more likely to complete my course of study	88	59	65.38	82.69	76	100	88.75	74	77.38
The assignment is given during the course study were found useful	95	68	83.33	86.53	88	79.41	91.25	76	83.63
Feedback system strong enough to clarify and resolve various doubts and problems that arise during the course	81	46	74.35	65.38	82	58.82	81.25	44	67.64

Helped to know various subjects without anybody's help	90	65	74.35	80.76	94	100	92.5	76	82.35

It was found that out of 544 respondent's majority of respondents found Digitized Educational Resources effective. Among 544 respondents 468 (86.02%) increased enthusiasm for future study, 475 (87.31%) increased independence and self-reliance, 465 (85.47%) gained confidence, 463 (85.11%) Increased experimentation with new ways of learning, 455 (83.63%) assignment given during course study was found useful, 448 (82.35%) helped to know various subjects without anybody's help, 430 (79.04%) became interested in a wider range of subjects than before, 421 (77.38%) being more likely to complete my course of study, 421 (77.38%) increased participation in classroom discussions, 368 (67.64%) stated that feedback system is strong enough to clarify and resolve various doubts and problems that arise during the course respectively.

Chi-square test and Kendall's tau b test

The test was carried out between that use of digitized educational technologies and the effect of Digitized Educational Resources on academic performance.

1. It was found that the use of digitized educational technologies and the effect of digitized educational efforts on academic performance were associated as the p-value was ($p = 0.049$), hence null hypothesis is rejected and is accepted. Since the p-value is less than chosen significance level ($\alpha = 0.05$). The results of the study concludes that the use of digitized educational technologies and effect of digitized educational efforts on academic performance are associated (= 9.524, p =0.049).

2. A Kendall's tau b test was carried out to determine the relationship between the use of digitized educational technologies and the effect of digitized educational efforts on academic performance amongst 544 respondents from eight faculties. There was no correlation between the use of digitized educational technologies and the effect of digitized technologies on academic performance, which was statistically non-significant. (= 0.077, p =0.102).

Table 6: Chi-square and Kendal's tau b test

Sr.No.	Particulars	Chi-Square value	Asymp.Sig
1	**Use of digitized technologies and Effect of Digitised Educational Efforts on academic performance of students**	9.524	0.049
		Kendall's tau b value	Asymp.Sig
		0.077	0.102

Research Question #3: Is there any relationship between the use of Open Educational Resources and gain in marks?

Percent gain in marks due to Digitised Educational Efforts:

Table 8 depicted that majority 76.64% of respondents from the faculty of management found less than 25% gain in marks due to Digitized Educational Efforts, followed by 56.25% from the faculty of science found 25-30% gain in marks and 53.84% from faculty of medical found 50% gain in marks

Table 8: Distribution of respondents based on percent gain in marks due to Digitised Educational Efforts:

% gain in marks due to Digitised Educational Resources	Agriculture (n=100)	Arts (n=100)	Medical (n=78)	IIT (n=52)	Law (n=50)	Management (n=34)	Science (n=80)	Commerce (n=50)	**Overall (N=544)**
	percentage								
Less than 25%	41	57	14.10	50	42	76.64	23.75	48	46.50
25-30%	40	24	32.05	30.76	24	32.25	56.25	26	34.19

More than 50%	19	19	53.84	19.23	24	-	16	26	20.03

It was found that out of 544 respondents majority of respondents found Digitized Educational Efforts helped them in gaining percentage in marks, it was found that109 (20.03%) agreed that there was more than 50% increased in marks whereas 253 (46.50%) agreed that there was less than 25% followed by 186 (34.19%)up to 25-30% respectively.

Discussion:

Results from the analysis of data collected from students of Banaras Hindu University, Varanasi show that:

1. Students have easy accessibility of the internet as campus hostels provide free wifi facility to students so that students can easily access Digital content. Similar results were found by Jelena and Dijana (2011) study on gender differences in the internet usage among postgraduate students enrolled at the Faculty of Organization and Informatics Varazdin, University of Zagreb revealed that information dissemination is faster, accessible with faster accesses and better selection, more than a half of male students (60%) agree with the statement that Internet will one day replace the libraries. Though, female students do not share the same opinion. About 52% of female respondents feel that the Internet will never replace libraries.

2. On the other hand affordability of Digital services by students was one of the limitations to access and use Open Educational Resources. An interesting observation is more than 80 percent had either a laptop or desktop. Means gadgets are affordable and accessible. The prime requirement is the availability of educational content to satisfy the needs of learners. Learners are harnessing the available content and looking for better quality content. Apart from entertainment, learning is the objective of young aspirants. The institutions are working on catering to the needs of the learners.

3. The majority of respondents implied that they saved money as many of them are freely accessible in different formats, students might need to pay the cost of printing if they would like to acquire printed copies. In both cases, faculty indicated that a significant amount of reduction in the cost of textbooks is possible (Ozdemir, O., Hendricks, C. 2017). Furthermore, the cost savings of OER addresses broader goals of more equitable access to education (Biswas-Diener&Jhangiani, 2017). The basic issue is the availability of digitized content and its access to end-users. Next in the order is the learner's interest in accessing the additional contents in addition to classroom learning. More inclination towards digital content is also an indication of learners' quest for quality information. There are many sources of information that provide complete access on payment basis only. Very limited content is freely available, if you want to move towards the next step, pay and proceed. Under such circumstances sources like NPTEL, SWAYAM, e-PG Pathashala, Krishikosh, e-Granth, etc are providing access to quality educational contents free of cost to learners. Hence learners are feeling that they have saved money by accessing the educational contents from authentic sources that too free of cost. It was also observed that the majority of respondents (75.36%) said that they saved money by using Digitized Educational Efforts. The reason behind these findings may be the free provision of Wi-Fi facilities in the hostels. Also, the availability of all kinds of e-resources including the full textbook, research papers, etc. in various formats such as PDF, word files, helps the students to download them online instead of spending money and getting hard copies.

Higher participation in education systems around the world poses a challenge in allocating costs between public budgets and private households to cover the cost of high-quality learning materials. Compared with the traditional model of appropriate content, digital education work offers the potential to reduce costs by sharing and updating resources in a more cost-effective manner. Textbooks, which are widely used as the basis for learning at all levels of education around the world can be replaced by open digital format which can reduce costs and increase the relevance of new textbooks.

4. Henry Garret's ranking of perception of learners regarding adopting Digitized Educational Efforts implied that somewhere we feel happy to have things free of cost. Marketing agencies have exploited this concept like anything in developing and underdeveloped countries. The cost of these services is borne by somebody, maybe it is the government in most of the cases. If private players come out with such attractions, the cost will be surely be recovered in subsequent events But anything which is termed as 'free' attracts masses. Displaying certificates is another indicator of quality, hence learners are interested in certificates, also they are ready to pay for it. Thus, it can be concluded that students preferred free courses but they are ready to pay if certificate or degrees are offered. Similar findings were revealed by Jirli *et.al* (2019) that a group of 49 (5 percent) respondents were honest enough to reveal the reality of participation in the course activities to get a certificate. The varied responses give us an

insight that the content to be included in the course needs to be carefully selected to cater to the needs of a diverse range of clientele.

In the case of the current use of Digitized Educational Efforts in agriculture, it was found that the majority used agMOOCs platform as it offers MOOCs on various courses in agriculture that too free of cost. Also provides course materials in a variety of formats such as videos, audios, and PDFs. A study conducted by Jiri et.al on "Alternative learning platforms for agri-students through e-Mediation: An initiative of agMOOCs" revealed that More than 90 percent of learners expressed their satisfaction with the content while nine percent remained neutral and one percent expressed their dissatisfaction. Distribution of learners based on Satisfaction with the content provided on the agMOOCs platform about 89 percent of learners were satisfied with the pace of content delivery, a feature of offline mode was added to the agMOOCs app so that you can access contents of the course without an internet connection. The benefit for the learner is that he/she can access the cloud-based course contents when they are not having internet connection ease of using agMOOCs app was recorded, which revealed that more than 85 percent of respondents said it's easy to use.

5. The result of the study has shown positive effects on academic performance of students. Chi-square test has shown an association between the use of Digitized Educational Efforts and its effects on academic performance. On the other hand, Kendall's tau b test did not show any association between them. Similar results were reported by Mehandi and Kalpana (2018) they stated that that 84.5% (127) agreed that e-learning was beneficial as it would be an interactive session and courses are readily available online. 78.5% (118) students found it cost-effective but 28.5% (43) students expressed their fear over its cost-effectiveness. 63.5% (94) felt that web-enabled training would help in a better understanding of the course than formal teaching methods. 54.6% (82) felt that e-learning would help them to learn on your own at your own pace.Thus it is clear from the table that many of the variables of Digitized Educational Efforts have cent percent effect on some faculties such as management so it can be concluded that the Digitized Educational Efforts may be the reason of the academic success of students from different fields and it helps the students to become self-reliant as well, although, the e-resources cannot replace the conventional teaching methods, they can surely supplement productively.
6. On percent gain in marks due to Digitized Educational Efforts it can be concluded that increases in the percentage of marks were seen in the students of all faculties, although the percentage was not much higher. From this, we can say that there is scope for further improvement in marks of the students in the future with the utilization of digitized resources.

Recommendations:
The current research focuses on measuring perception and effectiveness of Open Educational Resources, the study recommends that,
1. There is a need of implementing properly designed Digitized Educational Efforts to cater to the emerging needs of the students from different faculties.
2. It was observed that the majority of the students were registered for the Online Courses because they can access it without paying any fees and were provided a certificate. Students access it only because it provides a certificate, not for educational gain, if we asked to pay some money for the course, students will access it seriously, because they are paying for it. The study recommends providing paid online courses because students who are want to gain some knowledge will apply for it.

Conclusion:
The study intended to measure the effect and perception of Digitized Educational Efforts on students' Academic Performance, results of the study revealed that majority of the students had easy access to the internet and they found that the digitised educational resources are cost-effective than the traditional education system. The cost of textbooks and the cost of tuition are rising hence many students simply cannot afford textbooks. On the other hand, Digitized Educational Efforts is a way to easy access to course materials and should further utilize in a blended learning environment to support face to face teaching and allow for flexibility in the delivery of education. On the other hand, Digitized Educational Efforts have a positive effect on student's academic performance as it helps students to gain marks, increased participation in classroom discussions, increased satisfaction with the learning experience, increased independence and self-reliance, etc. There is a need to properly designed the technologies so that it helps to enhance student involvement and learning while breaking down barriers of affordability and accessibility.

Implications
The results of the study helps in bringing necessary changes by incorporating the newer techniques and tools into the learning environments for the benefit of the learner as well as incorporating e-mediated strategies, tools, and technologies at the Institutional level.

References:

Biranvand, A. and Khasseh, A. (2014). E-book Reading and its Impact on Academic Status of Students at Payame Noor University, Iran. *Library Philosophy and Practice (e-journal).* Paper 1170. Retrieved on 28/01/2016 from http://digitalcommons.unl.edu/libphilprac/1170

Dangi. P. and Jirli, B. (2019). Effect of Digitised Educational Efforts on Female Students of BHU towards their Academic Performance. Thesis, M.Sc. Department of Extension Education, Institute of Agricultural Sciences, BHU, Varanasi.

Gibson, C. and Gibb, F.(2011). An evaluation of second generation e-book readers. *The Electronic Library.* Vol. 29(3). pp:303-19.

Jayesh, P. (2017). Web Based Tools Of Technology In Future Teaching Learning Strategies. *International Education & Research Journal*. Vol. 3(2).

Jewitt, C. (2006). Technology, literacy andlearning: A multimodal approach. London: Routledge

Jirli, B., Srivastava, S. K. and Singh, R. S. (2016). A study on the attitude of undergraduate students towards distance education in agriculture. *Journal of open schooling.* Vol. 6(1). pp:56-71.

Jirli, B., Sarma, B. K. and Singh, A. (2019). Alternative Learning Platforms for Agri-Students through e-Mediation: An initiative of agMOOCs.

Jones, S. (2002). The Internet Goes to College: How Students Are Living in the Future with Today's Technology.

Kumar and Kumar. (2010). Perception and usage of e-resources and the internet by Indian academics. *The Electronic Library*. Vol. 28(1). pp: 137-156.

Landoni, M. and Diaz, P. (2003). E-education: design and evaluation for teaching and learning. *Journal of Digital Information.* Vol. 3(4).

Mehandi, M. and Kalpana, R. (2018). A study of student's perceptions about e-learning. *Indian Journal of Clinical Anatomy and Physiology*. Vol. 5(4). pp: 501-507.

Olabode and Olajide. (2017). Impact of electronic resources use on academic performance of Undergraduates in Nigeria, Information Impact. *Journal of Information and Knowledge Management.* Vol. 56(7).

Ozdemir, O. and Hendricks, C. (2017). Instructor and student experiences with open textbooks, from the California open online library for education.. *J Comput High Educ*. Vol. 29. pp: 98–11.

Thanuskodi, S. (2012). Use of Online Public Access Catalogue at Annamalai University Library. *International Journal of Information Science.* Vol. 2(6). pp: 70-74.

