

## UNDERGRADUATE STUDENTS' ATTITUDE TOWARD E-LEARNING: GENDER AND STREAM OF EDUCATION PERSPECTIVES

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### ABSTRACT

The present study is designed to examine the attitude of undergraduate students towards e-learning in the COVID era. The objectives of this investigation were to examine undergraduate students' attitudes toward e-learning in the COVID era and to compare undergraduate students' attitudes towards e-learning in terms of gender and stream of education. A sample of 180 undergraduate boys and girls belonging to Arts, Science, and Commerce streams were selected from the population using a stratified random sampling technique. The findings of the study showed that about 46.67% of undergraduate students were having a neutral attitude toward e-learning in the COVID era. The finding also showed gender and stream of education as significant predictors of attitude towards e-learning. Undergraduate girls were having a more positive attitude toward e-learning as compared to boys. Undergraduate students belonging to Commerce stream were having a more positive attitude towards e-learning as compared to the students belonging to Arts and Science stream. There was no significant influence of the interaction between gender and stream of education on the attitude of undergraduate students towards e-learning in the COVID era. The results of the study were discussed and the implications were described.

**Keywords:** Attitude towards e-learning; COVID-19 era; Gender; Stream of Education; Undergraduate Students

### INTRODUCTION

The 21<sup>st</sup> century is said to be the modern age and found the proper use of science and technology in the field of Education, Health and Communication. Due to the use of the Internet, the communication process between people has been increased rapidly. The world is becoming a family with the advent of new technology. Scientific discoveries have influenced all aspects of human life in many directions. Science and technology are used in all areas like hospitals, banks, industries, etc. The success of science and technology is also generalized to the teaching-learning situation in the form of e-learning. E-learning is the composition of two words 'E' and 'learning', where 'E' refers to electronic and learning refers to the relatively permanent changes in behavior through practice and experience. E-learning involves the use of information technology, information and communication technology, the internet, CDs, DVDs, etc. in the teaching-learning process. E-learning also involves a large number of technology applications such as audio and videotape, television, PDF, etc. The word e-learning is used synonymously with online learning and computer-based learning. Saroha (2013) defines e-learning as the combination of learning principles with the systematic application of information technology. E-learning enables people to work in their place because it is flexible (Dhamija, 2014). E-learning increases student achievement by

using internet technology, and digital content and providing a learner-centered environment (Khan, 2017). The term e-learning conveys a broader meaning than the terms computer-based learning or computer-aided instruction (Gupta & Sharma, 2018). E-learning is one of the most trusted areas to transmit education using different educational tools and communication media. It is the learning made possible by information and communication technology. The government has supported various e-learning programs to develop various tools and technologies to promote e-learning. A wide range of internet users are accessing the internet from their smartphones, tablets, laptop, and computer increasingly. The government of India has taken several initiatives through the Ministry of Education and University Grant Commission, which launch e-learning platforms for students. Dabbagh (2005) mentioned three components of e-learning design. These components are instructional strategies, learning technologies, and pedagogical models or constructs. Instructional strategies include different pedagogical aspects of delivering lectures or content. Learning technologies include various tools of support that are used to deliver content to e-learners, which includes both synchronous and asynchronous tools of communication. Pedagogical models or constructs are used to design the curriculum in the e-learning process.

A theory-based design framework for the e-learning process is useful for content delivery (Dabbagh 2005). For proper implementation of the e-learning strategy, the instruction should be carefully organized, implemented, and created a relationship between the teacher and students that will be consequences in the meaningful knowledge acquisition. This model helps to make the e-learning process more realistic using slideshows, graphics, audio, and video media and makes the learner an active participant in this process. Students' favorable attitude toward e-learning can be increased by designing the e-learning process according to this framework. Based on the user's requirements Davis (1985, 1989) developed "Technology Acceptance Model". "Technology Acceptance Model has three elements such as; perceived usefulness, perceived ease of use, and attitude toward using. According to this model, perceived usefulness is influenced by perceived ease of use, and students' attitude toward using e-learning system is influenced by perceived usefulness and perceived ease of use" (Davis, 1985, 1989). Davis in this model suggested that students' perceived ease of use has a direct effect on their attitude of students toward the use of e-learning resources. Another element of the technology acceptance model is the use of technologies in the teaching-learning process and its effectiveness depends upon students' perception of the usefulness of a particular technology. If learners believe that the instruction given by the instructor in the e-learning process is useful and effective, they are involved in the teaching-learning process more actively and their attitude towards e-learning will be more favorable. Based on the assumptions of the theories/model cited above, it was found that attitude towards e-learning as technology is influenced by varied factors in varied situations. Therefore, in the present study, an effort has been taken to investigate the attitude of undergraduate students towards e-learning concerning their gender and stream of education, especially in the COVID era, where online teaching was prevailing all over the country. An attempt has been made to study the attitudinal variations among undergraduate students with reference to their gender and streams of education. The influence of interaction between gender and stream of education has also been examined for gaining a deeper understanding.

## LITERATURE REVIEW

The analysis results revealed a positive attitude of respondents towards e-learning. (Dhamija, 2014; Rhema & Miliszewska, 2014; Kar et al., 2014; Cakir & Solak, 2015; Ali et al., 2016; Ogunnowo, 2016; Zabadi & Alawi, 2016; Elnoor et al., 2017; Konwar, 2017; Thakkar & Joshi, 2017; Dookhan, 2018; Pathak et al., 2019; Periasamy, 2019; Nachimuthu, 2020; Subedi et al., 2020). Findings of (Dhas, 2017; Fouzdar & Behera, 2017; Khan, 2017) showed a moderate attitude of respondents toward e-learning, whereas findings of (Saroja, 2013; Behera et al., 2016; Gupta & Sharma, 2018; Oktem, 2020) showed different levels of attitude towards e-learning. There found inconsistencies in the results among various studies conducted by other researchers such as Saroja (2013) indicated differences in attitudes of people toward e-learning, while the result of Periasamy (2019) indicated no differences in the attitude of learners toward e-learning based on age. The results (Suri & Sharma, 2013; Kar et al, 2014; Rhema & Miliszewska, 2014; Behera et al., 2016; Dhas, 2017; Fouzdar & Behera, 2017; Khan, 2017; Konwar, 2017; Thakkar & Joshi, 2017; Pathak et al., 2019; Periasamy, 2019; Nachimuthu, 2020) showed no significant differences between student's attitudes towards e-learning based on gender, in contrast to these findings of (Dhamija, 2014; Zabadi & Alawi, 2016; Gupta & Sharma, 2018 and Sao et al., 2018) showed differences between student's attitudes towards e-learning based on gender. Results of (Rhema & Miliszewska, 2014; Behera et al., 2016; Dhas, 2017; Fouzdar & Behera, 2017; Khan, 2017; Konwar, 2017; Thakkar & Joshi, 2017; Gupta & Sharma, 2018; Pathak et al., 2019) revealed no significant differences in the attitude of students towards e-learning based on locality, whereas results of (Dhamija, 2014 and Periasamy, 2019) showed differences in the attitude of students towards e-learning based on locality. Similarly, the results (Dhamija, 2014; Kar et al., 2014; Behera et al., 2016; Dhas, 2017; Gupta and Sharma, 2018) showed no significant differences in student's attitudes towards e-learning based on stream, considering that the results of (Fouzdar & Behera, 2017; Periasamy, 2019 and Nachimuthu, 2020) showed significant difference among student's attitudes towards e-learning based on the stream. Results (Kar et al., 2014; Behera et al., 2016 Fouzdar & Behera, 2017) evidenced no significant differences between students'

attitudes toward e-learning based on the category of students. From the result of Dookhan (2018), it was found that students' competency level and perceived usefulness had a significant influence on attitude toward e-learning, although the results of Oktem (2020) showed a significantly different attitude of students towards e-learning tendency and e-learning avoidance were based on grades. The result of Elfaki et al. (2019) showed that electronic learning affects better learning outcomes than traditional face-to-face learning. Raheem & Khan (2020) concluded e-learning is the most effective way of teaching and learning during the COVID-19 period. Lastly, the findings of Shete et al. (2020) showed that students preferred blended learning during the COVID-19 period.

A retrospective review of related kinds of the literature showed that numerous studies have already been conducted on the attitudes of students towards e-learning all over the world and the findings revealed a positive attitude of respondents towards e-learning proven by (Dhamija, 2014; Cakir & Solak, 2015; Zabadi and Alawi, 2016; Elnoor et al., 2017; Dookhan, 2018; Pathak et al., 2019; Periasamy, 2019; Nachimuthu, 2020), and a neutral attitude of students towards e-learning (Dhas, 2017; Fouzdar & Behera, 2017; Khan, 2017), different levels in attitudes of respondents towards e-learning (Saroja, 2013; Behera et al., 2016; Gupta & Sharma, 2018; Oktem, 2020). A large number of researches is being conducted to study the attitudes of postgraduate students toward e-learning (Elnoor et al., 2017; Fouzdar & Behera, 2017), attitudes of student-teachers toward e-learning (Behera et al., 2016; Periasamy, 2019; Nachi Muthu, 2020) but a few numbers of studies have been conducted to study the attitude of students towards e-learning at undergraduate levels, particularly in the state of Odisha. From the above analysis, the findings revealed that a small number of researches have been conducted to assess the attitude of students towards e-learning at the undergraduate level which had a greater impact during the COVID-19 period. Apart from it, the predictors of attitude towards e-learning have not been studied variedly. Therefore, the present study has been undertaken to examine gender and stream of education as predictors of attitude towards e-learning. It is also highly required to know the attitude of undergraduate students towards e-learning because e-learning played a major and an alternative role in the absence of a physical model of teaching which might have proved beneficial for the students concerning their suitability of time, place, and situations. Considering that the present study has been designed to study the attitudes of undergraduate students in e-learning during the COVID era. The rationale behind the COVID era was that during this period there was online teaching and learning all over the country, so it developed keen interest among the researchers to undertake a study on the attitude toward e-learning.

#### OBJECTIVES OF THE STUDY

1. To study undergraduate students' attitude towards e-Learning in the COVID era
2. To find out the variations in the attitude of undergraduate students towards e-learning in the COVID era concerning their gender and stream of education
3. To study the influence of interaction between gender and stream of education on the attitude of Undergraduate students towards e-learning

#### HYPOTHESES OF THE STUDY

1. There exists no significant difference in the attitude of undergraduate students towards e-learning concerning their gender and stream of education.
2. There exists no significant influence of interaction between gender and stream of education of undergraduate students towards e-learning.

#### DELIMITATIONS OF THE STUDY

- As per the data availability and convenience of research, the present study is exclusively delimited to Gangadhar Meher University, Sambalpur, Odisha.
- Further, the study is delimited to undergraduate boys and girls belonging to Arts, Science, and Commerce stream studying at Gangadhar Meher University, Sambalpur, Odisha.
- The design of the study is delimited to the survey method, similarly, the sampling technique is delimited to stratified random sampling with a sample size of 180 students.

#### METHODOLOGY

The methodology used in this study is as follows.

**a) Method:** The main objective of the study was to examine the attitudinal levels and variations of undergraduate students towards e-learning in the COVID era; to compare the attitude of undergraduate male and female students towards e-learning in the COVID era and to compare the attitude among undergraduate Arts, Science and Commerce students towards e-learning in COVID era concerning levels of attitude, gender, and stream, so descriptive survey method was used. Along with this, to study the influence of interaction between gender and streams of education on the attitude of undergraduate students, 2\*3 Factorial Design was also used.

**b) Participants:** All the final year Undergraduate students studying at Gangadhar Meher University, Sambalpur were constituted the population of the present study. In the present study, a stratified random sampling technique

was used to select 180 final year Undergraduate students belonging to the Arts, Science, and Commerce stream of Gangadhar Meher University, Sambalpur. Out of which, 60 students each from Arts, Science, and Commerce streams were taken as samples. The following table depicts the distribution of samples in the present study.

Table 1: Distribution of samples in percentage

Factors	Levels	N	Percentage
Gender	Male	90	50%
	Female	90	50%
Stream of Education	Arts	60	33.33%
	Science	60	33.33%
	Commerce	60	33.33%

**c) Instrument:** The Attitude towards the e-Learning scale developed by Dimpal Rani (2015) was used in the present study. The scale has been standardized on a sample of 200 students Ludhiana District in Punjab, India. The scale comprises 65 items, out of which 38 items are positive items and 27 items are negative items. The test-retest method was used to find out the reliability of the scale, which showed a reliability index of 0.87. Content validity and construct validity were used to test the validity of the tool. The scale was developed to cover four aspects of e-learning such as e-learning interest, usefulness, ease of e-learning, and e-learning confidence.

**d) Data Collection:** The data for this study have been collected personally by the investigators. After getting permission from the authorities, the researchers personally visited various departments of Gangadhar Meher University, Sambalpur, and introduced the tools to the sample students, convincing them about the purpose of the data collection. Further, the researchers asked and requested them to complete all the items on the scale. After filling up the scale, the investigators individually collected all the scales.

## RESULTS AND DISCUSSION

### A) Descriptive Analysis

One of the objectives of the present study was to examine the attitudinal level of undergraduate students towards e-learning in the COVID era. So, this descriptive analysis was done using the norms of the attitude scale.

Table 2: Attitude of undergraduate students towards e-learning in the COVID Era

Sr.No.	Range of z-score	Grade	Remarks	Number of Students	Percentage of Students
1.	+2.01 and above	A	Extremely High	5	2.78%
2.	+1.26 to + 2.00	B	High	20	11.11%
3.	+0.51 to + 1.25	C	Above Average	17	9.44%
4.	-0.50 to + 0.50	D	Average	84	46.67%
5.	-1.25 to - 0.51	E	Below Average	38	21.11%
6.	-2.00 to -1.26	F	Low	13	7.22%
7	-2.01 and below	G	Extremely Low	3	1.67%
Total				180	100%

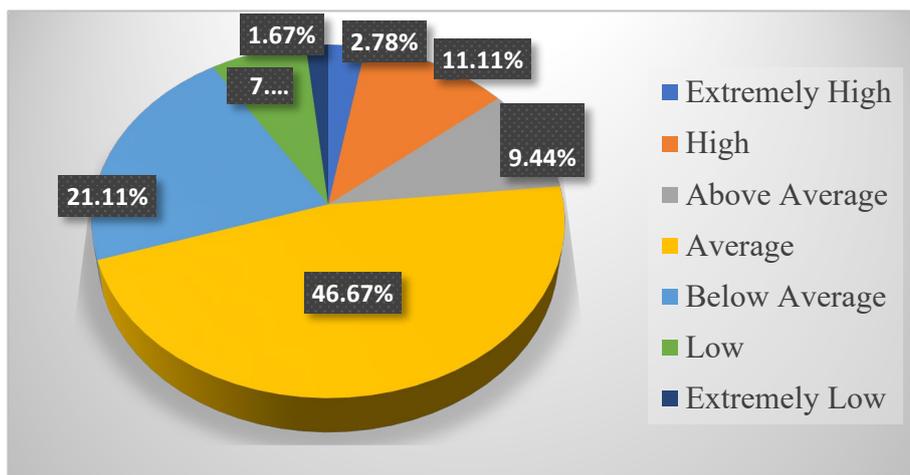


Figure 1: Attitude of undergraduate students towards e-learning in percentage

From Table 2 and Figure 1, it is revealed that the percentage of students having an extremely high level of attitude towards e-learning is 2.78%, the percentage of students having a high level of attitude towards e-learning is 11.11%, the percentage of students having an above-average level of attitude towards e-learning is 9.44%, the percentage of students having an average level of attitude towards e-learning is 46.67%, the percentage of students having a below-average level of attitude towards e-learning is 21.11%, the percentage of students having a low level of attitude towards e-learning is 7.22%, the percentage of students having an extremely low level of attitude towards e-learning is 1.67% in COVID era. So, from this, it is clear from the descriptive point of view that maximum undergraduate students are having an average level of attitude toward e-learning in the COVID era.

### B) Predictor Analysis

In the present study, there were two independent variables i.e., gender and stream of education, and one dependent variable i.e., attitude towards e-learning. An attempt was taken to study whether gender and stream of education are the predictors of attitude towards e-learning or not? An effort was made to find out the factors which predict the attitude of undergraduate students towards e-learning. For this purpose, linear regression analysis was employed by converting the above-cited categorical variable into dummy variables in SPSS. The results of the regression analysis are presented below.

Table 3: Results of linear regression analysis

Model	Regression weight	Beta coefficient	R <sup>2</sup>	F	P value	t-value	P-value
1	Gender	.253	.064	12.20**	.001	3.493**	.001
2	Science	-.110	.038	3.47*	.033	-1.287	.200
	Commerce	.115				1.345	.180

\*\* Significant at 0.01 level

\* Significant at 0.05 level

The table-3 shows two models of regression analysis. In the first model, gender has been taken into account as the independent variable. The R square value of the first model is .064, which reveals that 6.4% variance is caused by gender as a predictor of attitude towards e-learning. The F-value of the model is 12.20, which is significant at 0.01 level (P<0.01), and the t-value of the model was 3.493, which is also significant at 0.01 level (P<0.01). from this, it can be concluded that the gender of undergraduate students was found as a significant predictor of the attitude toward e-learning. Similarly, the second model was run for a stream of education. As the stream of education were having three levels, so, one group was taken as a reference group for comparison and linear regression was run. The model shows an R square value of .038 which reveals that 3.8% variance is caused by the stream of education when the Arts stream is taken as the reference group and a comparison is made. The F-value of the model was found as 3.47, which is significant at a 0.05 level (P<0.05). from which it can be concluded that the stream of education of undergraduate students is also a significant predictor of attitude towards e-learning in the COVID era. As both gender and stream of education, were found as significant predictors of attitude toward e-learning, further analyses were made to gain a deeper understanding by applying t-test and ANOVA.

**C) Variation Analysis**

**a) Gender wise variations analysis**

One of the objectives of the present study was to find out the attitudinal variations in the attitude of undergraduate students in terms of their gender. Here, gender was having two levels, namely, boys and girls. So, the t-test statistical technique was employed using SPSS-23, and the results are given below.

Table 4: Gender-wise mean, SD, df and t-value of attitude of undergraduate students towards e-learning in COVID Era

Groups	N	Mean	SD	Df	t- value	Sig.	Remark
Male Students	90	214.53	15.719	178	3.49**	.001	P<0.01
Female Students	90	224.30	21.366				

\*\*Significant at 0.01 level

From Table 4, it is found that the attitude of undergraduate male and female students toward e-learning differed significantly ( $t=3.49$ ;  $df=178$ ;  $p<0.01$ ) in favor of the attitude of the female undergraduate student toward e-learning ( $M=214.53 < M=224.30$ ). Therefore, the null hypothesis that there exists no sign of the difference between the attitude of undergraduate male and female students towards e-learning in the COVID era is rejected. Further, it can be said that the attitude of undergraduate female students towards e-learning is significantly better than the attitude of undergraduate male students towards e-learning in the COVID era related to e-learning interest, usefulness, ease of e-learning, and e-learning confidence.

**b) Streamwise variations analysis**

One of the objectives of the present study was to examine the attitude of undergraduate students towards e-learning regarding their stream of education. Here, the stream of education was having three levels, namely, the Arts, Science, and Commerce stream. So, the statistical comparison was made by employing One Way ANOVA by using SPSS-23, and the results are given below.

Table 5: Summary of the F-value for the attitude of undergraduate Arts, Science, and Commerce students towards e-learning in the COVID Era (N=180)

Source of Variation	Sum of Squares	df	Mean Square	F value	P-value	Remark
Between Groups	2521.23	2	1260.61	3.46*	.033	P<0.05
Within Groups	64392.51	177	363.80			
Total	66913.75	179				

\*Significant at 0.05 level

As can be seen in Table 5, it is found that the mean scores of attitudes of undergraduate Arts, Science, and Commerce students towards e-learning differ significantly ( $F=3.46$ ;  $df=178$ ;  $p<0.05$ ). Therefore, the null hypothesis that there exist no significant differences among mean scores of attitudes of undergraduate students belonging to Arts, Science, and Commerce streams towards e-learning in the COVID era is rejected. So, it can be said that the attitude of Arts, Science, and Commerce undergraduate students toward e-learning in the COVID era differed significantly related to e-learning interest, usefulness, ease of e-learning, and e-learning confidence.

As the result of One-Way ANOVA was significant, a posthoc test (Scheffe) was run to gain an understanding of the group having a better attitude towards e-learning, so a streamwise comparison was made accordingly.

Table 6: Stream-wise mean, standard deviation, and N of attitude

Streams	Mean	SD	N
Arts	219.35	18.45	60
Science	214.87	20.17	60
Commerce	224.03	18.56	60
Total	219.42	19.33	180

Table 7: Results of posthoc test (Scheffe)

Multiple Comparisons						
(I) Stream	(J) Stream	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Arts	Science	4.48	3.48	.438	-4.11	13.08
	Commerce	-4.68	3.48	.407	-13.28	3.91
Science	Arts	-4.48	3.48	.438	-13.08	4.11
	Commerce	-9.17*	3.48	.033	-17.76	-.57
Commerce	Arts	4.68	3.48	.407	-3.91	13.28
	Science	9.17*	3.48	.033	.57	17.76

\* Significant at 0.05 level

The results of the Scheffe test give a clear picture of multiple comparisons on the attitude of undergraduate students belonging to the Arts, Science, and Commerce streams. As there were three levels of stream of education, multiple comparisons were run three times i.e., Arts vs Science, Arts vs Commerce, and Science vs Commerce. From table 4, it is clear that the mean difference between the attitude of undergraduate students belonging to the Arts and Science stream is found to be 4.48, which is not significant ( $P>0.05$ ). The mean difference between the attitude of undergraduate students belonging to the Arts and Commerce stream is found to be 4.68, which is not significant ( $P>0.05$ ). So, it can be said that the attitude of undergraduate students belonging to the Arts and Science stream, and Arts and Commerce stream did not differ significantly. Finally, the mean difference between the attitude of undergraduate students belonging to the Science and Commerce stream is found to be 9.17, which is significant ( $P<0.05$ ). It revealed that there is significant altitudinal variation in the attitude of undergraduate students belonging to the Science and Commerce stream towards e-learning in the COVID era. Further, the mean score of undergraduate students' attitude towards e-learning was in favour of the Commerce stream, as the mean score for the Commerce stream was 224.03, which is significantly higher than of science stream which was found to be 214.87. So, it can be concluded that the undergraduate students belonging to Commerce stream were having a more positive attitude towards e-learning as compared to the students of the Arts and Science stream.

#### D) Analysis of Influence of Interaction between Gender and Stream of Education

One of the objectives of the present study was to examine the influence of the interaction of gender and the stream of education of undergraduate students towards e-learning in the COVID era. As per these objectives, two factors were taken into account i.e., gender and stream of education. Gender was having two levels, namely, boys and girls. Stream of education was having three levels, namely, Arts, Science and Commerce. So, the data was analyzed by employing Two-Way ANOVA or 2\*3 Factorial Design ANOVA using SPSS-23, and the results are given below.

Table 8: Gender and streamwise mean, SD, and N of the attitude of undergraduate students towards e-learning

Gender	Stream	Mean	SD	N
Males	Arts	215.60	18.25	30
	Science	213.03	18.70	30
	Commerce	214.97	8.48	30
	Total	214.53	15.72	90
Females	Arts	223.10	18.18	30
	Science	216.70	21.70	30
	Commerce	233.10	21.41	30
	Total	224.30	21.37	90
Total	Arts	219.35	18.45	60
	Science	214.87	20.17	60
	Commerce	224.03	18.56	60
	Total	219.42	19.33	180

Table 9: Result of two-way ANOVA (2×3)

Source	Sum of Squares	df	Mean Squares	F	Sig.
Gender	4292.45	1	4292.45	12.79	.000
Stream	2521.23	2	1260.62	3.76	.025
Gender * Stream	1685.23	2	842.62	2.51	.084
Error	58414.83	174	335.72		
Total	8732775.0	180			
Corrected Total	66913.75	179			

a. R Squared = .127 (Adjusted R Squared = .102)

From Tables 8 & 9, it can be seen that the F-value for interaction between Gender and Stream is found as 2.510 which is not significant at the 0.05 level. It indicates that there is no significant influence of interaction between gender and stream of education on the attitude of undergraduate students towards e-learning. It reveals that there exists no significant difference between the mean scores of undergraduate boys and girls belonging to the Arts, Science, and Commerce stream of education. Therefore, the null hypothesis that there is no significant influence of interaction between gender and the stream of education of undergraduate students towards e-learning in the COVID Era is accepted. Therefore, it may be said that the attitude of undergraduate students is free from interaction influence between gender and stream of education.

## DISCUSSION OF RESULTS

After going through the analysis of the data and results of the study, it can be said that the majority of undergraduate students were having an average level of attitudes toward e-learning in the COVID era. The findings of the present study match with the findings of Dhas, (2017), Fouzdar & Behera, (2017), and Khan, (2017). The findings of the study conclude that undergraduate male students had a less positive attitude than undergraduate female students towards e-learning, which matches with the findings of Dhamija, (2014), Zabadi & Alawi, (2016), Gupta & Sharma, (2018), Sao et al., (2018). The findings of the present study show that the attitude of Arts, Science, and Commerce undergraduate students towards e-learning differed significantly, which matches with the findings of Fouzdar & Behera (2017), who found that there was a significant difference between PG Arts students and PG Science students in favour of PG Arts students, Periasamy (2019) who found significant differences among Language, Arts and Science B.Ed. trainees in favour of Science B.Ed. trainees, Nachimuthu (2020) found a significant difference between student teachers who belonged to Science and Arts stream. As far as the findings related to the influence of interaction between gender and stream of education is concerned, it was a new finding for which a smaller number of studies were found. From the analysis of the results of the present study, it can be hypothesized that the attitude of undergraduate girls was found to be significantly higher than the boys, it may be due to the higher participation of girls in attending online classes. It may also be due to the educational usage of the internet among girls. In addition to this, from the results relating to the attitude of Commerce stream students, which was found to be significantly higher than other streams, it can be hypothesized that the commerce undergraduate students may be needing to go for educational usage when they remain at home for doing mathematical calculations.

## EDUCATIONAL IMPLICATIONS

The findings of the present study have the following implications for *students*,

- Students should be encouraged to attain various e-learning programs organized by different educational institutions and central and state governments to have better e-learning experiences
- Based on the findings of the present study, it is recommended that more e-learning materials and facilities should be provided to develop their attitude toward e-learning.

The findings of the present study have the following implications for *teachers*,

- Teachers should give more emphasis on the use of technology in the teaching-learning process.
- The E-learning process should be adopted by educational institutions and teachers to make students up-to-date.

The findings of the present study have the following implications for *policy makers*,

- Government should provide e-learning platforms for students of higher education and follow-up services should be provided to them.

- Various seminars, workshops, and symposiums should be organized for undergraduate students to develop an e-learning attitude among students at central, state, or institutional levels.

## CONCLUSION

E-learning is a source of knowledge, values, skills, and student evaluation. It has brought a drastic change in the educational context. As far as the results of the present study are concerned, it was found that the attitude of undergraduate girls was found to be significantly higher than the boys. So, essential measures are needed to be taken in favour of boys, so that they can develop a positive attitude toward e-learning and focus on their studies. On the other hand, the attitude of undergraduate students belonging to the Commerce stream was found to be significantly higher as compared to others. So, essential measures should be taken similarly to develop the attitude of undergraduate students in the Arts and Science stream towards e-learning. However, the study concluded gender and stream of education as significant predictors of attitude toward e-learning, especially for undergraduate students. In addition to that, it was concluded that there was a significant influence of interaction between gender and stream of education on the attitude of undergraduate students towards e-learning.

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No potential conflict is reported in the study.

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