Revolutionary Impact of Information Technology on Education

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ABSTRACT

Increasing disruptive changes in the technology has witnessed a remarkable transformation in almost every aspect of today's life and education is no exception. In the 21st century students are adopting technology by using e-Books, Excel, power point presentations and software of SPSS, STATA in their curriculum which are enhancing the exposure of students with less financial resources. The basic objective of this paper was to show the comprehensive influence of advance technique on education of students. A total of 230 students studying in different streams of University completed the questionnaires and the SPSS has been used to analyze the results of the questionnaires were subjected to statistical analysis. This study has shown a strong relationship between the Usage of Technology and the interpersonal & external enrichment of the students by saving their time.

Keywords: Disruptive, technology, efficiency, knowledge.

1. INTRODUCTION

In the new era of globalization and modernization, technology plays a very vital role. According to Daniels (2002) view, ICT has become the building block of the modern society within a very short span of time. The audio visual traditional classroom using the pedagogical aid of white board and chalk are no longer a part of curriculum. Nowadays many countries focus on the e-learning where the usage of ICT has become the core of education with special regards to understanding the basic skills and concepts of ICT alongside numeracy, reading and writing. As per UNESCO (2002) Under ICT 'informatics technology' is merged with other technology as communication technology. As per Pelgrun and Law (2003), the term 'information technology' gained more importance than the term 'computer' which signifies the shift of focus to storing and retrieving capacity of information. Nowadays students mostly rely on the e-books

rather than the library visit due to its cost and time effectiveness. According to UN report (1999), the term Information technology includes network based information system, telecommunication equipment, Internet service provision, information technology equipment service, network based information service, media and broadcasting, libraries and documentation centers and other activities related to information and communication. The stepping up of the technology into the education has replaced the traditional methods of teaching with the new modern methods of teaching which has increased the complexity ,range and sophistication of the activities done in the classroom where the educational institutions are also focusing more on the technological enhancement for the better upliftment of the students. Earlier the computers were used only to for learning the computer programming but the development of microprocessor in 1970's has increased the access towards the microcomputers in schools at a rapid rate. Modern education is technology based where the students approach to various software for solving their problems at higher levels. Hepp, Hinostroza, Laval and Pehbein (2004) in their paper named "Technology in schools : Education, ICT and knowledge society" claimed that though ICT has entered into the learning system but still it needs to prepare the students for lifelong belief and learning in ICT. It was profound that student used to actively and positively approached towards web learning in comparison with the paper based teaching due to its time and cost effectiveness. The curriculum of the higher education is technology based where the students enrolled must have an approach towards the e-devices like laptops, tab, computers etc for the better placement and furnished outcomes of the students. Increased pace of the technology among the youth has motivated them to use the technology in various ways and means. The students use to spend time on the Face book, twitter, face time, e-learning. Technology is used for the learning of curriculum also as it seems to be more easy, convenient and cost saving as compared to the learning using manual books that are comparatively costly than the e-books and time saving compared to library visits. The perception of educational institutions towards the traditional education is being transformed towards e-learning .The positive correlation between education and technology visualizes the evidence that student's performance on testing of basic skills can be improved with information technology as students with technological access gathers organize and analyze the information to solve the problems and enhance their competitiveness.

2. LITERATURE REVIEW

Research Methodology: This research paper is based on the review of literature published in various journals and magazines along with the sample survey of 230 Students within private university which access towards technology. Primary data was collected & analyzed using the various statistical techniques like factor analysis.

Data Analysis and Interpretation: Factor influencing the technology usage among students in education. To find out the factors influencing the technology usage in education wherein KMO and Bartlett's Test, Eigen value, rotated component matrix are calculated based on the factor analysis.

Kmo and Bartlett's Test: KMO shows the sample taken for the study is appropriate. The significant KMO value is regarded to be optimal when it is above 0.50, (Nargundkar, 2008) so that factor analysis is applicable.

S. No.	Name of the author	Paper	Year	Objectives	Test applied	Findings
1.	John sachacter	The impact of Education technology on students achievement	2015	To analyze the studies that visualize the impact of technology usage in instructions and learning	Meta analysis	Study of west Virginia based on the fourth and eighth grade students showed the positive correlation between the student's access to technology and their achievement levels.
2.	Adel Ben Youssef Mounir Dahmani	The Impact of ICT on Student Performance in Higher Education: Direct Effects, Indirect Effects and Organisational Change	2014	To explain the two findings of literature review : (a) Indirect effect of ICT based on the factors like student's characters tics, teacher characteristics and educational environment. (b) Higher education system should be changed to reap the fruits of ICT uses in education	Conceptual paper based on the analyses of literature review	Though usage of technology in education is having a positive impact but the success to fuller extent depends on the organizational changes. As universities are investing heavily in education but the success requires organizational changes.
3.	Sammy Elzarka	Technology Use in Higher Education Instruction	2013	To find the variables that impacts the technology usage in education for the instructional purposes in higher education.	Path analysis	Out 5 hypotheses tested in the study four showed a positive relationship between the construct and adaption rate. So a significant relationship exists between Technology access and higher education.
4.	GAIL Burrill et. al.	Research on the Role of Technology in Teaching and Learning Statistics	2013	To scrutinize myth regarding information and implementation of technology in higher education	Sampling distribution	The study analyzed the various aspects of technology associated with the education i.e. how technology is changing the teaching of statistics at various levels. The positive results are found between the technology and education.
5.	Mark Granito et. al.	The Effect of Technology on a Student's Motivation and Knowledge Retention	2012	To analyze that how the students are motivated with technology to learn new information retain the said information	Retention test with pre and post test analysis.	The study concluded that the provision of technology is not only sufficient for better outcomes. It also requires the motivation among the students to use the technology which can be a powerful educational tools for those who are keen to use the technology in education
6.	Ali Sharaf al., Musawi	Redefining Technology Role in Education	2011	To analyze the role of ICT in educational system	Conceptual paper	Technology has three main roles: (a) Source management (b) Delivery/Teaching mode (c) Appropriate interactive resources All these three are interrelated as the educational environment with the management support and effective delivery system can promote the students learning
7.	Professor Steven Higgins etal.	The Impact of Digital Technology on Learning: A Summary for the Education Endowment Foundation	2011	To analyze fact that how the academic achievements are related with digital technology used in the schools.	Meta analysis	The study concluded that the more important is: how the technology is used in education instead of focusing more on the concept that whether technology is used in education or not .The results from the study obtained shows the positive benefits of impact of digital technology in learning.

(Contd...)

S. No.	Name of the author	Paper	Year	Objectives	Test applied	Findings
8.	Ellen R. Bialo etal.	The Effectiveness of Technology in Schools: A Summary of Recent Research	2011	The paper focuses on the review of recent research done on the interdependence among the effectiveness of technology usage and achievements in education over the same	Conceptual paper	The study focuses on the learning and research in schools which showed the positive relationship between the technology use and achievements, learning, attitudes and self concept among the students from the technology based on education.
9	U.S. Department of Education	Learning Technology Effectiveness .	2011	To identify the fact that how the technology improves the learning outcomes.	Meta analysis	The study concluded that the development in the 21st century is not possible without the technological advancement among the students as the technology usage brings the better outcomes as compared to the traditional teaching
10	Syed Noor-Ul-Amin	An Effective use of ICT for Education and Learning by Drawing on Worldwide Knowledge, Research, and Experience	2010	The paper reviewed the available literature on the ICT used in education	Conceptual paper based on the quantitative and qualitative literature already done by the researchers	The approach of students towards the ICT in education provides a healthy and rich environment to them for learning and teaching.

Table 1
KMO and Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.615
Bartlett's Test of Sphericity	Approx. Chi-Square	1.642E3
	Df	190
	Sig.	.000

With reference to above table 1, we can interpret that the KMO value comes out to be .615 which depicts that sample is adequate and factor analysis is reliable.

Eigen Value: Higher is Eigen value, higher is amount of variance explained by the factor. There are six factors considered which have Eigen values more than one.

Table 2
Eigen Value

Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.104	15.518	15.518	3.051	15.255	15.255
2	2.004	10.022	25.539	1.972	9.859	25.115
3	1.942	9.712	35.251	1.858	9.290	34.405
4	1.777	8.886	44.137	1.676	8.381	42.786
5	1.418	7.088	51.225	1.476	7.379	50.164
6	1.248	6.240	57.465	1.460	7.300	57.465
7	1.108	5.538	63.002			
8	1.038	5.192	68.194			
9	.916	4.582	72.776			
10	.890	4.452	77.228			
11	.826	4.131	81.358			
12	.771	3.856	85.214			
13	.656	3.281	88.496			
14	.593	2.967	91.462			
15	.539	2.693	94.156			
16	.422	2.108	96.264			
17	.310	1.550	97.813			
18	.223	1.114	98.927			
19	.139	.694	99.621			
20	.076	.379	100.000			

Table 2 depicts that higher the Eigen value higher is the variability explained by the factors. As per the Table 2 there are six factors which have the value more than one.

Rotated Component Matrix: After the extraction of the factors decided from the rotated component matrix, the next task is to interpret and name the factors. It is identified by looking at the factor loadings

of each variable on each of extracted factors. Values close to 1 have high loading and close to 0 have low holdings.

Table 3
Rotated Component matrix

	Component					
	1	*2*	*3*	*4*	*5*	*6*
Maintain time	.919					
Effective learning	.902					
Creative thinking	.882					
Usage of time saving	.637					
Student performance		.969				
Communication skills		.968				
Creation of spreard sheet and charts			.866			
Presentation creation			.824			
Eagerness				.892		
Website usage				.888		
Assignment work					.660	
Webpage creation					.543	
Sending mails and messages					.543	
Skill improvement						
Decision making						
Interpersonal skills						.751
Do						.739
Home environment						
Creative learning						
Time saving						

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
[a]Rotatio *n* converged in 5 iterations.

As per Table 3 total six factors are extracted that will be used for explaining the dominating factors.

Factor name	*Reliability*
Automated process	.751
Efficiency enhancement	.919
Knowledge sharing	.660
Easy access to information	.866
Mutual impact	.892
Expertise interpersonal skills	.969

Table 3 gives the six factors that are extracted from the rotated component matrix. These factors are: Factor 1 which is automated process as it enhances the interpersonal skills among the students thus building the analytical skills among the users. The second factor which has been extracted is the Efficiency

enhancement as usage of technology is time effective where the students while sitting at any place can access the network to get their task done instead of visiting the libraries thus saving their time. The third factor is knowledge sharing as technology usage helps the students in their assignment and other academic task in the dynamic scenario. The fourth factor is easy access to information which helps them to complete their tasks using spreadsheets and trend lines which are comparatively easy and effective means of analyzing the data thus increasing their knowledge. The fifth factor is eagerness as in the modern era of globalization everyone is eagerly using the technology especially the young generation due to its low cost. The sixth factor is interpersonal skills because technology keeps the users about the recent trends and scenario of the global world thus increasing their interpersonal skills.

Findings: Finding of the study shows that using of information and communication technology has been effective to a high extent on automated process, Efficiency enhancement, knowledge sharing, and Easy access to information, Mutual impact and in total helpful in improvement of education skills. By applying the factor analysis, there are six factors which have been extracted that show the effectiveness of technology on education i.e. Automated process, Efficiency enhancement, knowledge sharing, Easy access to information, Mutual impact Expertise (interpersonal skills).

Practical Applications: This study can be used by those institutions and organizations which is not using information technology their curriculum or in learning aids.

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