



## Perceptual variance among university students towards learning in virtual mode in the contemporary scenario: An empirical study

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### ABSTRACT

The education sector in India has changed a lot largely because of the innovation and development in technology in recent years, where virtual learning is one of the major important parts of it. The concept of virtual learning is not new but recently it has emerged as a major tool for learning among different college and university based students, especially in the contemporary scenario. Therefore, the objective of the study is to find out the perceptual variance towards digital learning between different genders of university students in the current scenario. To fulfill the objectives of the study, the researcher conducted a primary based study mainly based in Kolkata, West Bengal to understand the perception of learning in virtual mode among university students, who are the matured learners. Non Parametric test, namely Mann Whitney test has been used in the current study to ascertain the result based on its primary survey. The findings of the study were mixed in nature giving statically significant and insignificant outcomes in the perception of learning towards virtual mode and based on the results and findings of the study, it can be concluded that there are more negative effect in virtual mode of learning then its positive side as perceived by the students and they mainly want offline mode of learning which does not significantly differ between different genders of the university students.

**Keywords:** Education sector, Mann Whitney Test, Perception, University students, Virtual learning

### 1. INTRODUCTION

The era we live in is the era of technological advancement and changes. It is the age of digital revolution and individuals along with industries are adopting such revolutionary changes which are not restricted to only few people or corporate bodies but it has found its way to influence life of every single individual. The technological innovation and its usage are being implemented in the education sector as well which made the industry to change which it was a decade ago. Students are adopting virtual mode of learning slowly and steadily which in turn the traditional black board chalk and duster method of learning is getting replaced by the smart whiteboard in modern day education. Virtual learning is simply the learning that is experienced virtually with the help of technological tools and the access to internet connectivity which maybe inside or outside the facilities of educational institution. The experience of teaching and learning is carried online here in this mode and they are socially separated and physically distanced. Virtual learning gives you a wide scope in education along with flexibility in learning among the students and keeps them engaged and motivated which improves student performance and the pressure is often less while learning (Martin and Bolliger 2018). But the main backdrop of virtual learning in India is the marginalized populations who hardly have any medium to access such learning as per their need and suitability. Virtual learning is dependent largely on technology and any disruption in technological medium can hamper concentration in studies (Brooks, 2003). Different students have different perception towards virtual learning which comprises of both positive and negative aspect as well and on that basis the researcher tried to conduct the study to find the perception among university students towards learning in virtual mode. Education sector is an important part of the society and being a social science researcher it is the duty to take upon the societal aspect as well. There are hurdles in higher education and with university students, especially in the recent scenario but it should seek as an opportunity such that it can reap the benefits to provide education to all equally in a robust manner.

### 2. LITERATURE REVIEW

Several extensive literatures have been studied in the concerned area by the researcher for the identification of research gap of the study:

Kundu and Dey (2018) in their study elaborated that virtual or online learning creates awareness in modern day learning process and it also offers a greater degree of freedom in education. The researchers also observed that such type of learning is progressing rapidly and it's gaining popularity such that it will lead to development of education industry of India in near future. Vivakaran and Maraimalai (2018) highlighted that the introduction of social media in higher education try to enhance the learning experience which will take the education into the next level. The researcher also focused on the cons part where there is an inability to have a proper access on the virtual learning facilities in India.

Baber (2020) studied about the factors that influence the students in online learning and it was found that the motivation of students, interaction in the classroom among student, knowledge of the instructor and course structure do influence positively among student's satisfaction and perceived learning outcome. Genelza (2022) outcome based education in higher education includes the abilities, awareness and learning that a student must attain to satisfy themselves and be successful in their life. Though outcome based education comes with several challenges, there should be awareness about such education as pointed out by the researcher.

Jibril et al. (2023) conducted a primary research study and it was observed that poor accommodation at 56.2% and academic stress at 53.3% are the major factors that affect the sleeping pattern among nursing students in University of Ilorin and it was concluded that there is significant relationship between achievement in academy and sleeping pattern of students. On the basis of detailed literature review studied by the researcher in the concerned area which is an area of importance from the societal point of view, the researcher found out that the literature lacks definite study on the perception of the university students about virtual learning in the contemporary scenario. The researcher found that there is an existing research gap that has got a huge social significance, and based on that the researcher tried to conduct the study by fulfilling the research gap through its will identified research objectives and its formulated hypothesis.

### 3. RESEARCH OBJECTIVES

Based on the detailed review of literature and the research gap in the study, the following research objectives have been identified by the researcher:

1. To find out the perception about the accessibility of learning materials in virtual classes between different genders of university students.
2. To understand the level of participation in virtual classroom between different genders of university students.
3. To find out whether ethics is maintained in virtual examination between different genders of university students.
4. To find out the level of interaction within batch mates in virtual classroom between different genders of university students.
5. To find out the level of satisfaction in virtual classes between different genders of university students.
6. To understand the perception on the mode of learning that will be considered for future between different genders of university students.

### 4. RESEARCH DESIGN

Research design here means the framework of research methods and techniques that is used here in the research study. The overall strategy utilized and carried out in the research work has been mentioned under research design. The research design in the study consists of research methodology, research questions and research hypothesis which are well explained and elaborated below:

#### 4.1. Research methodology

The study is exploratory and empirical in nature where the empirical part of the study has been conducted based on primary data collection via Google Forms from the university students who are perusing their higher education especially in Kolkata, West Bengal, India. 400 respondents were collected from the students who are either research scholar or pursuing their masters from their respective universities. The questionnaires that is prepared for the current study seeks to know the perception of virtual learning in the contemporary scenario between different genders of university students and based on it, questionnaires were prepared through the medium of Google Forms to fulfill its objectives such that to identify any variance in the perception among male and female students is there or not. The exploratory part of the study has been collected from several journals, books and various related articles.

Several testable hypotheses have been formulated by the researcher based on the nature of the study to fulfill its objectives and to derive results from it. Then the formulated hypothesis was tested using non parametric Mann Whitney test, which is appropriate when there are two different groups of respondents as pointed out by Gibbons and Chakraborti (Gibbons & Chakraborti, 1991). In the current study, there were male and female group of students who responded and the current study seeks to know whether there is a perceptual variance among students of different genders towards virtual learning in the recent scenario. On the basis of the test, the results were derived in the study which was conceptually analyzed and summarized by the researcher. The test was conducted using SPSS software and based on the results, conclusion was drawn by the researcher and then several recommendations were also forwarded such that the university

students can create an atmosphere of learner centric based on their choice for the overall development of the education sector of India.

#### 4.2. Research questions

The following research questions have been raised in the current study to fulfill the research objectives of the study:

1. Does there is a variance in perception about the accessibility of learning materials in virtual classes between different genders of university students?
2. Does there is a variance in the level of participation in virtual classes between different genders of university students?
3. Do ethics maintained in virtual examination vary between different genders of university students?
4. Does interaction within batch mates in virtual classroom vary between different genders of university students?
5. Does the satisfaction level vary between different genders of university students in virtual classes?
6. Does there is a variation in perception between different genders of university students regarding the mode of learning that will be considered for future?

#### 4.3. Research hypothesis

The following testable research hypothesis has been formulated in the current study based on its research objectives:

1. H<sub>01</sub>: There is no significant difference in perception about the accessibility of learning materials in virtual classes between different genders of university students.
2. H<sub>02</sub>: There is no significant difference in the level of participation in virtual classes between different genders of university students.
3. H<sub>03</sub>: There is no significant difference in ethics maintained in virtual examination between different genders of university students.
4. H<sub>04</sub>: There is no significant difference in interaction within batch mates in virtual classroom between different genders of university students.
5. H<sub>05</sub>: There is no significant difference in perception about the level of satisfaction for virtual classes between different genders of university students.
6. H<sub>06</sub>: There is no significant difference in perception about the futuristic mode of learning between different genders of university students.

### 7. DATA PRESENTATION AND ANALYSIS

On the basis of the data collected through Google Forms from different male and female students, data has been presented, analyzed and interpreted below regarding learning in the virtual mode in the contemporary scenario.

**Table 1:** Gender Distribution of Respondents

	Frequency	%	Cumulative %
Male	198	49.5	49.5
Female	202	50.5	100.0
Total	400	100.0	

Source: Researchers computation through SPSS

Table 1 above simply depicts the gender distribution of respondents of university students about their perception of virtual learning in the contemporary scenario. It is observable from the table that there are 198 male respondents out of total 400 respondents which is 49.5% of them whereas the female respondents are 50.5% having 202 responses out of total 400 respondents.

H<sub>01</sub>: There is no significant difference in perception about the accessibility of learning materials in virtual classes between different genders of university students.

H<sub>11</sub>: There is a significant difference in perception about the accessibility of learning materials in virtual classes between different genders of university students.

**Table 2: Do you think Virtual Learning is easily Accessible in the contemporary scenario?**

	Frequency	%	Cumulative %
Strongly Agree	142	35.5	35.5
Partially Agree	102	25.5	61.0
Neutral	70	17.5	78.5
Partially Disagree	37	9.3	87.8
Strongly disagree	49	12.3	100.0
Total	400	100.0	

Source: Researchers computation through SPSS

**Table 3: Mann Whitney Test Statistics(a)**

	Do you think Virtual Learning is easily Accessible in the contemporary scenario?
MannWhitney U	16172.000
Wilcoxon W	35873.000
Z	-3.430
P value (2-tailed)	.001

a Grouping Variable: Gender

Source: Researchers computation through SPSS

Based on the results ascertained from the above table 3, it can be concluded that the null hypothesis is rejected both at 1% and 5% level of significance which can be referred from the p value of the table at 0.001 which is less than both 0.05 and 0.01. Hence, it can be said that there is a difference in perception about the accessibility of learning materials in virtual classes between different genders of university students. From Table 2, it can also be said that majority of the students think that virtual learning can be easily accessible.

H<sub>02</sub>: There is no significant difference in the level of participation in virtual classes between different genders of university students.

H<sub>12</sub>: There is a significant difference in the level of participation in virtual classes between different genders of university students.

**Table 4: Is your Participation level less in virtual learning in the contemporary scenario?**

	Frequency	%	Cumulative %
Strongly Agree	103	25.8	25.8
Partially Agree	82	20.5	46.3
Neutral	101	25.3	71.5
Partially Disagree	39	9.8	81.3
Strongly disagree	75	18.8	100.0
Total	400	100.0	

Source: Researchers computation through SPSS

**Table 5: Mann Whitney Test Statistics(a)**

	Is your Participation level less in virtual learning in the contemporary scenario?
MannWhitney U	16348.500
Wilcoxon W	36049.500
Z	-3.162
P value (2-tailed)	.002

a Grouping Variable: Gender

Source: Researchers computation through SPSS

Based on the above table 5, it can be concluded here that the null hypothesis is rejected both at 1% and 5% level of significance which can be referred from its p value at 0.002 which is less than both 0.05 and 0.01. Hence, there is a significant difference in participation in virtual classes between different genders of university students. It can also be ascertained from Table 4 that majority of the students think that they participate less in virtual learning along with being neutral.

H<sub>03</sub>: There is no significant difference in ethics maintained in virtual examination between different genders of university students.

H<sub>13</sub>: There is a significant difference in ethics maintained in virtual examination between different genders of university students.

**Table 6:** Do you maintain Ethics in Virtual mode of Examination?

	Frequency	%	Cumulative %
Poor	95	23.8	23.8
Moderate	116	29.0	52.8
Good	92	23.0	75.8
Very Good	35	8.8	84.5
Excellent	62	15.5	100.0
Total	400	100.0	

Source: Researchers computation through SPSS

**Table 7:** Mann Whitney Test Statistics(a)

	Do you maintain Ethics in Virtual mode of Examination?
MannWhitney U	18491.000
Wilcoxon W	38994.000
Z	-1.340
P value (2-tailed)	.180

a Grouping Variable: Gender

Source: Researchers computation through SPSS

Based on table 7, it can be observed that the p value in the table is 0.180 (greater than 0.05) which makes the null hypothesis to accept at 5% level of significance. Hence, there is no significant difference in ethics maintained in virtual examination between different genders of university students. It can also be ascertained from Table 6 that majority of the students moderately maintain ethics in examination conducted via virtual mode.

H<sub>04</sub>: There is no significant difference in interaction within batch mates in virtual classroom between different genders of university students.

H<sub>14</sub>: There is a significant difference in interaction within batch mates in virtual classroom between different genders of university students.

**Table 8:** Do you have adequate interaction with your Batch mates in Virtual Classroom?

	Frequency	%	Cumulative %
Yes	100	25.0	25.0
No	216	54.0	79.0
Indifferent	38	9.5	88.5
Maybe	46	11.5	100.0
Total	400	100.0	

Source: Researchers computation through SPSS

**Table 9:** Mann Whitney Test Statistics(a)

	Do you have adequate interaction with your Batch mates in Virtual Classroom?
MannWhitney U	17084.000
Wilcoxon W	36785.000
Z	-2.776
P value (2-tailed)	.006

a Grouping Variable: Gender

Source: Researchers computation through SPSS

From above table 9, it is visible that the value of p herein is 0.006 which is less than both 0.05 and 0.01 which rejects the null hypothesis both at 1% and 5% level of significance. Therefore, it can be said that there is a significant difference in interaction within batch mates in virtual classroom between different genders of university students. Table 8 also depicts that majority of the students think they do not have adequate interactions with their batch mates in virtual classroom.

H<sub>05</sub>: There is no significant difference in perception about the level of satisfaction for virtual classes between different genders of university students.

H<sub>15</sub>: There is a significant difference in perception about the level of satisfaction for virtual classes between different genders of university students.

**Table 10:** Do you find adequate Satisfaction in virtual learning in the contemporary scenario?

	Frequency	%	Cumulative %
Yes	128	32.0	32.0
No	192	48.0	80.0
Indifferent	40	10.0	90.0
Maybe	40	10.0	100.0
Total	400	100.0	

Source: Researchers computation through SPSS

**Table 11:** Mann Whitney Test Statistics(a)

	Do you find adequate Satisfaction in virtual learning in the contemporary scenario?
MannWhitney U	16370.000
Wilcoxon W	36071.000
Z	-3.395
P value (2-tailed)	.001

a Grouping Variable: Gender

Source: Researchers computation through SPSS

On the basis of table 11, the results are visible and thereby it can be concluded that the null hypothesis is rejected both at 1% and 5% level of significance which can be referred from its p value at 0.001 which is less than both 0.05 and 0.01. Hence, there is a significant difference in the perception about the level of satisfaction for virtual classes between different genders of university students. Table 10 also depicts that majority of the students are not satisfied in virtual learning.

H<sub>06</sub>: There is no significant difference in perception about the futuristic mode of learning between different genders of university students.

H<sub>16</sub>: There is a significant difference in perception about the futuristic mode of learning between different genders of university students.

**Table 12:** In future you want which mode of learning?

	Frequency	%	Cumulative %
Online	89	22.3	22.3
Offline	187	46.8	69.0
Both	124	31.0	100.0
Total	400	100.0	

Source: Researchers computation through SPSS

**Table 13:** Mann Whitney Test Statistics(a)

	In future you want which mode of learning?
MannWhitney U	18152.500
Wilcoxon W	37853.500
Z	-1.724
P value (2-tailed)	.085

a Grouping Variable: Gender

Source: Researchers computation through SPSS

From the results visible in the above table 13, it can be ascertained that the null hypothesis is accepted at 5% level of significance since the p value of the table is 0.086 (greater than 0.05). Hence, it can be said that there is no significant difference in the perception about futuristic mode of learning between different genders of university students. However, majority of the university students want offline mode of learning in the future which is visible from table 12 above.

## 8. FINDINGS AND CONCLUSION

On the basis of the results derived above, it is found that in most of the cases there is a variation in the perception among university male and female students towards learning in the virtual mode of education. Though virtual learning is easily accessible but their participation level is less in such mode of learning which significantly differs between different genders of university students which also supports the existing literature Wang et al. (2009). It was found that the

interaction among the batch mates is poor in the virtual mode of learning which was also pointed out by Tripathiet et al. (2022) and there is no adequate satisfaction among the male and female university students towards virtual learning, which also significantly differs between them. Ethics is a very important part of education which is not maintained by majority of the university students in virtual mode of examination as responded where there are no significant differences between the respondents. Finally, the students mainly want offline mode of learning as found out and similar results were also ascertained by Wadhwa and Khatak (2020), You et al. (2021), and Setyaningsih (2022) which does not significantly differ between different genders of the university students.

The findings of the study suggests that there are more negative effect in a virtual mode of learning then its positive side as perceived by the learned students while responding which was also found by Caprara and Caprara (Caprara & Caprara, 2022). Moreover, there is no sense of belongingness in such kind of learning and there is also a fear of anxiety and mental pressure while learning alone in virtual mode as pointed out also in the study (Caprara & Caprara, 2022). Physical and face to face mode of traditional classroom teaching and learning suggests best for the students but maybe the current situation demands change and innovations from the education sector as well. Higher education and the students belonging in the universities is very important for the future of a country and such a strong unit cannot be neglected by any means and therefore it should be the students judgment to decide where they want to learn and pursue in future which will be a win-win situation from the perspective of both teachers and learners. Overall the education sector should be such where every student from every corner of a particular country can learn equally and affordably, be it in virtual or traditional physical mode or by using both medium of learning.

## 9. RECOMMENDATIONS

Teaching and learning in virtual environment provides a global learning environment which can be accessed anytime and anywhere as per the suitable needs of educationist. The innovation in technology and internet of things paved the way for virtual learning in our country but with a mass population and majority of them residing in rural areas, such type of learning cannot be a feasible option in a country like India. There are students who do not have a proper medium to access learning virtually and proper network connection is also a major problem in our country. Along with that assessment and evaluation is also a major problem in virtual mode of learning. There are several such problems associated with learning in virtual mode of education and therefore, several recommendations have been put forwarded as follows:

- There should be skill based learning in higher education such that the students can improve their specific skills and love what they are learning inserted of getting themselves educated just for the sake of learning.
- Participation among various groups of communities is very much essential, especially where there is a need to empower the marginalized sections of the population such that there should be equality among each and every group of educationist.
- The teachers along with the institutions must ensure that the students who are pursuing higher education and are learning in virtual mode must have adequate tools and facilities to continue their learning and if not, then there should be proper arrangements for such group of learners such that their teaching and learning process is not discontinued.
- The government and the ministry of education should ensure that education is inclusive so that no learners have to face problems due to inadequate facilities of online learning tools especially in this current scenario.
- Teacher can play a vital part in a student's life and therefore they should give special attention and make them comfortable in virtual mode of learning which is not same as the traditional physical mode of learning.

## 10. LIMITATIONS OF THE STUDY AND FUTURE RESEARCH SCOPE

The study has been conducted by the researcher based on primary survey and fewer amounts of data have been collected to understand the perceptual variances among university students towards learning in virtual classes. More amounts of data could have been collected along with having more number of parameters to better understand the perceptual variances. Basic and simple statistical tools have been used in the current study and therefore more advanced statistical tools can be used by the future researcher's to obtain more in depth knowledge in the concerned area.

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