RESEARCH ARTICLE

USES OF EDUCATIONAL TECHNOLOGIES IN TEACHING LEARNING DURING COVID-19 PANDEMIC- A SURVEY IN THE STATE TRIPURA, INDIA

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ABSTRACT

COVID-19 is a burning issue to the health workers, researchers, and government officials. It creates the biggest crisis to human health and adversely affects the economic growth worldwide. Education sector is badly affected due to COVID-19 pandemic. Worldwide, all schools, colleges, and other higher educational institutions have been closed in an effort to reduce the transmission of the virus. As a result, billions of learners were left out of school and compelled them to stay at home. Under these situations, the online teaching learning is the only way to continue study. But it is very difficult to adjust suddenly to a fully digital online learning mode when all the students are acquainted with classroom teaching and campus environment. In this paper, we performed a survey on the uses of educational technologies in teaching learning during COVID-19 pandemic situation in the state Tripura, India.

INTRODUCTION

A pandemic is an epidemic of an infectious disease that has spread across a large region, for instance multiple continents or worldwide, affecting a substantial number of people. The pandemic situation due to COVID-19 caused by SARS-CoV-2 is badly affected the all sectors of society including health, education, and research.[1-4] Globally, COVID-19 has created a health disaster and economic crisis. It forcibly affects economic growth and pushes millions of people towards unemployment. SARS-CoV-2 is an envelope, single-strand, positive-sense RNA virus of approximately 30kb size.[5] It caused the COVID, a highly infectious disease that rapidly spread worldwide.[6] Unfortunately, no therapeutic medication has yet been approved by FDA for the treatment of this disease. Recently, a few vaccines have been launched in the market by the different manufacturers to combat COVID-19. All the sectors including education, research, sports, entertainment, transportation, worship, businesses, and politics have been affected by the COVID-19 outbreak.[7] The most challenging sector is the education sector.[8] Most of the schools, colleges and other higher educational institutions were closed around the world as an effort to reduce the transmission of the virus. Due to lock-down, teaching learning process has been collapsed. Billions of learners were left out of school and compelled them to stay at home. All scheduled tests and examinations were also postponed. In this situation, it becomes a great challenge to the authority to maintain the continuous flow of educational transmission. Due to the shut-down of the institutes, the method of teaching learning has been modified to

provide students with an alternative learning opportunities. The learning delivery has been shifted to online platforms based on various software aided technology. The state governments are directed for virtual schooling and distance education to keep the teaching-learning in continuous process. Teachers have used virtual classrooms to teach from home with the help of necessary tools. But it is very difficult to adjust suddenly to a fully digital online learning mode as the students are conversant with classroom teaching-learning environment. The transition from an offline to an online education may bring about adverse educational changes and adverse health consequences for children and young adult learners especially in primary, upper primary, high school including college students. Under these backgrounds, we aim to survey on the uses of educational technologies in teaching learning process during COVID-19 pandemic situation in the state Tripura.

REVIEW OF THE LITERATURE

The COVID-19 pandemic affected educational systems worldwide, leading to the school closures all over the world.[9] The pandemic created serious disruptions in academic activities, as well as in career plans. Unplanned school closure causes severe problems for students, teachers, parents and the society at large.[10-12] Several research groups have paid attention to investigate the effect of online teaching-learning during COVID-19 pandemic situation. A few examples are briefly discussed below:

During the lockdown period, the online teaching-learning process has become an integral part of the education system. Several research papers have been published on the impact of COVID-19 on education system. In this regard, Pokhrel and Chhetri (2021) have published a review article on the impact of COVID-19 pandemic on teaching learning process.[13] Similarly, Ram Gopal and co-workers carried out an online study to identify the factors affecting students satisfaction and performance regarding online classes during the pandemic period of COVID-19.[14] The survey on 544 students who were studying in Indian universities on the business management (B.B.A or M.B.A) or hotel management courses, revealed that four independent factors such as quality of instructor, course design, prompt feedback, and expectation of students have positive impact on student's satisfaction. The results also showed that student satisfaction has positive impact on students' performance. In another study, Deepika Nambiar (2020) conducted an online survey regarding teacher's and student's perception and experience related to online classes.[15] The author has performed the survey on 70 teachers and 407 students from colleges and universities in Bangalore city. This survey deals with both the teachers and students' perceptions with regard to taking online classes. The findings showed that four factors such as interaction between student and professor, availability of technical support, structured online class modules, and modifications to accommodate conduction of practical classes are the important factors for teacher and student satisfaction during online classes.

A research group of Nigeria investigated the impact of corona virus pandemic on education system.[16] They collected data through structured questionnaires administered to 200 respondents that consist of teacher, student, parent and policy makers. The collected data were analyzed using STATA/Regression and showed that COVID-19 has adverse effects on education including learning disruptions, and decreased access to education and research facilities. Mainly, online education was hindered by poor infrastructures including, network, power, inaccessibility and unavailability issues and poor digital skills. The authors concluded that adoption of proper technology in the educational institutions and improvement of digital skills of all educators and learners in line with the emerging global trends and realities are necessary for effective online teaching learning. In June 2020, P. K. Jena of Bhubaneswar highlights on major impacts of COVID-19 in educational system of India.[17] The author has highlighted the various digital initiatives taken by UGC & MHRD, Govt. of Indian to support online learning during the pandemic period.[18] The author described the utility of *e*-GyanKosh, Gyandarshans, Gyandhara, Swayam, Virtual Labs *etc* in online teaching learning process during the pandemic situation.

Very recently, Gupta et al. also carried out an investigation of the impact of COVID-19 on education sector.[19] The education sector as well as students has been fighting to survive in this crisis with a different approach and trying to adopt digital methods to cope up with the challenges created due to this pandemic. The authors highlighted the measures taken by Govt. of India to provide smooth and hassle free education in the country. The outcomes of the investigation showed that COVID-19 adversely affects schooling including, learning disturbances, and diminished admittance to training and examination offices, and expanded understudy obligations. On the other hand, K. Saxena carried out an investigation on how Coronavirus accelerates pace of digital education in India.[20] He observed that online education has gaining popularity in India in the last few years. The Government of India's efforts to empower youth by offering them quality education free of cost or at the prices they can afford to pay has given rise to Massive Open Online Courses (MOOCs). This has resulted into educational institutions shifting their teaching pedagogy to e-learning platforms and address a huge mass of students including those in small towns with smart phones being able to access these platforms and pursue online courses. Similarly, K. Chaturvedi et al. have carry a survey on the impact of COVID-19 on education, social life and mental health of students.[21] This research work showed that in order to deal with surrounding situation, students adopted different coping mechanisms and also sought help from their near ones. Further, the research examined the student's engagement on

social media platforms among different age categories. Every public authorities should take the necessary steps to enhance the learning experience to minimize the negative effect of the COVID-19 outbreak. T. Muthuprasada *et al.* have carried out an online survey among the 307 students on understanding of student's perception and preference towards the online learning.[22] This survey helps to explore the student's preferences for various attributes of online classes that will helpful to design effective online learning environment. The results also indicated that 70% students are ready to opt for online classes to manage the curriculum during the pandemic. They preferred to use smart phone for online learning and opined that flexibility and convenience of online classes makes it attractive option, whereas broadband connectivity issues in rural areas. From the above, it was observed that a few survey on the online education and uses of educational technologies have been carried out and showed favourable opinion on online education.

OBJECTIVES OF THE STUDY

i.   To recognize the effect of the uses of educational technologies in teaching learning during COVID-19 pandemic in the state Tripura
ii. To identify the present status of online learning in Tripura.
ii. To investigate the facilities already provided for learning to the students in Tripura.
iii. To find out the constraints of online learning.
iv. To suggest some measures in order to improve the condition of online learning in the state Tripura.

METHODOLOGY OF THE STUDY

The methodology is the protocol which is used by the researcher to solve the research problems. By applying a proper research methodology, a researcher successfully initiated, performed and concluded the research work. In this research work, the methodology is comprises research method, population, sample, tool, procedure of the data collection and procedure of data analysis.

i. Research Design/method: In the research work mainly three methods are follow namely-Survey method, Interview method, and Questionnaire method. In this research work questionnaire method is adopted to gather information from respondents. The questionnaire comprises with 32 questions and has three sections. The descriptive survey method based on the designed questionnaire is adopted for the collection of data. The data was collected from different Higher Secondary School, High School and Senior Basic School of Tripura. The survey was carried out during September to October, 2021.

ii. Population of the study: Students of the whole State of Tripura is the population of the study. In order to carry out a systematic data collection, researcher have selected ten (10) School studying in the academic session 2021-22. From each school 10 students were selected considering 5 male and 5 female students.

iii. Procedure of data analysis: We prepared a table based on the response of the students. The total response is divided into two broad category, response made by male and female students. For the preparation of scoring table, two (02) marks for positive response and one (01) marks for the negative response are considered. The data obtained from the students were analysed by using different statistical method such as Mean, Mean deviation, Standard deviation, and z-test value. The response on questionnaire were collected and the data so obtained is presented in Table 1.

RESULTS AND DISCUSSION

i. Results of the survey: From the response, it was observed that 100% students were attended in online classes due to closure of schools during the COVID-19 pandemic situation. All the students were used mobile as a device for the online classes. No students were used computer or TV for online classes.

Table 1. Response of the students against each question

| Sl. No	Question	Options	Total	Male	Female
1	Which type of class did you attend during COVID-19 pandemic?	Online	100	50	50
		Offline	0	-	-
2	Which type of device do you use to attend online classes during COVID-19?	Mobile	100	50	50
		Computer	0	---	---
		TV	0	---	---
3	Was the device used for online classes available in your home?	Available	71	36	35
		Brought	29	14	15
4	Was the device used in online classes affordable by your family?	Yes	55	30	25
		No	45	20	25
5	Whom did the device used in Online classes belongs to?	Own	14	9	5
		Parents	76	36	40
		Other member of family	10	5	5
6	Did you use the device for purposes other than online class?	Yes	100	50	50
		No	0	--	--
7	For which other purpose was the device used by you?	Call	100	50	50
		Youtube	30	17	13
		Play Game	10	10	--
		others	0	--	--
8	Which App/Apps did you have to use for attending Online classes?	Google meet	90/70	40	30
		Zoom	12	5	7
		WhatsApp	18	5	13
9	While using the App for online classes, did you face any difficulty at the initial stage?	Yes	28	10	18
		No	72	40	32
10	What was the duration of the online class?	30 minutes	0	--	--
		45 minutes	100	50	50
		45 minutes	0	--	--
11	Which time-slot do you think best for online classes?	Morning	30	12	18
		Noon	44	25	19
		Evening	26	13	13
12	Did you feel enthusiastic for online classes?	Yes	82	40	42
		No	18	10	8
13	Which mode of class would you choose for yourself as a learner?	Online	15	8	7
		Offline	85	42	43
14	Do you think that online mode of teaching-learning facilitates the learning?	Yes	36	22	14
		No	64	28	36
15	Could you sufficiently interact with your teachers in online classes?	Yes	63	34	29
		No	37	16	21
16	Did you face any problem with internet connectivity during online classes?	Yes	61	23	38
		No	39	27	12
17	Was your syllabus completed within the session of online classes?	Yes	86	39	47
		No	14	11	3
18	Could you exert your full concentration during online classes?	Yes	53	31	22
		No	47	19	28
19	Would the online mode of class suffice to clear all your doubts?	Yes	39	24	15
		No	61	26	35
20	Do you think practical classes to be feasible in online mode?	Yes	9	5	4
		No	81	42	39
		Don't Know	10	3	7
21	Did the teachers use any teaching aid in online classes?	Yes	46	27	19
		No	54	23	31
22	Is there any provision on the part of the government for conducting classes in online mode?	Yes	20	0	20
		No	80	50	30
23	Do you think it fit to compare the online mode of teaching-learning with the offline mode practiced in schools?	Comparable	0	--	--
		Not Comparable	100	50	50
24	Which mode of teaching do you think to be more effective?	Online	0	--	--
		Offline	100	50	50
25	After due exposure to online classes, which mode would you prefer for examination?	Online	14	9	5
		Offline	84	41	45
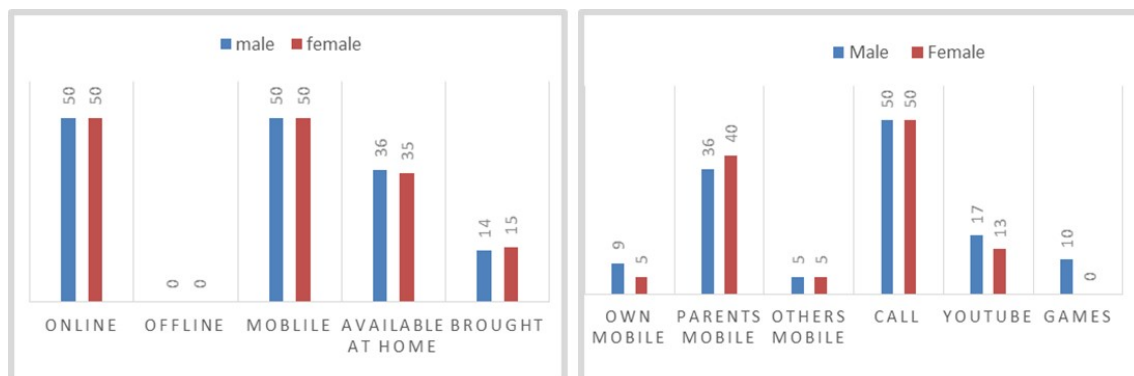
Figure 1. (a) Bar diagram of online classes and device used in online classes; (b) Bar diagram of device owner and other use of the device

It was observed that 71% students have mobile in their home and 29% students were brought mobile to attend in online class (Figure 1a). It was also revealed that 55% families could afford the cost of the mobile whereas the cost of the mobile was not easily affordable for 45% student's family. However, majority of the students (76%) have used their parent's mobile for online classes. Only 14% students have their own mobile, whereas 10% students were used the mobile of other member of family. Interesting, it was observed that 100% student and their family have used the same device (mobile) for calling; 30% students were used the mobile for searching in Youtube and 10% students were used the device for playing game other than the online classes. Almost all the students were used Google meet as App for online classes; only 12% students were used Zoom and 18% students were used WhatsApps for online class. During the installation/ use of these Apps, 28% students, especially students of rural area were faced difficulty at the initial stage to use the Apps. Interestingly, duration of all online classes was 45 minutes; no students gave response for the online class for a longer time. Regarding the suitable time slot for online classes, 30% students were preferred online class at the morning time whereas 44% students were preferred at noon time and 26% students at evening time. It was also found that about 82% students were enthusiastic for the online class. However, 18% students are not enthusiastic for online class.

As a learner, 85% students, almost in equal ratio in male and female were like offline classes. Majority of the students believed that online mode of teaching-learning is less effective than the offline teaching-learning. This may be due to that students could not able to interact with teacher properly through online mode. In an answer of a question, they respond that majority of the students were not able to interact with teacher in online class. More importantly, although not all students but 39% students were faced internet connectivity problem during online classes; which is a major issue in the State in online teaching learning process. Regarding the completion of syllabus through online classes, it was observed that 86% students were agreed that syllabus was completed within time period; whereas a few students from rural areas response negatively, that syllabus was not completed within time. However, 61% students admit that they could not clear the doubt through online classes. Majority (81%) of the students respond that practical classes through online is not possible. Regarding the use of teaching aid in online classes, 46% students' respond that teaching aids were not used in online classes. According to the student response, only 54% teachers were equipped to use teaching aid in online classes. Although several initiative taken by Government for online teaching-learning process and several platform are also available; only 20% students are familiar with such platform and majority of the students (80%) don't know about the Government
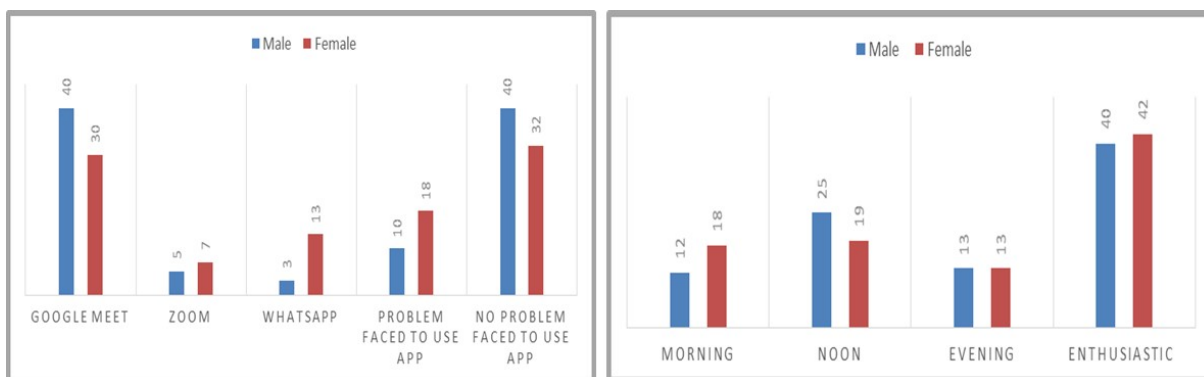

Figure 2. (a) Bar diagram for Apps used and problem faced to use app. (b) Bar diagram for time slot for online class and enthusiasm for online class

Table 2. School-wise score

Sl. No	Name of School	Male					Female				
		Urban School									
1	Netaji SubhasVidyaniketan	22	17	19	21	21	19	18	18	20	20
2	Prachya Bharati H. S. School	16	16	20	22	18	19	20	20	20	20
3	Swami Dayalananda Vidyaniketan H. S. School	19	19	21	21	21	21	21	16	21	22
4	Mahatma Gandhi Memorial H. S. School	20	19	18	21	18	18	18	20	18	17
5	Bardowali High Class XII School	22	21	20	22	20	19	18	19	22	23
		Rural School									
6	Ramkrishna Vivekananda Vidyamondir	19	18	17	18	19	19	19	18	18	17
7	Chandrapur South High School	18	19	18	20	20	20	20	21	21	20
8	Dr. B. R. Ambedkar Vidyabhavan	16	18	17	19	16	19	19	20	20	19
9	BidrohiKabi Nazrul Vidyabhaban	20	21	20	19	21	20	22	19	22	20
10	Jagatpur Senior Basic School	17	17	25	15	19	15	22	18	19	19

Table 3. Mean, Mean deviation and Standard deviation for Total Male students

Marks obtained (x)	Frequency (f_i)	f.x	$\bar{x} = \sum fx/N$	$|x-\bar{x}|$	$f_i|x-\bar{x}|$	M.D	$(|x-\bar{x}|)^2$	$f(|x-\bar{x}|)^2$	S.D
15	1	15	19.2	4.2	4.2	1.584	17.64	17.64	1.969
16	4	64		3.2	12.8		10.24	40.96	
17	5	85		2.2	11		4.84	24.2	
18	8	144		1.2	9.6		1.44	11.52	
19	10	190		0.2	2		0.04	0.4	
20	8	160		0.8	6.4		0.64	5.12	
21	9	189		1.8	16.2		3.24	29.16	
22	4	88		2.8	11.2		7.84	31.36	
25	1	25		5.8	5.8		33.64	33.64	
Total	50	960		----	79.2		---	194	

Mean deviation (M.D) = 79.2/50 = **1.584**

Variance (σ^2) = $\frac{1}{N}\sum f(|x - \bar{x}|)^2 = \frac{194}{50}$ = 3.88; Standard deviation (σ) = $\sqrt{3.88}$ = **1.969**

facilities for virtual classes. From the survey, it is clear that students are supportive for offline classes. 100% Students provided the answer that online classes are not comparable with offline classes. Students are prone for offline classes. Even after online classes they are interested to face offline examination.

Formula used for the calculation of z-value:

$$\text{Standard error of mean } (\sigma_m) = \sqrt{\frac{N_2^2 \sigma_1^2 + N_1^2 \sigma_2^2}{N_1^2 N_2^2}}$$

Table 4. Mean, Mean deviation and Standard Deviation for Total Female students

Marks obtained (x)	Frequency (f_i)	f.x	$\bar{x} = \sum fx/N$	Ix-$\bar{x}$I	f_iIx-$\bar{x}$I	M.D	(Ix-$\bar{x}$I)^2	f(Ix-$\bar{x}$I)^2	S.D
15	1	15	19.46	4.46	4.46	1.260	19.892	19.8916	1.590
16	1	16		3.46	3.46		11.972	11.9716	
17	2	34		2.46	4.92		6.0516	12.1032	
18	9	162		1.46	13.14		2.1316	19.1844	
19	12	228		0.46	5.52		0.2116	2.5392	
20	14	280		0.54	7.56		0.2916	4.0824	
21	5	105		1.54	7.7		2.3716	11.858	
22	5	110		2.54	12.7		6.4516	32.258	
23	1	23		3.54	3.54		12.5316	12.5316	
Total	50	973		----	63		-----	126.42	

Mean deviation (M.D) = 63.0/50 = 1.26

Variance $(\sigma^2) = \frac{1}{N}\sum f(\text{Ix} - \bar{x}\text{I})^2 = \frac{126.42}{50} = 2.528$; Standard deviation $(\sigma) = \sqrt{2.5284} = 1.590$

Table 5. Mean, Mean deviation and Standard Deviation for Urban students

Marks obtained (x)	Frequency (f_i)	f.x	$\bar{x} = \sum fx/N$	Ix-$\bar{x}$I	f_iIx-$\bar{x}$I	M.D	(Ix-$\bar{x}$I)^2	f(Ix-$\bar{x}$I)^2	S.D
16	3	48	19.62	3.62	10.86	1.426	13.1044	39.3132	1.707
17	2	34		2.62	5.24		6.8644	13.7288	
18	9	162		1.62	14.58		2.6244	23.6196	
19	8	152		0.62	4.96		0.3844	3.0752	
20	11	220		0.38	4.18		0.1444	1.5884	
21	10	210		1.38	13.8		1.9044	19.044	
22	6	132		2.38	14.28		5.6644	33.9864	
23	1	23		3.38	3.38		11.4244	11.4244	
Total	50	981		----	71.28		----	145.78	

Mean deviation (M.D) = 71.28/50 = **1.426**

Variance $(\sigma 2) = \frac{1}{N}\sum f(\text{Ix} - \bar{x}\text{I})^2 = \frac{145.78}{50} = 2.9156$; Standard deviation $(\sigma) = \sqrt{2.9156} = \mathbf{1.707}$

Table 6. Mean, Mean deviation and Standard Deviation for Rural students.

Marks obtained (x)	Frequency (f_i)	f.x	$\bar{x} = \sum fx/N$	Ix-$\bar{x}$I	f_iIx-$\bar{x}$I	M.D	(Ix-$\bar{x}$I)^2	f(Ix-$\bar{x}$I)^2	S.D
15	2	30	19.04	4.04	8.08	1.329	16.3216	32.6432	1.832
16	2	32		3.04	6.08		9.2416	18.4832	
17	5	85		2.04	10.2		4.1616	20.808	
18	8	144		1.04	8.32		1.0816	8.6528	
19	14	266		0.04	0.56		0.0016	0.0224	
20	11	220		0.96	10.56		0.9216	10.1376	
21	4	84		1.96	7.84		3.8416	15.3664	
22	3	66		2.96	8.88		8.7616	26.2848	
25	1	25		5.96	5.96		35.5216	35.5216	
Total	50	952		----	66.48		-----	167.92	

Mean deviation (M.D) = 66.48/50 = 1.329

Variance $(\sigma^2) = \frac{1}{N}\sum f(\text{Ix} - \bar{x}\text{I})^2 = \frac{167.92}{50} = 3.358$; Standard deviation $(\sigma) = \sqrt{3.3584} = 1.832$

Table 7. Calculation of z-value of the data

Sl. No	Urban/Rural	Student type	Sample size	Mean ($\bar{x}$)	M.D	S.D (σ)	σ^2	z-test value	Remarks
1	Total (Urban and Rural)	Male	50	19.2	1.584	1.969	3.88	0.726	Not significant
		Female	50	19.46	1.260	1.590	2.528		
2	Total Urban	(Male + Female)	50	19.62	1.426	1.707	2.915	1.64	Not significant
	Total Rural	(Male + Female)	50	19.04	1.329	1.832	3.358		

ii. Statistical Analysis of data: For the statistical analysis, we have prepared a score table by considering two (02) marks for each positive response and one (01) marks for each negative response. The school-wise score against each student is presented in Table 2. This raw data is used for the statistical analysis. In order to compare the result with the hypothesis of the work, we divided the result into two category-(i) Total male vs total female (Table 3 and Table 4); (ii) Urban students vs Rural students (Table 5 and Table 6). The data obtained from the students were analysed by using different statistical method such as Mean, Mean deviation, Standard deviation, and z-test value.

$$z\text{-test value} = \frac{\bar{X_1} + \bar{X_2}}{\sigma_m}$$

iii. Discussion of Results

The survey revealed that 100% students are attended in online classes during the COVID-19 pandemic situation. It was also found that more than 80% students were enthusiastic for the online classes. But, as a learner, 85% students were like offline classes. If we compare among the rural and urban students, it was observed that both, urban and rural students are equally enthusiastic for the online teaching-learning

process. Both, the students of rural as well as urban are equally interested in online learning process. However, some rural students are faced internet connectivity issue during online classes. Although several initiative taken by Government for online teaching-learning process and several platforms are also available; only 20% students are familiar with such platforms. Majority of the students (80%) don't know about the Government facility of virtual classes. From the survey, it is clear that students are supportive for offline classes. All students are prone to offline classes and agreed that online classes are not comparable with offline classes. Even after online classes they are interested in offline examination. From the table 3 and table 4, it was found that the mean deviation of male and female is 1.584 and 1.260, respectively. On the other hand, the standard deviation for male and female 1.969 and 1.590. From these values, we can say that male students are more effective in online learning than female students. Similarly, from table 5 and table 6, it was found that the mean deviation of urban and rural students is 1.426 and 1.329, respectively. On the other hand, the standard deviation for urban and rural students is 1.707 and 1.832. Here, urban students are more effective in online learning than rural students. From the above table 7, it is revealed that the calculated z-value for the total male and female students is 0.73 which is less than both the critical value (1.96 and 2.58) at 0.05% level and 0.01% level of confidence. So, calculated z-value is not significant. Hence, H-1 null hypothesis is accepted. We can conclude that there is no significant difference between male and female students on effectiveness of online teaching-learning. In case of urban and rural students, the z-value is 1.64 which is also less than both the critical value (1.96 and 2.58) at 0.05% level and 0.01% level. So, calculated z-value is not significant and hence, null hypothesis is accepted. We can say that there is no significant difference between urban and rural students on effectiveness of online learning.

SUMMARY AND CONCLUSIONS

In this paper, we have carried out an investigation on the uses of educational technologies in teaching learning process among the student of Tripura during COVID-19 pandemic situation. The main objective of this work is to find out the status of online learning in Tripura. From the investigation, it was observed that there is no significant difference between the male and female students as learners to learn through online mode using educational technologies. Both, male and female students are equally effective in online teaching-learning process. Similarly, rural and urban students are also equally effective in online mode of learning. Although students are accepted the online learning process during COVID-19 pandemic, they are preferred offline classes and also offline examination than the online. Unfortunately, majority of the student don't know about the government initiative taken for the online teaching-learning process. Therefore, proper sensitization programme among the school students is very essential for the utilization of government platform available for virtual class. High speed internet connectivity should be ensured in order to improve smooth access for all including learners of disadvantaged groups and low-income families. Online learning is not affordable for all including the poor and disadvantaged groups of the society. So, necessary steps should be taken by Government/educational institutions to minimise this gap between privileged and unprivileged learners. Further research on the challenges and issues of online classes and their effective solution is highly required for the implementation of online teaching-learning process among the students. Further studies using a larger sample size are also needed.

REFERENCES

1. Chen, N. M. Zhou, X. Dong, J. Qu, F. Gong, Y. Han, Y. Qiu, J. Wang, Y. Liu, Y. Wei, J. Xia, T. Yu, X. Zhang, L. Zhang. *The Lancet,* 2020, *395*, 507-513.
2. Huang, C. Y. Wang, X. Li, L. Ren, J. Zhao, Y. Hu, L. Zhang, G. Fan, J. Xu, X. Gu, Z. Cheng, T. Yu, J. Xia, Y. Wei, W. Wu, X. Xie, W. Yin, H. Li, M. Liu, Y. Xiao, H. Gao, L. Guo, J. Xie, G. Wang, R. Jiang, Z. Gao, Q. Jin, J. Wang, B. Cao, *The Lancet,* 2020, *395*, 497–506.
3. Israeli, E. *Harefuah*2020, 159, 70–71.
4. Wu, F. S. Zhao, B. Yu, Y. M. Chen, W. Wang, Z. G. Song, Y. Hu, Z. W. Tao, J. H. Tian, Y. Y. Pei, M. L. Yuan, Y. L. Zhang, F. H. Dai, Y. Liu, Q. M. Wang, J. J. Zheng, L. Xu, E. C. Holmes, Y. Z. Zhang, *Nature,* 2020, 579, 265–269.
5. Pillaiyar, T. S. Meenakshisundaram, M. Manickam. *Drug Discov. Today* 2020, 668-688.
6. Zhu, N. D. Zhang, W. Wang, X. Li, B. Yang, J. Song, X. Zhao, B. Huang, W. Shi, R. Lu, P. Niu, F. Zhan, X. Ma, D. Wang, W. Xu, G. Wu, G. F. Gao, W. Tan, N. *Engl. J. Med.* 2020, 382, 727–733.
7. Haleem, A. M. Javaid, *Curr Med Res Pract*. 2020, 10(2): 78–79.
8. Hoofman, J. E. Secord, *Pediatr. Clin .North. Am.* 2021, *68(5)*, 1071–1079.
9. Impact of the 2019–20 coronavirus pandemic on education. (2020, April 19). Retrieved April 21, 2020, from Wikipedia.org website: https://en.wikipedia.org/wiki/Impact_of_the_2019 20_coronavirus_pandemic_on_education.
10. Adverse consequences of school closures. (n.d.). Retrieved April 21, 2020, from UNESCO website: https://en.unesco.org/covid19/ educationresponse/consequences
11. *COVID-19 Educational Disruption and Response*. (2020, March 24). Retrieved April 21, 2020, from UNESCO.org website: https://en.unesco.org/news/covid-19-educational-disruption-and-response.
12. Christakis, E. N. A. Christakis, Closing the Schools Is Not the Only Option. https://www.theatlantic.com/ideas/ archive/2020/03/coronavirus-closing-schools-not-only-option/608056/
13. Pokhrel, S. R. Chhetri, *Higher Education for the Future*, 2021, 8(1) 133–141.
14. Gopal, R. V. Singh, A. Aggarwal, *Education and Information Technologies*, 2021, https://doi.org/10.1007/s10639-021-10523-1.
15. Nambiar, D. *The International Journal of Indian Psychology*, 2020, DOI: 10.25215/0802.094
16. Onyema, E. M. N. C. Eucheria, F. AObafemi, S. Sen, F. G. Atonye, A. Sharma, A. Omar Alsayed, *Journal of Education and Practice*, 2020, 11, 108-121. DOI: 10.7176/JEP/11-13-12.
17. Jena, P. K.*International Journal of Advanced Education and Research*, 2020, *5*, 77-81.
18. Jena. P. K.*International Journal of Multidisciplinary Educational Research*, 2020, *9*, 82-92.
19. Gupta, P. A. Gupta, *Indian Journal of Applied Research*, 2020, *10(12)*, DOI : 10.36106/ijar.
20. Saxena. K. *Coronavirus Accelerates Pace of Digital Education in India*. https://edtechreview.in/e-learning/3984-corona-virus-accelerates-pace-of-digital-education-in-india.
21. Chaturvedi, K. D. K. Vishwakarma, N. Singh. *Child Youth Serv Rev*, 2021, doi: 10.1016/j.childyouth.2020.105866.
22. Muthuprasada, T. S. Aiswaryab, K. S. Adityaa, Girish K. Jhaa, *Social Sciences & Humanities Open*, 2021, *3(1)*, 100101. https://doi.org/10.1016/j.ssaho.2020.100101.

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