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An Analysis of the Outcome of Virtual Mode of Teaching Learning Approach on Students Knowledge Building and Performance

Dr. Aditi Nath[1*]

[1]Assistant Professor, Department of Social Work, Assam University, Silchar, Silchar, Assam 788011, India

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***Corresponding author:** Dr. Aditi Nath

Abstract **Original Research Article**

The shift from conventional teaching method to the technology-driven virtual mode of teaching due to COVID 19 pandemic has provided a lot of opportunities with challenges to academic stakeholders. With this background the study has been designed with an objective to analyze the outcome of the virtual mode of teaching and learning on the knowledge building and performance of the students of higher education in the north-eastern region of India. The study's design is descriptive and has drawn a sample from the region's universities that constituted 209 students. The study period was April 2020 to April 2021. Primary data has been collected using Google form when journals, reports, and websites are secondary data collection sources. The analysis has been done on micro soft excel and presented through tables and charts. The results of the study indicated that 46.9% of the students found virtual teaching useful. 49.7% of students shared that academic programs conducted in virtual mode (webinars, training programs, workshops) significantly contributed to knowledge building, but subject-specific virtual teaching could not impact students' performance. Excess pressure of assignments, online exam phobia, Lack of Technical know-how, poor internet connectivity; has been identified as causative factors of poor performance. In-spite of having such challenges, 42.85% of the female and 38.14% of the male shared their overall learning experience in online mode as satisfactory. The study suggested that the Universities of North Eastern Region requires developing technological infrastructure, initiating discussion with teachers on the mental health issues of students, and organizing programs on technical aspects which will lead to performance development of the students.

Keywords: Analysis, Virtual Teaching-learning, knowledge building, Performance.

INTRODUCTION

The spread of the coronavirus has completely changed the academic system across the country for the time being. Phase wise countrywide lockdown taught us how to adapt to the situation quickly. Coping up with the changed scenario was difficult for the academic stakeholders due to a lack of digital knowledge, technical know-how, insufficient technical infrastructure, etc. The fast-moving time has trained each of us to act according to the situation. The pandemic has no doubt affected the Indian economy badly and the population of all sections. Students Community is aspiring for a better career, better life ahead but suddenly all their dreams got stuck which has affected students community in all sorts, study says. Initial lockdowns were leisure times, but subsequently, there is a need to initiate online classes. Therefore, the entire world shifted to the virtual model of teaching-learning. The literature on the traditional method of teaching-learning emphasizes that effective learning requires a classroom. Classroom teaching creates an academic environment that leaves scope for students to gain experience by doing, observing, conceptualizing, and experimenting. It also creates a provision for the students to encounter multiple perspectives, which helps them develop critical thinking skills (Kolb, 1984). According to Biesta (2010), classroom teaching empowers students in their learning and inculcates democratic values. In the same line of thinking, John Bogardus (2013) said that classroom teaching creates an environment for students to express their opinions. However, certain situations like COVID 19 pandemic create a condition that debars both teachers and students from traditional classrooms and finds online teaching-learning mode as an alternative. The adverse situation has opened up a new vista for the academicians. It has created opportunities for both teachers and students to expand their learning scope holistically. The use of technology in teaching, especially for the non-technical subjects during a pandemic, brought a reformation in

academics. Along with syllabi related learning, the students have participated in various academic programs in a virtual mode in an organized and cost-effective manner. The debate on traditional classroom teaching and virtual classroom teaching is always on because of the reason like i) Class timing ii) learners group iii) Teaching methodology etc. Methodologies followed in classroom teaching are well tested, and most of us grew up in that environment. On the other hand, virtual classroom teachings are new and high tech-oriented. The literature says that virtual teaching encourages personalized learning where students can learn at their own time and space, enhance collaboration and communication, and give students and teachers a wide exposure. Hence, it is less expensive, but in some cases, like enrolling in online live classes or courses, it could be expensive. A virtual classroom requires a computer system, headphones, camera, and good internet connectivity that may not be accessible. However, the students are attending online classes and taking part in other academic programs in virtual mode. Before we again move towards traditional classroom teaching, the study intended to analyze how successfully the virtual teaching-learning approach could contribute to students' knowledge building and performance.

Virtual Teaching

Virtual teaching is the process of making others learn via the internet. The present pandemic situation has made us technologically literate, if not a master, to use different online platforms to make teaching-learning meaningful. Various messaging platforms, email and video calls, and academic loots like Google classroom have become the medium of interaction with online mode students. Moreover, digital resources like PowerPoint, video, and audio materials are shared with students to make teaching-learning effective in virtual mode.

Effective teaching requires competencies like i) Managerial ii) Pedagogical iii) Social iv) Technical v) Assessor vi) Facilitator vii) Content expert and it expects from a teacher to i) encourage students' participation ii) encourage students' cooperation iii) encourage students' in dynamic learning iv) provide timely feedback v) emphasize on time-oriented task vi) respect differences in terms of talents and ways of learning so that learning can be brought to students easily instead of students to learning (Ni. She, C. Farrell, O. Brunton, J. Costello, E. Donlon, E. Trevaskis, S. Eccles, S. 2019).

Virtual Learning

Virtual learning is considered as e-learning or digital learning offered via the internet. It has replaced the physical classroom by using web-based technologies offering ample opportunities for out-of-class learning as per the learners' convenience (Chigeza & Halbert 2014). Students of the digital age are technologically disciplined and techno-savvy, so it is an opportunity for the students to learn in a virtual model in a structured, organized, and effective manner. The learner can thus benefit from such a method as it is flexible, accessed from one's comfort zone, and a cost-effective opportunity to learn from experts irrespective of the teachers' distance. However, the only difference is like delivering courses. In online students mostly require having an entree on a computer system with speedy internet connections. Joshua Stern highlighted some of the advantages of online learning like i) convenience ii) enhanced learning iii) Interaction iv) Innovative teaching v) Improved Administration vi) Savings vii) Maximize physical resources viii) Outreach.

OBJECTIVES

This research's overarching objective was to analyze the virtual teaching-learning approach's outcome on students' knowledge building and performance. The objective was achieved by answering the following questions:

- What is the opinion of students about the virtual mode of teaching?
- Are the academic programs conducted in virtual mode contributing to knowledge building?
- Is virtual teaching impacting the academic performance of the students?
- What is the overall learning experience of students in virtual mode?

Study Area

The present study has been conducted in the North Eastern Region of India. The region has eight states with a good number of higher academic Institutions. All most all the states have both public and private run universities, which includes: (i) Gauhati University, Assam (ii) Dibrugarh University, Assam (iii) Assam University, Silchar, Assam (iv) Tezpur University, Assam (v) Rajiv Gandhi University, Itanagar, Arunachal Pradesh (vi) Manipur University, Imphal, Manipur (vii) Mizoram University, Mizoram (viii) The North Eastern Hill University, Shillong, Meghalaya (ix) Nagaland University, Nagaland (x) The Tripura University, Tripura (xi) Sikkim University, Sikkim (xii) Assam Agricultural University, Jorhat, Assam (xiii) Krishna Kanta Handique State Open University, Guwahati and (xiv) Central Agricultural University, Imphal. Along with that, the region is bestowed with an additional 16 private and deemed universities reflecting the region's well-off academic environment (UGC Annual Report 2010-11).

METHODOLOGY

The study has been conducted based on the students' responses from the above-mentioned universities—the study period covered April 2020 to April 2021. The descriptive study design tries to understand the impact of virtual teaching approach on

students' learning experience amidst COVID 19 pandemic. To achieve the objective, the study used a mixed-method to collect data from students of different universities. The questionnaire was the primary source of data for which Google form was used to collect data. The primary source was complemented by existing literature as secondary data. The secondary sources of data used in the study are (i) journals, (ii) reports, (iii) websites and scholarly articles, (iv) research papers, and other academic publications. A total of 209 respondents of the mentioned universities attended a minimum of five academic programs in virtual mode have been considered for the study. The questionnaire protocol consisted of questions relating to an opinion about online teaching and learning approach, contribution in knowledge building and performance, and overall learning experience in virtual mode.

RESULTS AND DISCUSSION

Opinion about the virtual approach of teaching

The participants were asked to share their opinion about the virtual teaching-learning approach. The question was asked to understand the perception of the students about the virtual approach of teaching. Responses of the participants indicated that a virtual teaching-learning approach is useful in higher education, followed by convenience, time-saving, and cost-effectiveness (Chart-1).

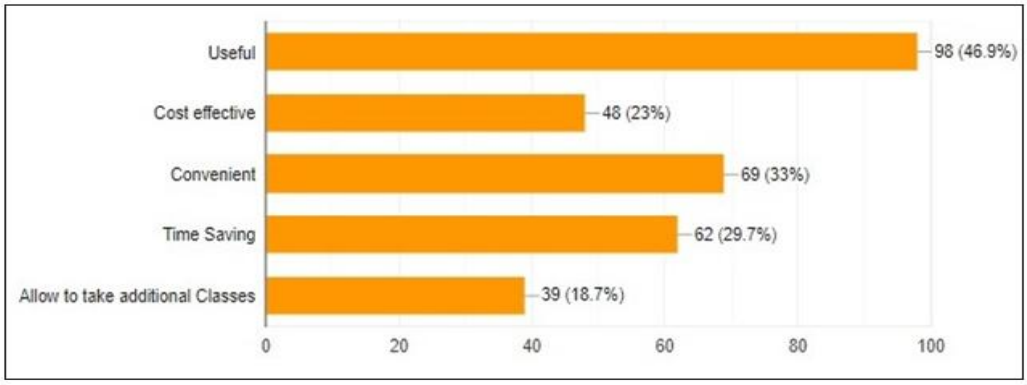

Chart-1: Opinion about the virtual approach of teaching

Opinion about the contribution of virtual academic programs on knowledge building

The participants were asked to share their opinion about the contribution of academic programs (Webinars, lecture series, conferences, and training programs) attended by them in virtual mode on their knowledge building. Responses indicated that online academic programs have a very significant contribution to knowledge building (Table 1).

Table-1: Contribution of virtual academic programs on Knowledge building

Contribution of virtual academic programs on Knowledge building	Number of respondents (N=209)	Percentage (%)
Very significant	104	49.7
Significant	58	27.8
Average	18	8.6
Minor	15	7.2
Minimal	14	6.7
Total	209	100

Opinion about the impact of virtual mode of teaching on performance

The participants who have been attending virtual classes were asked to share opinions about their academic performance based on the built knowledge to understand the impact of virtual teaching on the students' performance. A cross-tabulation result indicated that the majority among male (40.21%) and female (58.04%) students were of the opinion that the virtual mode of teaching is somewhat affecting their performance (Table-2).

Table-2: Impact of virtual mode of teaching on performance

Gender	Impact of virtual mode of teaching on performance				Total
	NIL	Somewhat	Very little	Very Much	
Female	13 (11.6%)	65 (58.04%)	24 (21.43%)	10 (8.93%)	112
Male	15 (15.47%)	39 (40.21%)	23 (23.71%)	20 (20.61%)	97
Total	28 (13.4%)	104 (49.76%)	47 (22.49%)	30 (14.35%)	209

Opinion about the causes affecting students' performance in the virtual mode of learning

The participants were asked to mention the possible causes affecting performance in the online learning process. The response indicates that most participants (69.4%) shared that the internet connectivity issue is one of the major causes affecting students' performance.

Table-3: Causes affecting students' performance in the virtual mode of learning

Causal factors	Frequency	Percentage (%)
Excess academic assignment	56	26.8
Fear of passing exams	51	24.4
Career-related worries	27	12.9
Doubtful learning	50	23.9
Internet connectivity	145	69.4
Absence of group learning	64	30.6
Personalized approach to learning	38	18.2
Technical know-how about gadgets	50	23.9

Opinion about the overall learning experience in virtual mode

The participants were asked to share their overall learning experience in virtual mode. The response indicates that the learning experience of students of both genders (female 42.85% & Male 38.14%) in virtual mode was satisfactory in-spite of having good challenging factors.

Table-4: Overall learning experience in virtual mode

Gender	The overall learning experience in virtual mode					Total
	Dissatisfied	Neither Satisfied Nor Dissatisfied	Satisfied	Very dissatisfied	Very Satisfied	
Female	14 (12.5%)	41(36.61%)	48(42.85%)	7 (6.25%)	2 (1.79%)	112
Male	10 (10.31%)	37 (38.14%)	37 (38.14%)	5(5.16%)	8 (8.25%)	97
Total	24 (11.48%)	78 (37.32%)	85(40.67%)	12(5.74%)	10 (4.79%)	209

DISCUSSION

The universities and colleges have put in their best efforts to continue their academic programs and complete the course content using various ICT tools of teaching and learning. The students had ample opportunities to learn from teachers and experts in virtual mode irrespective of distance in a structured, organized, and effective manner. The results indicated that 46.9% found virtual teaching useful. 49.7% of the students shared that academic programs organized by different educational institutions of repute from April 2020 to April 2021 had a significant contribution in knowledge building on various subjects. However, when it came to subject knowledge, teaching in virtual mode has somewhat affected students' performance (female 58.04% and male 40.21%) respectively. It is highlighted by 26.8% of the students that excess academic assignments with submission deadlines developed anxiety in them, which further created a fear of passing exams among 24.4% of the students. Most importantly, to accomplish all these given assignments, high-speed internet connectivity was required. However, the students of the North-eastern region had to compromise with the technological infrastructure they have. Therefore, 69.4% of the respondents shared poor internet connectivity as one of the major factors that challenged their performance, followed by a lack of technical know-how (23.9%). However, most of the respondents, irrespective of genders (42.85% female and 38.14% male), shared their overall learning experience in virtual mode is satisfactory.

CONCLUSION

It is observed that academic programs conducted in virtual mode had enhanced the students' knowledge level in allied subjects, but it could not make a significant contribution in terms of students' performance. If the virtual mode of teaching continues further, the causes affecting performance will have to be taken care of diligently by the concerned academic institution. In this regard following suggestions can be made: i) dialogues and discussion with the teachers on mental health issues of students' ii) capacity building programs on digital resources for students, iii) making good technological infrastructure, iv) e-counseling sessions for students. Delivering the best services for students' growth and all-round development should be the hour's concern irrespective of the mode of teaching

and learning. Since most of the students are satisfied with the virtual teaching mode, the blended teaching-learning methods can be introduced in post-pandemic.

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