The Innovation Imperative in Education; challenges of e-learning technology

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Abstract - **In this unprecedented period of time e-learning has become a significant tool in addition to traditional learning methods. This study emphasizes on how teaching, learning and assessment methods employed can influence the effectiveness of online programs, as well as the benefits and constraints experienced by students in e-learning. The research work was conducted at Higher Education Institutions in this changing period of virtual education time. A survey methodology was employed to investigate the opinions and experiences of students promoted in higher education online degree courses. Various factors that affect the effectiveness of online programs were studied in order to provide insights on the major challenges, benefits and limitations faced. Among the findings, major problem areas were identified and suggestions were proposed on how identified problems can be minimized. The study also raised future directions for e-learning.**

Index Terms - **e- Learning, Higher Education, Online Learning, Virtual classes.**

I.INTRODUCTION

Literacy empowers us as a healthy society. It is necessary for the academic institutions to commit to build more literate and skilful societies and ensure continuity of learning by narrowing the digital divide. Balancing the complexity of science the World is undergoing rapid changes in the Science and Technology systems. The need to deal with more complex relationships calls for new alliances of domains of knowledge. *A better understanding of the scientific process and of doubts, which is a fundamental aspect of such a process, is replacing the traditional practice of the science enterprise.* It's a major change but to deal with the zeal and the foreseen technologies we can easily and smoothly adopt with the changing time.

Online degrees with the use of virtual technology now have become a regularized phenomenon. People wish to take up online courses for their learning, degrees and certifications. Top institutions offer amazing online programs with the use of various applications of ICT. This is a concept that will continue to rise as it gets more support and awareness. The online degree scenario around the world is more famous among students who work and look for flexible studying programs. Virtual mode of research and development can foster sustainable development by building greener, more inclusive societies. Learning has evolved from the traditional classroom to distance learning and now it's online learning time, where students learn in invisible classrooms. With the advancement of technology and the Internet, educational institutions are changing their learning techniques to meet demands of users in providing a favourable and ideal learning environment. *The use of e-learning methods involves the possibility of learning from information delivered electronically through sending, receiving emails, online courses, online discussion forums, video conferencing, CD Rom, etc.* (Cappel, Hayen 2004).

Online learning method is more cost effective than traditional classroom learning but there are many issues arising within the context of self-study independent study programs from the end users perspective. There is a need to observe and analyze these situations in order to find out areas of improvement in the design delivery methods applied. This study examines the assessment of effectiveness of online learning program. What major constraints limit the usefulness of online learning and what major benefits are obtained in online programs?

II.METHODOLOGY

This research was designed as a quantitative study, and was conducted with a cross-sectional approach, which

is actually a type of the survey studies. Survey studies are scanning studies carried out in institutions composed of many members, and, in order to reach a general judgement, with a specific sample taken from different institutions. The approach to the study is survey based and is employed to give the actual state of mind of our students in these institutions covered in this research work and relationship with their thoughts and surrounding situations. The design of the study interprets suggestions in order to gain new knowledge, develop concepts and identify required areas of concern. Qualitative designs were employed for the purpose of understanding in great depth several situations and experiences of respondents in order to solve the identified research problem.

The participating respondents are from the various departments and institutions in the central Madhya Pradesh region. The respondents signed a non-disclosed consent Google form and were fully aware of the purpose of this research study. The appropriate written documents used to study participant's responses to the evaluation of the effectiveness of online classes.

A. Data Collection Strategies

We connected multifaceted institutions that offer students many of the degree programs at the Bachelor's, Master's, Specialist's, and Doctoral levels. These institutions are well equipped with the required technologies and a few of them have extensive experience in online and distance learning programs to support students offering online classes for various courses in different faculties. The colleges selected are: Mata Gujri Women's College, Hawabagh College, Home Science College, Govt. Science College, Dharma Shastra National Law University, and IIITDM. The participants were randomly selected to ensure bias was prevented.

B. Data Analysis

The goal of the study is to investigate several situations that influence the effectiveness of online programs. Certain facts concerning the relevant issue are categorized and arranged in orderly form in graphical representation.

Reliability testing: The online learning questionnaire went through a test among students of different colleges of the central zone of Madhya Pradesh so as to establish its reliability before it was adopted in the pilot study. Reliability of the scale was measured by computing *Cronbach's alpha*, which indicates the extent to which all items in the scale measure the same underlying attribute (Cronbach, 1951; Pallant, 2010; Bryman & Cramer, 2011). Data were collected using paper questionnaires. Prior to the analysis, all responses were coded as 1= strongly disagree, 2 = Disagree, 3 = Agree and 4 = strongly agree for positive worded items.

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

III.RESULTS

According to the latest insights as to how exactly modern students of today prefer to use technology and how does their learning get an impact if they use technology, it was revealed that the use of modern connecting technology and tools, the learning and interactivity of students increases. They also find it much more interactive, as well as full of interesting areas, when aided by technology. The transfer of knowledge becomes very easy and convenient, as well as effective. What this means is that our minds now tend to work faster when assisted with the use of modern technology, be it any part of life, here we talk about education. The reliance and dependence of such an innovation, that simply makes life an easy, smooth journey is completely unavoidable these days and students today can make best use of emerging technology. Internet connection and round the clock connectivity, using projectors and visuals, penetration of digital media within the education sector has now grown. It has been noticed that this penetration has resulted in round the clock connectivity with students and different forums management in MOODLE that are available for different kinds of assignments or help. As the power of digital increases, there are and there will be more applications that will assist students in development and learning in the various virtual ways.

The role of technology in the field of education is Multifoods: it is included as a part of the curriculum, as an instructional delivery system, as a means of aiding instructions and also as a tool to enhance the entire learning process. Thanks to technology; education has gone from passive and reactive to interactive and aggressive.
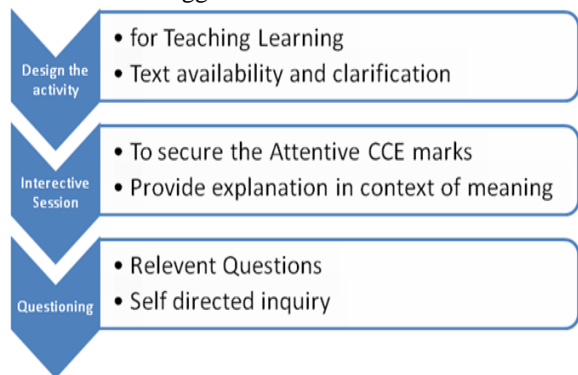

Fig1: Channelized Learning Pattern

Impact of ICT on future generations in the educational context has the potential to increase access to education and improve its relevance and quality. Raja & Nagasubramani (2018) asserted that modern technology has a tremendous impact on education in terms of acquisition and absorption of knowledge to both teachers and students. Because of the unique nature of online education, we intended to propose a few important research questions in a way that student perspectives on the effectiveness of online education can be addressed and emphasized. When asking about following in formations:

- *Beneficiary of Online Education system.*
- *Expansion of the capacity for education in new areas.*
- *Availability of access to IT equipment necessary for e-learning.*
- *Freedom in choosing teaching materials online.*
- *Do you have facility of repetition of lectures if necessary, on MOODLE or in any other access.*
- *Do you find Home environment suitable for attending classes?*
- *Do you have network and internet availability at your locations and new cost-effective plans suitable for educational purposes*

In addition, with these specific issues other relevant queries show that a maximum of them accepted this

change in the education system and found it helpful to clearly understand the subject in online classes. They feel this system will successfully enhance the capacity of the educational system and learners. Nearly 50% of them found learning from their own home beneficial and favourable for people with restricted mobility. They get everything at the same place. They accepted easy access to information in ICT. This study shows the cost of studying doesn't make much difference.

Questions/ Statement	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
1	11	6.4	8.9	5.4	68.3
2	13.7	7.4	6.1	5.9	66.9
3	20.7	5.6	5.5	4.6	63.6
4	12.5	6.5	2.5	10	64.5
5	20.4	3	4.6	8.7	63.3
6	21.2	9.6	4	6	59.2
7	20.2	6	5.3	8	60.5

Summary	Count	Sum	Average	Variance
Row 1	5	100	20	733.805
Row 2	5	100	20	697.52
Row 3	5	100	20	639.055
Row 4	5	96	19.2	655.45
Row 5	5	100	20	632.225
Row 6	5	100	20	524.56
Row 7	5	100	20	549.095
Column 1	7	119.7	17.1	20.03333
Column 2	7	44.5	6.357143	3.932857
Column 3	7	36.9	5.271429	3.942381
Column 4	7	48.6	6.942857	3.899524
Column 5	7	446.3	63.75714	10.44619

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	2.742857	6	0.457143	0.043749	0.999578	2.508189
Columns	17476.06	4	4369.014	418.1161	8.25E-22	2.776289
Error	250.7829	24	10.44929			

Cronbach's Alpha - 0.956251

The resulting α coefficient of reliability ranges from 0 to 1 in providing this overall assessment of a measure's reliability. Our result shows Cronbach's alpha coefficient i.e. 0.95 which is closer to 1.0. A high value for Cronbach's alpha indicates good internal consistency of the items in the scale.

In discussing the best practices of online education, Finch and Jacobs (2012) stated these advantages: reducing the time and costs for travel; increasing opportunities to access and collaborate with expert professionals in a global range; providing students with flexibility to access courses at their convenience; and allowing adjustments to subjects and content needs. The fast development of the Internet and the World Wide Web (WWW) has produced numerous benefits to education in the availability of text. Online education provides potential opportunities to learn new combinations of courses for higher education institutions. Many adult learners may enjoy the flexibility when they have to balance work, study, and family responsibilities. The wide range of technological advancement used by universities" online programs may enhance the interaction between students and instructors, and among students at large (Bell & Fedeman, 2013). In addition, the nature of anonymity in the online environment may allow more students, who otherwise do not want to attend face-to-face classes because of their shy personality, to participate in online education where they do not physically see each other. Finally, the upgraded technology and software may allow instructors, students, and institutional administrators to collect data, feedback, and evaluation regarding their online experiences (Bell & Fedeman, 2013).

Online education is here and is highly likely to stay and grow. The review of this study clearly shows online education has developed rapidly, fuelled by Internet connectivity and advanced technology. It has evolved from the 19th century as correspondence programs to the 21st century's vibrant and well-designed institutional online offerings. We can well anticipate that online education will continue to increase its significance and influence higher education through a vigorous process of reshaping, refining, and restructuring. It is actually to replace traditional higher education as a needful alternative. But, owing to its flexibility, accessibility and affordability, online education is gaining in popularity, especially for individuals who are otherwise unable to obtain education because of physical distance, schedule conflicts, and unaffordable costs. Throughout this study, the primary focus was to discuss how theories, practical and assessments apply to the online learning environment and what response we are getting through our students to improve the system. It started with a basic overview of online education as studied and perceived by Ni She. et al., 2019, which served as the theoretical framework for this study. They highlighted that development of new technologies has changed the teaching and learning trends in higher education, moving from the traditional face-to-face classroom to online learning

We reported that both learners and instructors have to make a joint effort to get deeply involved in constructing interaction and collaboration between them to create an effective online learning community. O'Sullivan (2018) states that student-centred learning is the key in online education, they were disappointed to note that although many studies emphasized the importance of creating such a learning community, many students lacked effective and detailed means, approaches, and technologies that could be used to achieve their objective.

Online education is a growing trend, and more and more institutions may eventually be offering more and more online courses to an increasing number of students. Therefore, future studies should be designed to obtain students" perspectives, especially to make the system more appropriate for them. Nahid Khalil Elfaki1 et al 2019 stated, it is important to note that this is an interesting, but perhaps not surprising observation, which suggests that the generation of students in their study may still be traditional learners and have not yet resorted to such learning.

IV.CONCLUSION

The study might also be useful to institutions in the era of fast-growing technology to create the best learning

atmosphere for future generations. Individual institutions have their own vision and mission, and this study may make it possible for them to create innovations for teaching and learning.

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