

A Comparative Study on Student Engagement and Achievement in Online Versus Traditional Classroom Instruction

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Abstract : The different points related to the study topic and Vygotsky's theory have been stated. The transition of traditional learning to digital learning has faced great changes mainly in this time of pandemic. The primary data collection process, descriptive method, and deductive approach of research have followed here. SPSS and ANOVA, frequency analysis, and correlation have been done here. Data has been gathered from different 55 students with 13 questions and their analysis is been stated here. The interpretation of data has been done with SPSS in this part. A comparison of the literature review and the relation between the results that are collected are analysed in this part. Thus, it can be concluded that the traditional learning practice created more impact on the engagement of students. The online teaching process has made less engagement in comparison with the traditional process. Students who wished to attend international classes but could not go to the places are taking online classes from home. Nevertheless, the relationship between the teacher and the student and their successes are hindered here so much so.

Keywords : Traditional, online, teaching, teachers, students, face-to-face connection, digital, engagement.

1. Introduction

The traditional process of teaching is where interaction between the teachers and the students are face to face. It has a great help to the students to teach the interpersonal skills that are helpful for them in their life later. Working with total groups with the physical settings can help to boost the overall confidence of the students and the motivation can help them to achieve more confidence.

Online teaching has been popular after the pandemic situation and it can be delivered with the help of images, text, and different kinds of videos. As per the views of Holbrey (2020), for evaluation, the students are asked to complete the assignments within a specific time. The interaction process with the students is limited. On the other hand, traditional learning is maintained with e affixed schedules and a fixed time and place.

Due to the Covid period, which was unpredictable for the whole world, the business sector has gone through significant changes and it has impacted the education sector also. The unprecedented shift of the big challenge helped the students to become engaged with the virtual classes (Chiu, 2021). The short-term impact of Covid has led to the design of the face-to-

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face challenge and there was an intended change in the teaching and learning process. It has been seen per the report that 94% of the total learners all over the world have been affected in the year 2020 due to COVID-19 (Ehsanifard et al. 2020). Among them, there were 1.58 billion children and youth in primary and higher education among the 200 countries all over the world.

Student engagement can be defined as the multidimensional concept that encompasses the success of leading students at the primary to secondary level of the education system. Student engagement is also characterized by the engagement and involvement of the students in their class to gain knowledge. Connection with the learning environment which is related to the cognitive, behavioral, and social connection with the students and gaining knowledge with the help of the traditional processes is maintained (Jusuf, Ibrahim & Suparman, 2019).

The study aims to show a comparison between student engagement in the traditional way of learning and the online learning process in the education system. The objectives of the study are RO1: To define the student engagement process in traditional learning and the online learning process. RO2: To investigate the comparison and impact of the traditional learning process and the online learning process and their impact on the students. RO3: To find the challenges those are faced by the students to become engaged with study in an online class in comparison with the traditional one. RO4: To describe the solutions that may be helpful to mitigate the issues those are faced by the students to become engaged in the online learning process.

The research questions of the study are: RQ1: What is the description of the student's engagement in the traditional learning process and the online learning process? RQ2: What is the comparison between the impact on the student's engagement in the traditional and online process of learning? RQ3: What are the challenges that are faced by the students to become engaged in the online learning process? RQ4: What are the solutions that may help to mitigate the issues in the online learning system and engage students on them?

The hypotheses of the study are: H2: Students have not engaged that much and faced difficulties in achievements in the online process in comparison with the traditional process. H1: Students have been

engaged more and achieved more in the online learning processes in comparison with the traditional process of learning. H0: There is a significant relationship between traditional learning process and education development.

The main issue that has been faced in comparison with the traditional and digital learning process is the connection gap between the teachers and the students due to a lack of face-to-face connection. Another issue is that the students are not learning so many things from the teachers that may help them in their lives (Sahni, 2019). This is a great issue because, with the lack of physical connection with the teachers, the students are sometimes facing problems in their studies that are not being solved. Some of the students are not too open about their issues in the online class which was understood early by the teachers in the class only. The teacher-student connection is being cracked and the bond is being hampered. In the above figure, it is seen that in the US, there were 43% of the people have said that online teaching was worse for their teaching (statista.com, 2023). This is a great issue now because, at the primary level, it needs to be handled with the physical attendance of the teachers. Without face-to-face connection, the situation and capacity of learning cannot be known with the help of test evaluation only (Kevser, 2021). That is a great issue now for the students in the online teaching process. This research will shed light on the challenges that are being faced in the online learning process related to student's engagement in the study. The solutions to the issues that may also be helpful for mitigating the issues will be discussed in this present research.

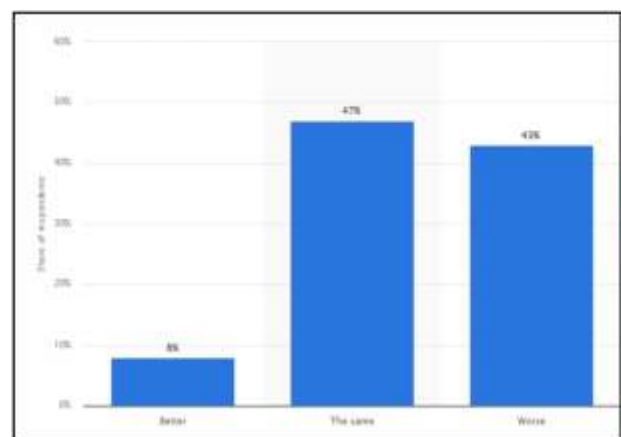


Fig. 1: Beliefs of students related that if online teaching is better or same or worse in comparison with the traditional process (Source: statista.com, 2023)

2. Literature Review

A. Student engagement and achievement process in traditional learning

In the traditional way of teaching, they try to understand the meaning of the total context that is being taught to them and to understand why it is being studied and understood by the students. As per the statement of Serrano et al. (2019), there is also scope for the students to give their efforts in challenging situations and to give efforts on them. The teachers can engage the students by caring about them and motivating them with the excitement of the learning process in face-to-face interaction. It is seen that the students can ask questions to the teachers freely and there is also a great improvement in the attendance in the classroom. On the other hand, it is seen that the teachers also become helpful in knowing the needs of the students and can judge the authenticity of the homework of the students (Shah et al. 2021). The teachers may also monitor the progress of the students repeatedly and can guide them.

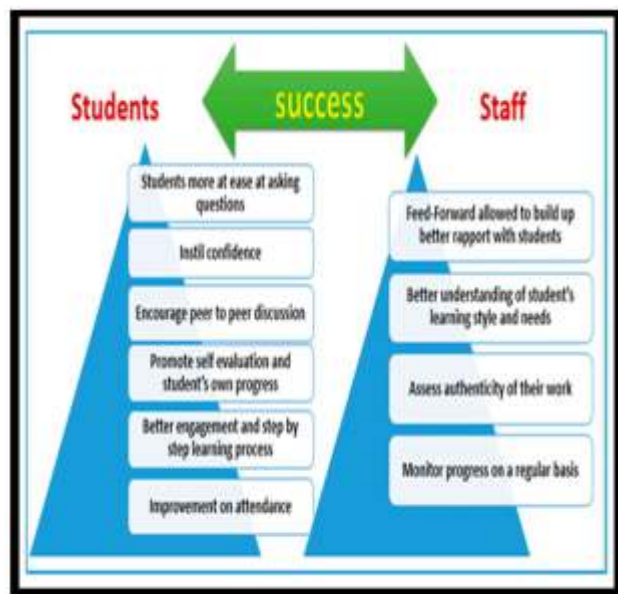


Fig. 3 : Challenges of online learning
(Source: Toro-Troconis, Alexander & Frutos-Perez, 2019)

B. Students' engagement process in online learning

The online teaching system and lessons from them are very effective and may be easily understandable for the students. As per the views of Ali, Narayan & Sharma (2021), the graphics, and animation of the process of different techniques related to study may help the students individually with clear ideas. It may

help to remember more and this may help to create a great picture for the students. On the other hand, in the online learning system, there is no chance to interact with the student's teachers and their batch mates physically (Shukla et al. 2020). The bonding between the students and teachers students relation is affected by the online learning system. As per the report of Ergun & Adibatmaz (2020), fun activities through a virtual system are the only way to teach the students and to make them engage. However, the addiction to using digital systems like computers, and mobiles is creating an impact on children. The students are facing loneliness as they are not getting physical contact with their classmates.

C. Comparison between the engagement of students in online and traditional learning processes

Table 1 : The Comparison of Students' Engagement and Achievements in Traditional and Online Learning Processes (source: Tsay Et Al. 2020)

Traditional learning	Online learning
Face-to-face interaction exists here.	There is no chance of face-to-face interaction
Teachers can read the minds of the students and can guide them by seeing those (Nasution et al. 2021).	It is impossible for the teachers to understand the issues of the students if they do not express their issues to them.
There is a chance to discuss any issue with classmates and to find a way to solve it in a group.	As there is no chance to interact with the students in the class face to face, group work is not possible (Yulia, 2020)
If there are any behavioral issues of the students they can be solved as per the guidance of teachers.	It is not possible to know the behaviors of the students without being with them physically.
Traditional learning may help to improve better presence in class (Tsay et al. 2020).	Students cannot get interested in joining the class in many situations at home.

The above table shows the differences and comparisons about the points faced at different times to understand the engagement and achievements of the students in the process of the online learning process and the online teaching process system

D. Challenges faced in the online learning process

There are many issues that are being faced in the online learning system and to implement and service proper study to the students. The main issue faced in the online learning system is the lack of motivation of the students (Toro-Troconis, Alexander & Frutos-Perez, 2019). Students do not feel that much



Fig. 2: Traditional process of teaching and engagement of students
(Source: Shah et al. 2021)

encouragement to go to schools to interact with their friends and to be with them in the online process of teaching. Another issue also faced by the schools is that the infrastructure-related issues give proper teaching to the students in the proper way. As per the points of Kay & Pasarica (2019), technical issues are being faced by the teachers and are not habituated with the new equipment used for online studies of studies. The main issue in online learning is the lack of interaction with the friends of schools and the teachers that are needed for learning. Structures of different schools are different and this is hampering the way of using them properly (Qureshi et al. 2013). On the other hand, the students are facing issues to become open up to their teachers and to tell them their issues. This is the cause of hampering their learning process.

E. The solutions to mitigate the issues of the student's engagement in the online learning process



Fig. 4: Student engagement theory of Vygotsky
(Source: Romero-Rodriguez et al. 2019)

The teachers should use multiple formats like video engaging, learning activities in groups and the games that may create the bonding between the students virtually should be arranged by the teachers. As per the views of Lo & Hew (2020), teachers should pay attention individually to know their issues and should try to mitigate the issues. The teacher should accept the participation more adversely in the class and the performances of the students. The teachers should be trained to use the technologies approximately and to detect them easily and to help them become more engaged in the class. Interesting facts should be added to attract them to the class and this may help to enhance their engagement and performances (Cranfield et al. 2021). The teachers should take regular feedback and should analyze the behaviours and psychology of the students to guide them properly. There should be asynchronous tools that can help to detect the students in particular and attention should be given to them to make them more engaged and to achieve their knowledge (Xhelili et al. 2021).

F. Theoretical framework Vygotsky's theory of students' engagement

The theory related to the engagement of the students was developed by Vygotsky in the year 1978. It has great importance in emphasizing the roles of the students and their environment for the learning

process. It was said that the encouragement process and involving the students more with the help of pedagogical practices in the learning process may help to enhance their performances in a great way (Romero-Rodriguez et al. 2019). This theory may help to build an environment for the learning process and to achieve the knowledge that is needed for the students in the online learning process.

G. Methodology

In this present research, the primary quantitative research method is used in the data collection method. A descriptive research design has been used in this research to know the scientific cause of the issues that are faced and to get their solutions. A deductive approach has been used in this research to focus on the primary data collection process. Positivism philosophy is used to get the conclusion with the help of the quantitative data analysis process. The questionnaire was made with 13 questions that were asked among 55 students who are involved in online learning and were involved in the traditional process of teaching within the age group of 10 to 40 years. The students were picked from different places in the world who are involved in online and offline teaching processes in different classes. Primary quantitative data analysis is a great help to get accurate data for the rich and to get a practical conclusion related to the topic of the research. SPSS software has been used to interpret the data that are collected with the help of primary survey methods related to the responses of the students. In SPSS, correlation frequency tests and ANOVA have also been done to get statistical data interpretation along with regression analysis. Descriptive research methods with the help of demographic analysis of the research also have been done to fulfil the whole research process (Romero-Rodriguez et al. 2019). All the ethics of the research and the privacy of the personal details of the participants were conserved in this research. There was no force on the participants and there was no manipulation to get favourable data for this research. Statistical tests of data can help to give clear ideas with different parameters that are essential to know about real situations about the topic. With the support of the SPSS software, detail analysis of the research findings has to be evaluated. Therefore, based on the demographic analysis, and statistical test, the brief discussion of data analysis process has to be evaluated. With the aid of online survey data has been collected. Therefore, researchers are capable to analyze collected data statistically.

3. Finding And Analysis

A. Demographic Analysis

1) Age

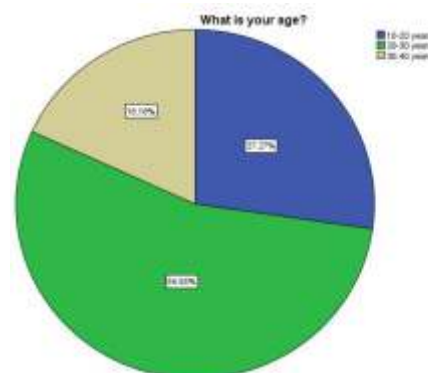


Fig. 5: Age Group of participants (Source: IBM SPSS)

What is your Age?

Table 1: Age of Participants (source: Ibm Spss)

		Frequency	Percent	Valid percent	Cumulative percent
Valid	10-20 years	15	27.3	27.3	27.3
	20-30 years	30	54.5	54.5	81.8
	30-40 years	10	18.2	18.2	100
	Total	55	100	100	

The above table represents the age-related data of the respondents who have taken part in the survey conducted for the research. The maximum percentage of the respondents were from the age group of 20 to 30 years. The age group of 10 to 20 years has 27.3% of the total respondents. The rest 18.2% of the respondents belonged to the age group of 30 to 40.

2) Gender

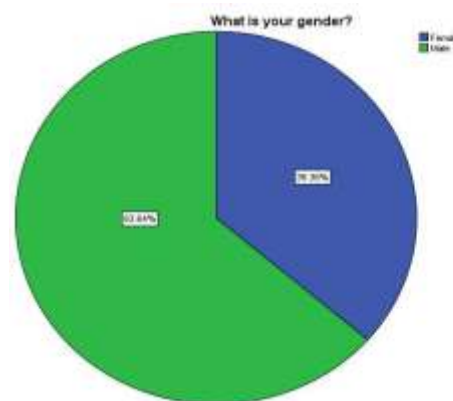


Fig. 6: Gender of participants (Source: IBM SPSS)

What is your gender?

Table 2: Gender of Participants (source: Ibm Spss)

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Female	20	36.4	36.4	36.4
	Male	30	63.6	63.6	100
	Total	55	100	100	

Table 2 represents the percentage of the respondents from different genders. Male respondents were 63.6% and female were 36.4% of the total respondents.

3) Educational Qualification

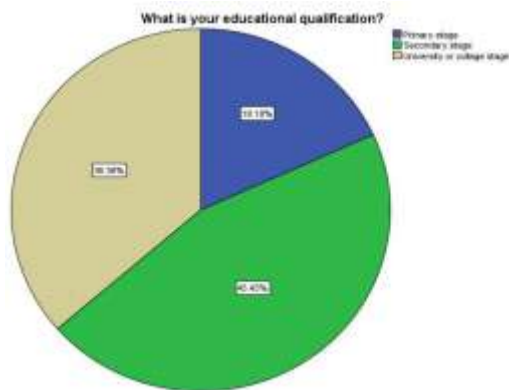


Fig.7 : Educational qualification (Source: IBM SPSS)

What is your educational qualification?

Table 3: Educational Qualification (source: Ibm Spss)

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Primary Stage	10	18.2	18.2	18.2
	Secondary stage	25	45.5	45.5	63.6
	University or college stage	20	36.4	36.4	100
	Total	55	100	100	

The above table represents the educational background of the respondents. The educational background of the respondent is important as this helps to know the depth of knowledge the respondents have. Maximum numbers of the respondents have the education qualification of the secondary stage as those candidates were 45.5% of the total respondents. The respondents of 36.4% of the respondents were university or college-passed. There were 18.2% of the respondents who only qualified for the primary stage of education. Maximum respondents of this research were highly educated and this increases the quality of the data.

4. Statistical Analysis

A. Descriptive Analysis

What is your educational qualification?

Table 4: Descriptive Analysis of the Variables (source: Ibm Spss)

	N	range	Minimum	Maximum	mean	Std. Deviation	skewness	kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
DV	55	5	5	10	8.6364	1.4483	-1.430	.322
IV1	55	9	6	15	13.1818	2.3889	-2.507	.322
IV2	55	4	11	15	13.6364	1.1605	.713	.322
IV3	55	3	12	15	14.0909	1.0932	.627	.322
Valid N (listwise)	55							

The above table represents the descriptive analysis of the research which includes all the variables of the research. This helps to analyze the quality of the data that have been used through the kurtosis and skewness analysis.

1) Hypothesis 1

Table 5: Linear Regression Analysis of Hypothesis 1(source: Ibm Spss)

Model Summary^a ANOVA^a

Model	Sum of Square	df	Mean Square	F	Sig.
Valid Regression	1.813	1	1.813	.866	.356 ^b
Residual	30	53	2.093		
Total	55	54			

Coefficients^a

Model	Unstandardized Coefficients		standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	7.625	1.104		.000	.356 ^b
Residual	30	53	2.093		

Table 5 represents the regression analysis of hypothesis 1 and represents the relation of the variables through the significance value. The significance value of this hypothesis is lower than 0.5 and this demonstrates that the variables have a good relationship. As per model summary table, the R value of the first component is .127, therefore, R square

value is .105. as per this table, the adjusted R square value is .102.

2) Hypothesis 2

Table 6: Regression Analysis For Hypothesis 2

(source: Ibm Spss)

Model	R	R Square	Adjusted R Square	Std. error of the estimate	Change Statistics					Durbin-Watson
					R square change	F change	Df 1	Df 2	Sig. F Change	
1	.306 ^a	.094	.077	1.38834	.094	5.484	1	53	.023 ^b	1.597

ANOVA^a

Model	Sum of Square	df	Mean Square	F	Sig.
Valid Regression	10.571	1	10.571	5.484	.023 ^b
Residual	102.156	53	1.927		
Total	112.727	54			

Coefficients^a

Model	Unstandardized Coefficients		standardized Coefficients	t	Sig.
	B	Std. Error			
1 (Constant)	3.438	2.228		1.543	.129
Residual	.381	.163	.306	2.342	.023

Model Summary

Model	R	R Square	Adjusted R Square	Std. error of the estimate	Change Statistics					Durbin-Watson
					R square change	F change	Df 1	Df 2	Sig. F Change	
1	.139 ^a	.019	.001	1.44433	.019	1.037	1	53	.313 ^b	1.954

The above table represents the significance value of this regression analysis through which the relation of the hypothesis could be determined. The significance value is 0.023 which is lower than 0.5 and it represents the positive relation between the variables. As per model summary table the R value of second hypothesis has to be identified. According to this table, the R value is .305; therefore, R square value is .094. therefore, the adjusted R square value is .077.

The range of R is -1 to 1. Values closer to 1 represent a strong positive correlation between variables while a values closer to -1 exhibit the strong negative correlation, almost around zero stands as weak or no linear correlation. This metric is an alternative version of R Square, accounting for the number of predictors. It penalises irrelevant predictors. The value of Adjusted R Square in the analysis is 0.102 that is lower than R Square. The corrected value is generally more credible when making contrasts of models that have a variable number of predictors.

Table 7: Regression Analysis For Hypothesis 3 (source: Ibm Spss)

ANOVA^a

Model	Sum of Square	df	Mean Square	F	Sig.
Valid Regression	2.164	1	2.164	1.037	.313 ^b
Residual	110.563	53	2.086		
Total	112.727	54			

Coefficients^a

Model	Unstandardized Coefficients		standardized Coefficients	t	Sig.
	B	Std. Error			
1 (Constant)	6.056	2.541		2.384	.021
Residual	.183	.180	.139	1.018	.313

This is the summation of the squares of the differences of the statistics from the mean of the independent variable. So, in such a case, it should be 2.164. This is the number of predictors included in the model. For the regression aspect it is 1. It is RSS/DF. In such case it will be 2.164/1 = 2.166.

The above table represents the internal relationship through the regression analysis of hypothesis 3. The significance value of this hypothesis is 0.313 which is lower than 0.5 and it is a good indicator of the relation. As per this above table, the R value is .139; therefore, adjusted R square value is .019. After that, according to this table the adjusted R square value is .001.

B. Pearson Correlation Test

Table 8: Correlation Test Of The Research (source: Ibm Spss)

	DV	IV1	IV2	IV3
DV person correlation	1	.127	.306	.139
Sig (2-tailed)		.356	.023	.313
N	55	55	55	55
IV1 person correlation	.127	1	.759	-.042
Sig (2-tailed)	.356		.000	.761
N	55	55	55	55
IV2 person correlation	.306	.759	1	.172
Sig (2-tailed)	.023	.000		.208
N	55	55	55	55
IV3 person correlation	.139	-.042	.172	1
Sig (2-tailed)	.313	.761	.208	
N	55	55	55	55

The above table represents the correlation values of the different variables of the research. This helps to understand the interconnection of all the variables with each other.

5. Discussion

In the literature review, it has been seen that traditional learning was helpful in connecting with the

students because it was easy to interact with the students face to face. The primary level students cannot tell all the things that are faced to learn and achieve by them (Lee, Song & Hong, 2019). Sometimes, they are not attentive in class and invest their minds in other places. That used to be understood by the teachers, as they were familiar with this situation. COVID-19 created a great impact on educational learning as institutions were closed and students were not being physically presented for learning. Therefore, online learning was essential for maintaining the education system. The teachers used to guide them and used to teach them properly by interacting with them (Cole, Lennon & Weber, 2021). But in the online learning process, the teacher even sometimes did not see the faces of the students.

The teachers also do not know all the descriptions of the mind as being connected virtually. The students are attentive in class, and can easily connect with the class, only they can learn something and achieve something as they can tell their issues to their teachers (Camacho & Legare, 2021). In the primary and secondary standards, the teachers and the parents are the main people who can guide the students and teach lessons of life that are needed for them in the future. But in the traditional learning process, the teachers the students, and the parents were connected simultaneously. The teachers could interact with the students face to face and sometimes the issue the students would keep in their minds and also tell the parents to change their habits or sometimes to emphasize them (Yulia, 2020). In the online learning and teaching process, the students are not always attentive in class and the parents of the students also cannot contact the teacher all the time. There is a huge communication gap between the teachers and students and with the parents of the students (Barber, 2020). This is not helpful for the students to make their habits and character. In the results also, it is seen that the students are not too attentive to their studies. Sometimes they are too involved in digital systems like phones and computers in the name of classes (Nasution et al. 2021). There are sometimes issues with some bad impact of the internet content being spread through groups and social media. Some issues like addiction to the internet, social media, and games are hampering the behavioural issues and cognitive issues of the students. The teachers and parents are not able to control the students (Tsay et al. 2020). The education system with online learning was invested to enhance and continue the process of study. However, it is hampering great students to engage them in the

study and to achieve in their future life. These findings of the research may enhance knowledge about the challenges faced in online learning and the comparison of it with the traditional learning process.

6. Conclusion

Thus, it can be concluded that the traditional learning system has had a great impact on the minds and the studies of students who want to achieve something in their lives. The teachers and their interaction face to face can help to learn something by being in their environment. The hostel system and the systems to go to school and to learn and work in groups helped students to solve many problems in their lives from their classroom age. Working experiences in groups with people doing work with their help and managing them was great work that would be needed in the field of life. The table displays the correlation matrix for four variables: DV, and three IVs namely, IV1, IV2, and IV3. Every cell specifies Pearson correlation coefficient and two-tailed p values between the given pairs of variables. Significantly, IV2 is highly positively associated with DV (0.759, $p < 0.001$), indicating a robust connection. Alternatively, IV1 yet, has a 0.127 as a weaker positive correlation with the p-value of 0.356. IV3 is non-significantly correlated at -0.042 ($p = 0.761$). These correlation values and importance levellets are used to estimate the strength and statistical reliability of connections between the variables of the dataset. The face-to-face interaction with the students and the teachers is helpful to collect different types of knowledge that are useful for life. The issues in classroom learning would be solved with the help of the other students. Also, those who understood the problems. This may help to make bonds with them and to work in a group that is needed in life. On the other hand, online learning has been useful in the pandemic period. There was no way without this choice of learning process. The students were connected with the virtual classes where they could not see their friends and teacher physically. If they are faced with any issues in their study, it cannot be mitigated as they cannot tell the teachers among all the students. This was a great issue in online learning. Online learning has an advantage also and it is that any student can access the schools and courses without the foundation of the geographical areas. The students who wanted to access the international classes but were not able to go to the places are taking classes from home. However, the teacher-student bonds and achievements are being hampered in this online learning process in a great

way. On the other hand, online education has a great advantage in that it gives chances to students to learn from any corner of the world without being physically present. Therefore, the chance of learning is being enhanced.

Appendix

Appendix A: Survey Link

https://docs.google.com/forms/d/e/1FAIpQLScho0snV3ESEqP_LRcDttjHOFwNgCaDx5gvpzJKE1PPu4GhA/viewform?usp=sf_link

Appendix B: Survey questionnaire

What is your age?

10-20 years

20-30 years

30-40 years

What is your gender?

Male

Female

What is your educational qualification?

Primary stage

Secondary stage

University or collage stage

Interaction with the students and teachers may help to understand the minds of the students

In the traditional learning interaction with the teachers and students helps to learn many things in life

In traditional learning the teachers can understand the minds of the students by seeing them and can guide them as per the need

In online learning process, students are not being engaged as much and cannot become attentive in class

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