

Article

# School Students' Perception and Challenges towards Online Classes during COVID-19 Pandemic in India: An Econometric Analysis

Mohammed Arshad Khan <sup>1,\*</sup>, Tuba Kamal <sup>2</sup>, Asheref Illiyan <sup>2</sup> and Mohd Asif <sup>3</sup>

<sup>1</sup> Department of Accountancy, College of Administrative and Financial Sciences, Saudi Electronic University, Riyadh 11673, Saudi Arabia

<sup>2</sup> Department of Economics, Jamia Millia Islamia (A Central University), New Delhi 110025, India; tubakamal73@gmail.com (T.K.); ailliyani@jmi.ac.in (A.I.)

<sup>3</sup> Department of Finance, College of Administrative and Financial Sciences, Saudi Electronic University, Riyadh 11673, Saudi Arabia; masif@seu.edu.sa

\* Correspondence: m.akhan@seu.edu.sa

**Abstract:** Due to the COVID-19 pandemic, the worldwide education system has been severely affected, following the shutdown of schools and colleges/universities since March 2020 in order to prevent the spread of the virus. Conventional classrooms shifted to online classrooms which profoundly impacted teachers' and students' closed interaction, making a paradigm shift in the teaching-learning process, inter alia. Against such a backdrop, it is relevant to analyze the perception of students and the challenges of online classes during this ongoing COVID-19 outbreak. The present study is based on a quantitative and sample survey approach. The respondent sample of 385 secondary school students from grades 8 to 12 in Delhi have been collected through a Google Form Questionnaire. The study was conducted in the months of January and February 2021. Statistical techniques, such as Descriptive Statistics, Chi-Square Test, Factor Analysis, Reliability Test and Logistic Regression, were used for analyzing the data. The Logistic Regression result shows that the quality of Internet, prior knowledge of ICT, family income, mother's education and the number of rooms are positively impacting online classes. The findings of the study revealed that, on average, students have positive perceptions towards online classes during the pandemic to maintain their academic growth. Nonetheless, they experienced several challenges in online classes. Thus, the outcome of this research study will encourage policy makers and educational institutes to handle online classes in a better way, by adopting the latest techniques of online classes and by training teachers and students continuously so that the teaching-learning process becomes more enjoyable and effective during this ongoing pandemic. The government must take certain remedial measures to overcome the challenges in online classes and reduce the digital divide so that no students will be left out.

**Keywords:** COVID-19; pandemic; online education; ICT; students' perception; challenges; google forms questionnaire; sample survey



**Citation:** Khan, M.A.; Kamal, T.; Illiyan, A.; Asif, M. School Students' Perception and Challenges towards Online Classes during COVID-19 Pandemic in India: An Econometric Analysis. *Sustainability* **2021**, *13*, 4786. <https://doi.org/10.3390/su13094786>

Academic Editors: Sébastien Jacques and Abdeldjalil Ouahabi

Received: 1 April 2021

Accepted: 19 April 2021

Published: 24 April 2021

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

The unprecedented health crisis of COVID-19 has affected almost every aspects of life. It was recognized for the first time in December 2019 in Wuhan, China, and spread rapidly all over the world to become an economic and humanitarian crisis [1]. The World Health Organization (WHO) declared COVID-19 as a pandemic on 11 March 2020. Due to this outbreak, the education system is beholding an extraordinary double-shock: temporary school closures in more than 180 countries since March 2020, in order to prevent the spread of the virus and disclosing the fragility of education systems worldwide. This interruption to education and the expected reduction in global growth due to economic recession have a

far-reaching impact on the most disadvantaged students who have faced vulnerable socio-economic family conditions [2]. The shutdown of schools has not only ceased learning of new things, but also made students forget what they had learnt earlier. South Asia's estimated learning loss of 0.5 years of learning-adjusted years of schooling (LAYS) and economic loss due to school closure for students in India is estimated to be USD 420 billion in their lifetime future earnings [3]. Globally, 90 percent of the world's student population has been affected due to the pandemic, from which 800 million are girls, as per the United Nations Educational, Scientific and Cultural Organization (UNESCO) [4].

The prolonged shutdown transformed the conventional classrooms into online classes due to the contagious nature of the disease. The concept of e-learning had appeared with the development of Internet since the 1990s. Online learning, remote learning, distant learning, e-learning, internet-based learning, and computer-assisted learning are terms that are interchangeably used and not new for us. During this pandemic, these are the only sources that were utilized in the ongoing learning processes. Teaching and evaluation of students were done through information technology, which helped in reducing the learning gap that emerged due to the lockdown [5]. Pupils can now get subject knowledge, clear their doubts with mentors' assistance, quickly share study material, receive rapid feedback, be more flexible, discuss with their comrades and observe their academic progress in online classes. Prior to the pandemic, however, e-learning never received the attention, as its effective learning outcome deserves (at least as much as conventional education did); however, the outbreak of COVID-19 encouraged virtual learning as a solution to overcome the existing learning gap in the world [6]. During the pandemic, educational institutions and teachers are exploring and approaching numerous teaching softwares for students to facilitate online learning [7].

On the other hand, the impact of rapid transformation towards online classes is questionable [8]. According to NSSO (National Sample Survey Organization, India) 2017–2018, only 9 percent of the households had access to the Internet and computer in India. Around 90 percent of the currently enrolled students have no access to the required materials, which severely affects participation in online classes. There are stark socio-economic disparities in Internet accessibility. From among the poorest 20 percent and the richest 20 percent, computer ownership varies from 2 to 28 percent [9]. According to the mentioned UNICEF report, approximately 120 million children in South Asia are on the verge of poverty due to this pandemic and around 240 million children reside in multidimensional poverty, which contains factors like deficiency of education, poor health, lack of sanitization and poor working conditions [10]. The undeniable effect of stringent lockdown has decreased the income and earning capacity of many poor and marginalized families. This leads to direr conditions for adolescent girls, as they have to carry out a lot of household chores and care for their younger siblings, resulting in their disengagement from online classes, which leads to an increase in learning gaps and gender inequalities [11]. This pandemic has created a new crisis in the education system due to a huge digital divide, which leads to a loss of learning in the short run, while simultaneously increasing the chances of dropping out from education. In the long run, there will be a huge loss in human capital accumulation and economic development.

Against this, backdrop, it is significant to know the perceptions of students (both positive and negative), as well as the challenges they face in online classes. In this regard, this study attempts to examine the school students' perceptions and challenges regarding e-learning so that their experiences will help educational institutions and policy makers to design better ways of learning and course structures post COVID-19 pandemic, as social distancing may become the new normal. The rest of the paper is organized as follows: while Section 2 deals with materials and methods, including review of literature, research gap, objectives and research methodology; Section 3 delineates detailed results and findings. Section 4 presents the discussion of the paper. Section 5 concludes the paper and suggests policy implications.

## 2. Materials and Methods

### 2.1. Review of Literature

Due to the COVID-19 pandemic, the world has closed all schools and universities to prevent the spread of the virus. The traditional classrooms changed to virtual classroom and remote education has become ubiquitous during 2020. Online education is the process that takes place over the internet. It has both benefits and limitations, traveling costs and other costs are reduced in online classes subsequently teachers and students have the technological knowledge to access online classes and use of a computer [12]. In the current scenario of unprecedented crisis, personal interaction of teachers and students got immensely affected due to the contagious nature of COVID-19. It has increased the contribution of information and technology (ICT), which raised the challenges for students such as social isolation, connectivity issue, etc. One study revealed the perception of university students towards e-learning during the pandemic, as it provides more freedom to connect with the teachers and engage with their study material at comfort and flexible time and space [13]. Online education has transformed teachers' and student's relationships as teachers are not able to give extra attention and care to students who need more care and are suffering from physical exhaustion. The students also believed that online classes are not sufficient for them. The workload of teachers in online teaching has been increased due to needing to make videos, Power Point presentations and e-notes for students. Mobile data is not enough to work; it requires a strong bandwidth connection. In online classes, teachers and students felt physically weary and miss the environment of the classroom [14]. Many universities students are from remote villages with slow and inadequate internet access; thus, they have faced difficulties while attending online lectures. It is also stressful for students to spend long hours on screens and mobile phones. The biggest negative effect of online lectures is lack of physical classroom discussion and disconnection from university library [15].

A study on agriculture university students' perception towards online education during this pandemic by using content analysis found that flexibility and convenience of online classes make it an attractive option, whereas 60% of the respondents said it is less effective when compared with the face-to-face classes. It has also highlighted the issue of the digital divide and inequalities in obtaining internet connection that creates a problem for several students [16]. Online education has created an enormous shock for both teachers and students as it affected both teachers' productivity and students' learning. The biggest challenge faced by teachers was transforming teaching material into digital format at a short notice and it was difficult to keep away students from other social network sites during the online classes. Students are from different socio-economic backgrounds and they faced problems in access to laptops or mobiles and connectivity issues [17]. The MBBS students' survey on online learning conducted by the institution revealed that students preferred online classes to maintain their academic interest during the pandemic. In addition, they faced many challenges such as lack of socialization, technological-related issues and eye-related problems, etc. A total of 79% of the students lost their interest in online classes due to internet connectivity issues when the classes went on; the majority of students favored a combined approach of learning post-COVID-19 outbreak [18].

Another study used Interpretative phenomenological analysis (IPA) to understand the barriers faced by university teachers in online teaching and assessment at home environment. They categorized barriers into four ways: 1. home environment barrier which includes lack of basic facilities, family interruption during teaching, conducting an assessment; 2. institutions support barriers, which includes an absence of training, lack of clarity and direction, insufficient budget for purchasing advanced technologies; 3. technical difficulties faced by teachers which includes lack of technical infrastructure, slight awareness of online teaching platforms, security concern; 4. teachers' personal problem barrier such as negative attitude, low motivation for teaching, lack of technological knowledge become restrictions in online teaching and assessment [19]. University students felt that online courses are not comfortable when compared with the conventional method of teaching.

They did not accept that online classes can replace traditional face-to-face classes. For teachers, online classes are challenging mainly for practical subjects due to improper infrastructure facilities and lack of emotional attachment with the students [20]. The pandemic is accompanied by isolation measures that have led students and teachers to confine to their homes. It is stressful for teachers and students to learn and teach at isolated environment due to the pandemic. Male students were more dissatisfied with current online learning, whereas female students were more dissatisfied with the current home environment that created a negative impact on their education [21].

## 2.2. Research Gap

Recently, many research studies have addressed the problems related to online teaching and learning faced by students in higher education institutions during the COVID-19 pandemic, ignoring the perceptions of school students concerning online classes during this pandemic. Several studies are related to only positive aspects of online learning, but in the present study, both aspects (positive and negative) of e-learning, as well as challenges faced by students in online classes, are covered. This is the research gap the present study attempts to fill.

## 2.3. Objectives

1. To analyze the school students' perceptions towards online education during COVID-19 outbreak.
2. To analyze issues and challenges faced by school students in online classes during the phase of the ongoing COVID-19 pandemic.

## 2.4. Research Methodology

This study explores the perception and challenges of school students about online classes in Delhi. The study is based on a quantitative and sample survey approach. It uses both primary and secondary sources of data. The respondents of this study were school students who were selected based on simple random sampling. A structured Google Forms questionnaire was used to collect primary data. There were two sections included in the questionnaire. Section 1 gathers information related to the socio-economic status of the students and ICT devices used by them. Section 2 of the questionnaire assesses students' perception and challenges towards online learning during COVID-19 pandemic. The samples of 385 students responded from several schools of Delhi during the months of January and February, 2021. A two-point Likert scale was used to collect students' perception towards online classes: one being agreed and zero being disagreed. The data were compiled and documented in a structured manner before being examined with Statistical Package for Social Science (SPSS) version 20. The data were collected and categorized into different instruments like demographic analysis which includes gender, religion and nature of school, grade (class), ICT device tool used by students, perception and challenges faced by the students.

The principal component analysis (PCA) was used for data reduction and to identify underlying variables measured by the observed factors. The reliability and internal consistency of the questionnaire were checked through Cronbach's Alpha measure. In addition, different statistical tools like logistic regression, descriptive statistics, chi-square test, etc. have been used for analyzing the data in SPSS.

## 3. Results and Findings

In this section, the demographic profile of the students, ICT devices used by the students for online learning, students' perception towards online classes, challenges and issues faced by the school students are presented.

### 3.1. Demographic Profile of the Respondent Students

Table 1 illustrates the demographic profile of the respondent students. It shows that the majority of the respondents (75.3%) were males, while 24.7% were female. The highest number of students (70%) belongs to the religion of Islam (Muslims), whereas 29% were Hindus and only 0.3% were Christians. Around 46% of the respondents were in grade 12, 31.2% were in grade 11, 6.5% were in grade 10, 12.7% were in grade 9 and only 3.4% were in grade 8. The majority of the respondents, i.e., 72.7% were studying in government schools, whereas 15.5% were in private schools and 11.6% were from aided schools. Hence, our sample is quite representative.

**Table 1.** Demographic profile of the respondent students.

Variables	Levels	Data in Numbers	Percentage
Gender	Male	290	75.3%
	Female	95	24.7%
Religion	Hindu	114	29.1%
	Muslim	270	70.1%
	Christian	1	0.3%
	Jain	0	0%
Class	Grade 8	13	3.4%
	Grade 9	49	12.7%
	Grade 10	25	6.5%
	Grade 11	120	31.2%
	Grade 12	178	46.2%
Nature of School	Government	280	72.72%
	Private	60	15.5%
	Aided	45	11.6%

Source: Calculated by the authors from Google Forms questionnaire.

### 3.2. Socio-Economic Status of Parents of the Respondent Students

Table 2 presents the socio-economic conditions of the respondent students' parents. From Table 2 it can be seen that the education status of fathers and mothers are low, which is not inspiring as many of the respondents' parents were illiterate, i.e., 30.1% fathers and 41.8% mothers. Only 36% of fathers and 27% of mothers were educated up to the 10th grade standard. The education statuses of the parents of the respondents are associated with their economic conditions [22]. An enormous majority of the respondents' fathers were engaged in small business (36.4%), 33% were working as daily wage workers and only 4.2% had a government job. Most of the respondents' mothers (92.5%) were housewives, 2.9% were in private jobs and 1.3% were engaged in daily wage earnings and business. A total of 82.6% of the respondents belong to the low family annual income of the bracket of Rupees 0–0.2 million, while 11.2% belong to Rupees 0.2–0.5 million family income. This shows that the majority of the respondents are from the lower strata of society.

### 3.3. ICT Device Knowledge and Tools Used for Online Classes

From Table 3, it can be seen that 93.8% of the students are taking online classes. For taking online classes prior knowledge of information technology (ICT) is necessary; hence, the researchers asked respondents about it and it was revealed that 69.1% of the students had prior knowledge of ICT. The majority of the students (86%) use mobile phones for taking online classes. The students felt that accessing online classes on mobile phones was diverting their focus due to the desire to open social media sites, screen problems and checking messages which leads to loss of interest in ongoing classes [18]. A total of 27% of the students said connectivity of their Internet is poor and 29.6% of the students faced electricity problem, which led to disconnection during the online classes more than three times for 30.6% of the respondents. Google Meet is the most used app (29.1%) for online classes in Delhi's schools, whereas 23.4% of the students used a WhatsApp group. Zoom is

the third preferred tool (21.3%) for taking online classes; YouTube and school websites are also considered a tool for online classes in Delhi, which are depicted in Figure 1. Digital YouTube-based lessons are appreciated; however, students are disassociated with their teachers that limit incentives to complete their assignments [23]. The family size of most of the respondent students is large more than five members (31% of the students have five members in the family, 18% belongs to six members in the family). In addition 33.8% of the students lived in one -room, 36% lived in two rooms and 12% lived in more than three rooms; it is difficult for them to manage online classes due to a lot of difficulties as they have only one ICT device which is shared with their siblings at the same time leading to gender inequalities as parents have preferred boys education more instead of girls' education [24]. Several students who live in one room faced more distraction in online classes due to the unavailability of physical space [25] and most of the respondents' parents are illiterate and cannot help in their children's education. The sudden launch of online education may escalate the already prevailing socio-economic disparities in education.

**Table 2.** Socio-economic status of parents of respondent students.

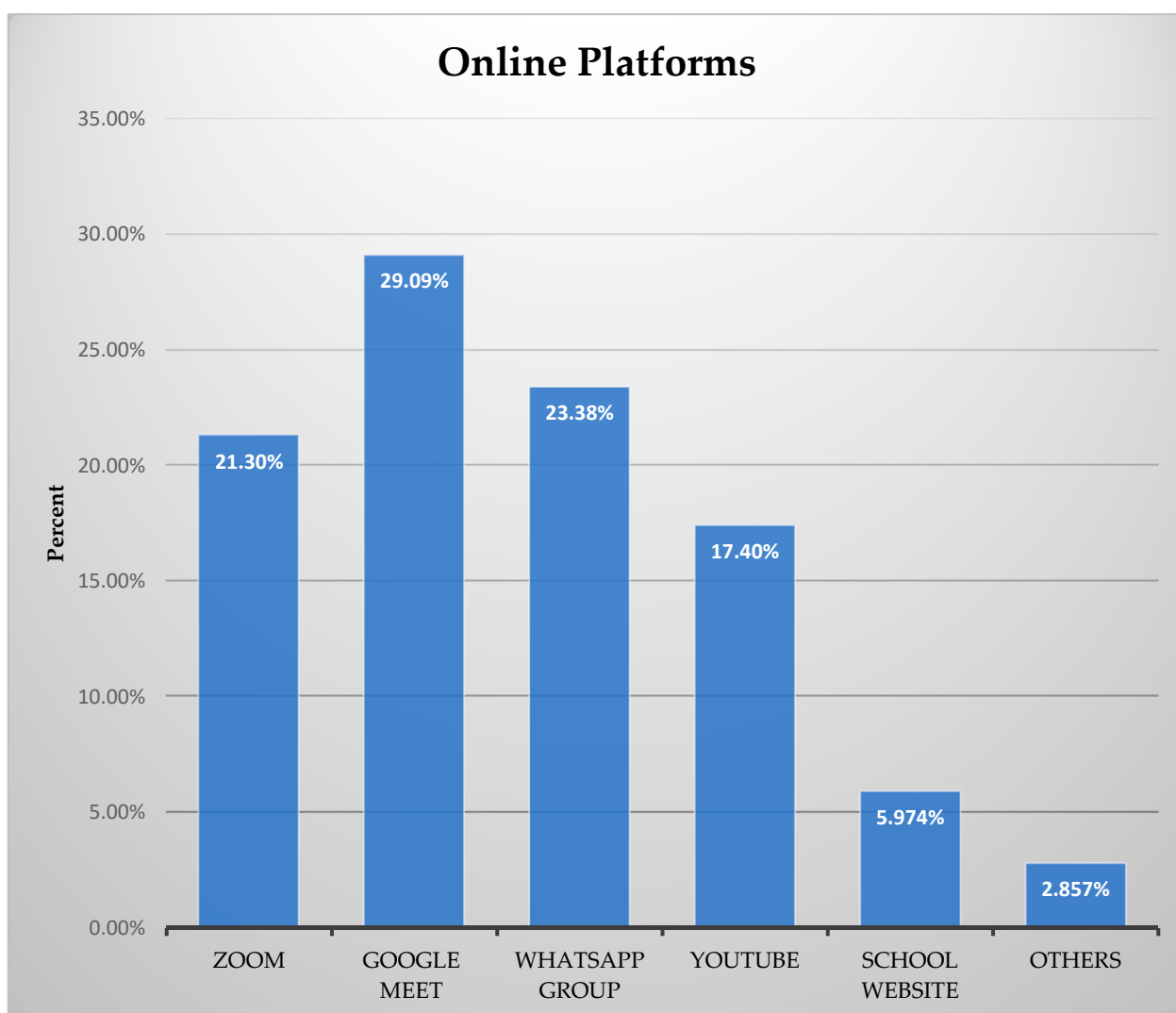
Variables	Level	Father N (%)	Mother N (%)
Parents Education	No Formal Education	116(30.1%)	161 (41.8%)
	10th Passed	139(36.1%)	104 (27%)
	12th Passed	61(15.8%)	57(14.8%)
	Graduation	48(12.5%)	42(10.9%)
	Post-Graduation	21 (5.5%)	21 (5.5%)
Parents Occupation	Business	140(36.4%)	5 (1.3%)
	Government Job	16(4.2%)	8(2.1%)
	Private Job	85(22.1%)	11(2.9%)
	Daily Wage Earner	127(33%)	5 (1.3%)
	Unemployed/Housewife	17(4.4%)	356 (92.5%)
Parents Income	0–0.2 Million	318 (82.6%)	
	0.2 Million–0.5 Million	43 (11.2%)	
	0.5 Million–1 Million	16 (4.2%)	
	1 Million–1.5 Million	4(1%)	
	More than 1.5 Million	4 (1%)	

Source: Calculated by the authors from Google Forms questionnaire. Note: 1 Million equals 10 Lakhs in Indian Rupees. Parents' income is mentioned in Rupees Million.

**Table 3.** ICT device knowledge of the respondent students.

Statements	Levels	Percentage (%)
Taking Online Classes	Yes	93.8%
	No	6.2%
ICT Device used by Students	Computer	1.3%
	Laptop	0.3%
	Mobile Phone	86.5%
	Both Mobile Phone and Laptop	11.9%
Quality of Internet	Best	14.3%
	Good	56.1%
	Poor	27%
Prior Knowledge of ICT Device	Yes	69.1%
	No	30.1%
Connection Disconnected during Online Classes	One	34.8%
	Two	25.5%
	Three	9.1%
	More Than Three	30.6%
Electricity Problem While Taking Online Classes	Yes	29.6%
	No	70.4%
Number of Rooms in House	One	33.8%
	Two	36.1%
	Three	17.4%
	More Than 3	12.7%

Source: Calculated by the authors from Google Forms questionnaire.



**Figure 1.** Online platforms used for online classes. Source: Calculated by the authors from Google Forms questionnaire.

### 3.4. Determinants of Online Classes—Logistic Regression Analysis

The Logistic Regression model was used to measure the extent of factors that affect significantly online classes. The dependent variable is dichotomous, the probability of taking online classes or not. It determines the log odds for a particular outcome. The odds of an online class are given by the ratio of the probability of taking online classes and not taking online classes as  $P/(1 - P)$ , where  $P$  is the probability of an event. A positive value of Beta indicates that odds are in favor of the event, whereas a negative value indicates that odds are against the event [26]. As indicated in Table 4, a positive Beta coefficient for quality of internet and prior knowledge of ICT device means that with an increase in quality of internet chances for taking online classes will be improved. A value of  $\text{Exp. (B)}$  for the family income is greater than one indicating that for one unit increase in yearly family income, odd for taking online classes increased by 1.435. The family income has a significant impact on their children's education status and growing household income will help them to improve their educational attainment [27]. Beta coefficient for father's education and occupation are negative because most of the respondents' fathers were illiterate and engaged in small business or daily wage that leads to a decrease in the probability of taking an online class while the positive Beta coefficient for mother education level as maternal education has a larger effect on their children's education, since mothers are generally primary caregivers in habitation [28].  $\text{Exp(B)}$  for the number of rooms is

greater than one implying that an increase in the number of rooms odd in favor of taking online classes increased by 1.117. ICT device has a negative Beta coefficient because mostly the students are using mobile phones for taking online classes which is not a suitable device for pursuing online classes. Taking online classes via the mobile phone is likely to lead to unavoidable access and operational challenges [9].

**Table 4.** Logistic regression results.

Dependent Variable = Probability of Online Classes	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Father's Education	−0.708	0.281	6.369	1	0.012	0.492	0.284	0.854
Mother's Education	0.055	0.212	0.068	1	0.795	1.057	0.698	1.600
Occupation of Father	−0.151	0.170	0.786	1	0.375	0.860	0.616	1.200
Family Income (Yearly)	0.361	0.321	1.264	1	0.261	1.435	0.765	2.691
No of Rooms	0.111	0.265	0.175	1	0.676	1.117	0.665	1.877
ICT Device	−0.303	0.328	0.855	1	0.355	0.739	0.389	1.404
Quality of Internet	1.003	0.412	5.912	1	0.015	2.726	1.215	6.117
Prior Knowledge of ICT	0.362	0.434	0.696	1	0.404	1.437	0.613	3.367
Constant	−3.386	1.983	2.915	1	0.088	0.034		

$p > 0.05$ ,  $R^2 = 0.125$  (Nagelkerke), 0.30 (Hosmer and Lemeshow). Source: Calculated by the authors from Google Forms questionnaire.

### 3.5. Principle Component Analysis and Reliability Analysis of Perceptions

The researchers asked the respondent students about their perception (positive and negative) of online classes in this survey. Principal component analysis (PCA) was applied separately for the positive and negative perceptions. PCA was performed to decrease the number of items that describe less about respective factors and basically, it is a data reduction technique. K.M.O test of sample adequacy and Bartlette test of sphericity (to know the inter-correlation among the items) were conducted and found to be statistically significant. We chose those variables whose Eigenvalue is greater than one as criterion [26]; the result shows that each of these items indicates one component solution. Subsequently, we eliminated those variables whose communality value was less than 0.5. Originally, the researcher asked seven items related to students' negative perception towards online classes and six items linked with the positive perception. Out of the seven items, only six were retained in the negative perception which explains 43.55% of the variance. In the positive opinion out of six items only four items were retained which describes 41.62% of variance as shown in Table 5. In the negative perception, "you feel isolated in online class" was removed and in the positive perception, "high motivation for study in online class" and "able to concentrate more in online class" were deleted.

After PCA analysis the reliability test was applied for chosen items. The reliability test is an important step when we desire to assess the internal consistency of a questionnaire and scrutinize properties of measuring scales [29]. Cronbach's Alpha is used to measure the reliability of the scale in this study. Table 6 depicts the value of Cronbach's Alpha for both items separately which is analyzed by the researchers through SPSS software.

The reliability value of Cronbach's Alpha lies between  $\pm 0.41$  and  $\pm 0.70$  qualifies for moderate reliability of the scale measured, while a greater value than  $\pm 0.70$  indicates high internal consistency [30]. As Table 6 shows, Cronbach's Alpha value for each selected item is more than 0.6 which is the standard size of alpha, depicting that high internal consistency and opinion from the respondents are reliable that allowed for further analysis.

**Table 5.** Principal component analysis.

Factors	Statements Retained	% Of Variance Explained
Negative Perception	Low Motivation for Study in Online Classes	43.55%
	Lack of Interaction with Teachers	
	Disinterested to take Online Classes	
	It is Hard to Stick to Study Schedule of Online Classes	
	Online Classes are not Comfortable as Offline Classes	
Positive Perception	Not Understand Content Delivered in Online Classes	41.62%
	As Traveling Time can be Saved in Online Classes	
	More Convenient than Offline Classes	
	Able to get more Knowledge in Online Classes	
	Online Classes Increased my Technological Literacy	

Source: Calculated by the authors from Google Forms questionnaire.

**Table 6.** Reliability Analysis.

Variables	Initial Number of Variables	Number of Variables Retained	Cronbach's Alpha
Negative Perception	7	6	0.733
Positive Perception	6	4	0.623

Source: Calculated by the authors from Google Forms questionnaire.

### 3.6. Students' Negative and Positive Perception of Online Classes

Abruptly, the education system shifted towards massive online classes due to the COVID-19 pandemic. Hence, it is necessary to know about the opinion of school students towards online classes. With the prolonged shutdown of schools, online education becomes inevitable in the future unless the students will not accept it. Consequently, the researchers asked both the positive and negative perceptions of online classes from the students of Delhi Schools.

#### 3.6.1. Negative Perception of Students towards Online Classes

Table 7 represents negative feelings, demerits and opinions of the students towards online classes which were asked by researchers on two- points Likert scale statements as agree and not agree. The highest response rate was 48.1% as the students said that online classes are not comfortable when compared to offline classes. The second highest response rate was 47.3%; the sample respondents felt with regards to lack of interaction with teachers in online classes. A total of 44.9% of the students opined that there is a low motivation for study in online classes due to a lot of distraction in the home, while 30.4% of the respondents not understand the content delivered in online classes. In online classes, students felt isolated because there are no group projects, lack of communication and restriction in outdoor activities, which leads to social isolation [31]. In addition, social isolation is a symptom of dropout from school. Around 35.1% of the students opined that in online classes it is hard to stick to a study schedule due to eye strain problems, epiphora, headache and social media distraction. The students expressed that 27.5% of them are disinterested to take online classes due to internet connectivity issues when classes went on.

**Table 7.** Students' negative perception of online learning.

S.NO	Statements	Frequency	Percentage (%)
1	Low Motivation for Study in Online Classes	173	44.9%
2	Lack of Interaction with Teachers	182	47.3%
3	Disinterested to Take Online Classes	106	27.5%
4	It Hard to Stick to a Study Schedule of Online Classes	135	35.1%
5	Online Classes are not Comfortable Than Offline Classes	185	48.1%
6	Not Understand Content Delivered in Online Classes	117	30.4%

Source: Calculated by the authors from Google Forms questionnaire.

### 3.6.2. Positive Perception of Students towards Online Classes

Positive opinions of students for the online classes are depicted in Table 8. The majority of the students (50.4%) opined that traveling time saved in online classes as virtual learning has emerged as a comfortable option due to flexibility of geographical space and lower transportation cost. The second highest response rate (46.5%) is with regards to students increasing their technological literacy due to online classes. Only 20% of the students opined that online classes are more convenient than offline classes. Additionally, in terms of the variable "able to get more knowledge in online classes", the result represents that 18.2% of students have shown this factor as a positive one.

**Table 8.** Students' positive perception of online learning.

S.NO	Statements	Frequency	Percentage (%)
1	As Travelling Time Can be Saved in Online Classes	194	50.4%
2	More Convenient than Offline Classes	77	20%
3	Able to Get More Knowledge in Online Classes	70	18.2%
4	Online Classes Increased my Technological Literacy	179	46.5%

Source: Calculated by the authors from Google Forms questionnaire.

### 3.6.3. Combined Mean of Students' Positive and Negative Perceptions

Table 9 reveals the combined means of all the positive and negative perceptions of the respondents towards online classes which were clubbed together. The mean value for the positive opinion of the students towards online classes is 3.42, which is higher than the mean value with 2.72 for the negative perception of the students. Thus, on average students have a positive attitude towards online classes, because it emerged as a bridge to reduced the learning gap due to the shutdown of schools and assisted them to maintain their academic interest and development during the ongoing COVID-19 pandemic.

**Table 9.** Combined mean of perception.

Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation
Negative Perception	385	1	6	2.72	3.372
Positive Perception	385	1	4	3.42	2.205
Valid N(List Wise)	385				

Source: Calculated by the authors from Google Forms questionnaire.

### 3.6.4. Chi-Square Test

Chi-square test was conducted to find out the association between negative perceptions about online classes within the gender of male and female students. The relation between these variables was insignificant as calculated Chi-square value observed  $\chi^2$  (1, N = 385) = 9.05 and  $p$ -value greater than 0.05, as shown in Table 10. That means there was

no significant difference in the negative opinions of male and female students towards online classes.

**Table 10.** Chi-square analysis on negative perception within gender.

Negative Perception	Chi Square Value	p-Value
Low Motivation for Study in Online Classes	0.097	0.07
Lack of Interaction with Teachers	0.625	0.42
Disinterested to take Online Classes	1.21	0.27
It is Hard to Stick to a Study Schedule of Online Classes	0.149	0.70
Online Classes are not Comfortable as Offline Classes	6.97	0.08
Not Understand Content Delivered in Online Classes	0.865	0.35

Source: Calculated by the authors from Google Forms questionnaire.

Table 11 portrays Chi-Square analysis to see the relationship between the positive perceptions towards online classes on a male and female student. The calculated value of Chi-Square was  $\chi^2 (1, N = 385) = 19.791$  and  $p$ -value less than 0.05 which means significant relation between the variables. It was observed that overall male students have a more positive opinion about online classes as compared to female students.

**Table 11.** Chi-square analysis on positive perception within gender.

Positive Perception	Chi Square Value	p-Value
As travelling time can be saved in online classes	1.77	0.18
More convenient than offline classes	13.37	0.00
Able to get more knowledge in online classes	4.41	0.03
Online classes increased my technological literacy	0.241	0.02

Source: Calculated by the authors from Google Forms questionnaire.

### 3.7. Major Challenges and Issues Faced by Students in Online Classes

Table 12 shows major challenges confronted by the students while pursuing online classes during this COVID-19 pandemic. Most of the schools' students (around 47.8%) faced difficulties in submitting their assignments in online classes because mostly respondents' parents are illiterate and they cannot help with their children's homework. The second highest response rate of the students (46.2%) who faced problems in attending online exams due to connectivity issues and electricity problems. A total of 29.9% of the sample respondents faced challenges of lack of textbooks, as they belong to low socio-economic backgrounds. The majority of the students were taking online classes through mobile phones; therefore, 28.6% of the respondents said the temptation to watch other social networking sites, check messages or pick up calls, which deviates interest from online classes.

**Table 12.** Challenges faced by students in online classes.

S.NO	Challenges	Frequency	Percentage (%)
1	Attending Online Exams	178	46.2%
2	Submitting Assignments	184	47.8%
3	Lack of Text Books	115	29.9%
4	The Temptation to Other Sites which Deviates from Online Classes	110	28.6%

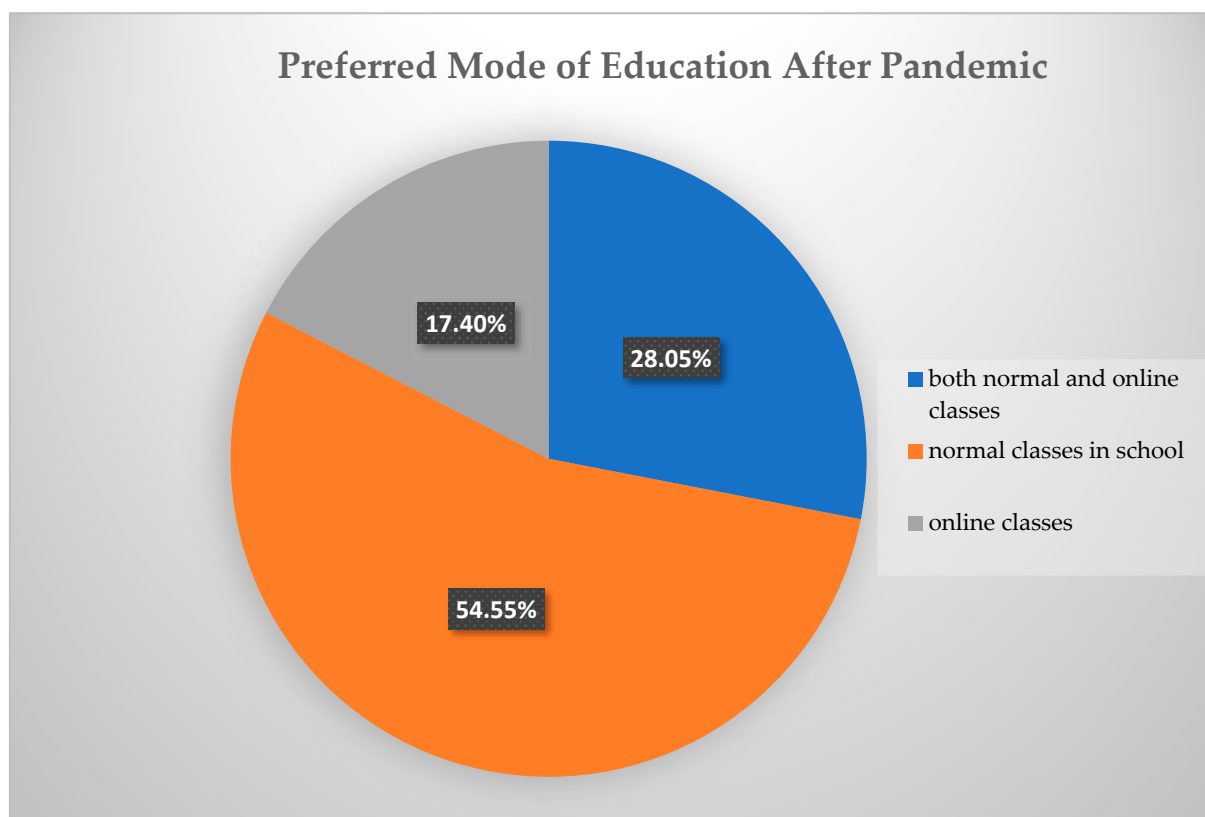
Source: Calculated by the authors from Google Forms questionnaire.

#### 4. Discussion

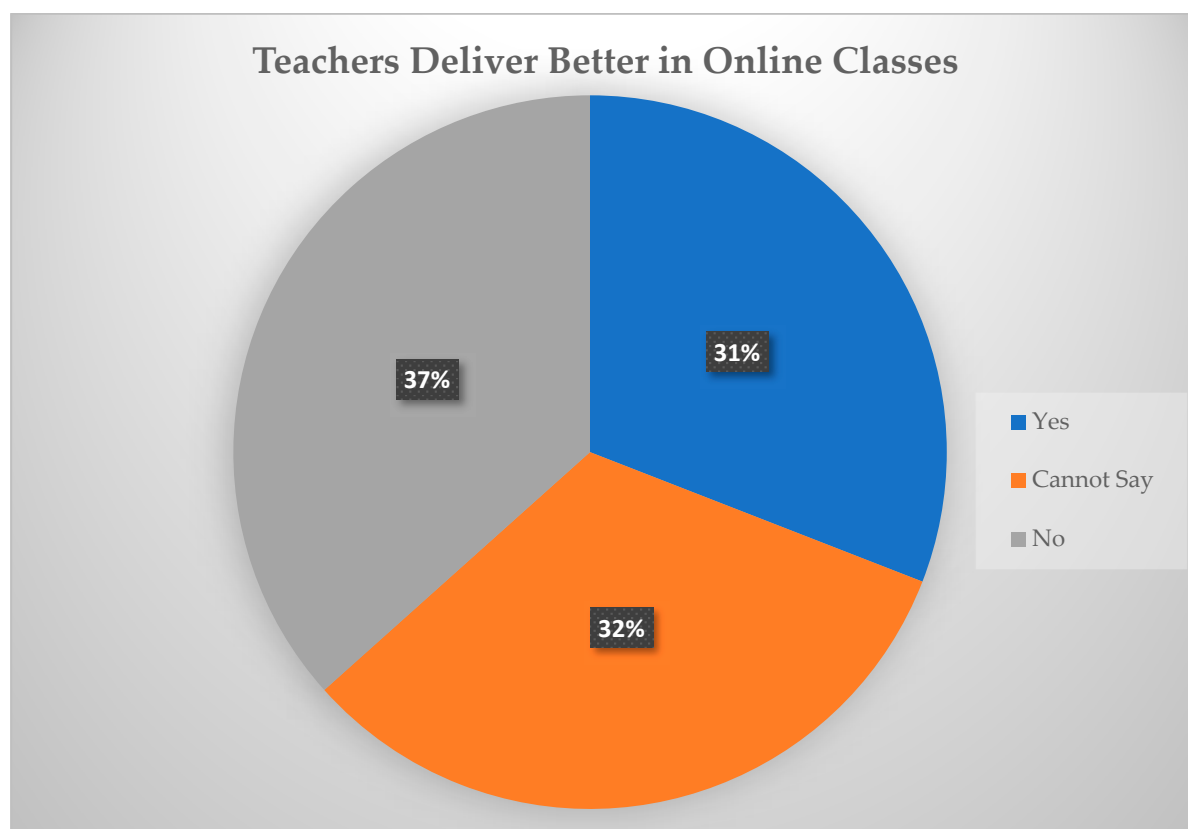
##### Experiences of students about online classes during COVID-19 and preferred mode of education after COVID-19 pandemic.

The study investigated the experiences of Delhi's schools students of online classes during this COVID-19 outbreak and asked about which classroom setting is better for the students in future education. To measure the degree of experiences of online classes researchers asked questions on five-point Likert scale, fully satisfied to never satisfied. Questions related to fully satisfied and satisfied were clubbed together as satisfied and somehow satisfied and not satisfied were clubbed together as not satisfied. Question relate to never satisfied was left as it is. A total of 46% of the total students opined that they are satisfied with the current online class environment during this pandemic, whereas 46.8% of the respondents who is little higher than satisfied opined that they are not satisfied with online classes. Only 7.3% of the students expressed that they never got satisfied with e learning transformation of classes.

The authors asked the preferred approach of classroom education after COVID-19 by the students, majority of the students (54.5%) opined that after this COVID-19 crisis normal classes in schools are better for their studies, whereas 28.1% of Delhi schools students said they preferred combined approach- both normal and online classes for their education. Merely 17.4% of the students opted for online classes as a better option for their future education as shown in Figure 2. Around 37% of the students felt that teachers have not taught better in online classes as compared to offline classes, while 31% of the respondents said teachers delivered better in online classes and 32% of pupils were indifferent between them as shown in Figure 3.



**Figure 2.** Preferred mode of education after pandemic.



**Figure 3.** Teachers deliver better in online classes.

## 5. Conclusions and Policy Implications

This study analyzed the perceptions of school students and challenges faced by them towards online education during the ongoing COVID-19 pandemic. The study revealed the opinions and perceptions of Delhi's school students towards virtual learning as it increased the technological literacy of students, traveling time can be saved in the online classes and it is more flexible in time and space, whereas it is not comfortable when compared with the offline classes. The majority of the respondents said there is a lack of interaction with teachers in online classes and low motivation for study due to a lot of distractions at home. Some students felt socially isolated because of restrictions on outdoor activities and group project to prevent the spread of the virus. On average, students have a positive perception towards virtual learning during the COVID-19 pandemic as the combined mean value of perceptions was higher than negative perception to maintain their academic growth. A similar result was found for engineering students in France, who expressed their satisfaction with distance learning. They got similar grades as expected in conventional teaching and their performance level did not decline due to e-learning; however, they expressed their apprehensions regarding the futility of having practicals and project works in e-learning mode [32]. The findings of the present study revealed that there was no association between negative perceptions of online classes within gender, whereas in positive perceptions significant relation exists within the gender. Nonetheless, students faced obstacles and issues in online classes, including problems in submitting their assignments and attending online classes because the majority of the students are using mobile phones for taking online classes, which is not a suitable device for virtual classes.

After the pandemic, most of the students preferred normal classes in school, instead of online classes and some of the respondents, preferred a combined approach of both normal and online classes in their school education. If students supported emergency e-learning as the best option, then the securitization theory of transition toward e-learning teaches

that it could be difficult to search out a more democratic and emancipatory educational system [33]. Furthermore, the study illustrated experiences of students towards online classes during the COVID-19 outbreak and around 46.8% of the students were not satisfied with online learning due to connectivity issues, eye strain or belonging to low socio-economic family, whereas some students were satisfied with online classes as it helped to reduce the learning gap, which had widened due to the prolonged lockdown during this COVID-19 pandemic. Several students felt that the teachers did not deliver better in online classes.

Thus, the policy implications emanating from the study are that the findings of the study encourages the policy makers and educational institutes to handle this online-based learning in a better way by adopting the latest techniques of online classes and by training teachers and students in this new technology continuously, so that the teaching and learning process becomes more enjoyable and effective during this ongoing COVID-19 pandemic. The government must take certain remedial measures to overcome the barriers/challenges in online classes and reduce the digital divide so that no students will be left out. Even after the COVID-19 this online mode of education can be continued for those students, who are hitherto untouched by the formal education provided. The government must ensure that all necessary infrastructure is set up for this purpose.

The limitations of this study are that it only focused on secondary school students from Delhi in India, by using a limited number of variables and methods. In addition, the present study has not considered the perception of school teachers towards online classes. As far as the direction for future studies in this area are concerned, a similar type of research can be repeated in the future and results can be generalized to other states or countries. Future studies can look into teachers' perceptions, along with students' perceptions towards online classes.

**Author Contributions:** Conceptualization, M.A.K., T.K. and A.I.; methodology, M.A.K., T.K. and A.I.; software, T.K. and A.I.; validation, M.A.K. and M.A.; formal analysis, M.A.K., A.I. and M.A.; investigation, T.K.; resources, M.A.K., A.I. and M.A.; data curation, T.K.; writing—original draft preparation, T.K.; writing—review and editing, M.A.K., A.I. and M.A.; visualization, M.A.K. and M.A.; supervision, M.A.K., A.I. and M.A.; project administration, M.A.K., A.I. and M.A. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not Applicable.

**Informed Consent Statement:** Not Applicable.

**Data Availability Statement:** Not Applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. ESCAP UN. COVID-19 and South Asia: National Strategies and Sub Regional Cooperation for Accelerating Inclusive, Sustainable and Resilient Recovery. pp. 1–39. Available online: [https://www.unescap.org/sites/default/files/SouthAsiaCovid-19Paper\\_5.pdf](https://www.unescap.org/sites/default/files/SouthAsiaCovid-19Paper_5.pdf) (accessed on 25 June 2020).
2. UNESCO. UNESCO COVID-19 Education Response: How Many Students Are at Risk of Not Returning to School? Advocacy Paper—Unesco BiblioTeca Digital. Available online: <https://unesdoc.unesco.org/ark:/48223/pf0000373992> (accessed on 22 July 2020).
3. World Bank. *South Asia Economic Update October, 2020*; World Bank: Washington, DC, USA, 2020.
4. Burzynska, K.; Contreras, G. Gendered effects of school closures during the COVID-19 pandemic. *Lancet* **2020**, *395*, 1968. [CrossRef]
5. Henderson, D.; Woodcock, H.; Mehta, J.; Khan, N.; Shivji, V.; Richardson, C.; Aya, H.; Ziser, S.; Pollara, G.; Burns, A. Keep calm and carry on learning: Using Microsoft Teams to deliver a medical education programme during the COVID-19 pandemic. *Future Health J.* **2020**, *7*, e67–e70. [CrossRef] [PubMed]
6. Mahajan, M.V. A study of students' perception about e-learning. *Indian J. Clin. Anat. Physiol.* **2020**, *5*, 501–507. [CrossRef]
7. Nassoura, A.B. Measuring Students' Perceptions of Online Learning In Higher Education. *Int. J. Sci. Technol. Res.* **2020**, *9*, 1965–1970.

8. Verma, A.; Verma, S.; Garg, P.; Godara, R. Online Teaching during COVID-19: Perception of Medical Undergraduate Students. *Indian J. Surg.* **2020**, *82*, 299–300. [CrossRef] [PubMed]
9. Jose, S.; Reddy, A. Mind the Digital Gap. The Indian Express. Available online: <https://indianexpress.com/article/opinion/mind-the-digital-gap-online-education-6465232/> (accessed on 18 June 2020).
10. Unicef. 120 Million Children in South Asia Could Slip into Poverty Due to Pandemic Unicef Report. The States-Man. Available online: <https://www.thestatesman.com/world/120-million-children-in-south-asia-could-slip-into-poverty-due-to-pandemic-unicef-report-1502903176.html> (accessed on 24 June 2020).
11. Alvi, M.; Gupta, M. Learning in times of lockdown: How Covid-19 is affecting education and food security in India. *Food Secur.* **2020**, *12*, 793–796. [CrossRef] [PubMed]
12. Kim, J. Learning and Teaching Online During Covid-19: Experiences of Student Teachers in an Early Childhood Education Practicum. *Int. J. Early Child.* **2020**, *52*, 145–158. [CrossRef] [PubMed]
13. Khan, M.; Vivek, V.; Nabi, M.; Khojah, M.; Tahir, M. Students' Perception towards E-Learning during COVID-19 Pandemic in India: An Empirical Study. *Sustainability* **2020**, *13*, 57. [CrossRef]
14. Hindocha, J. Teachers Students Miss Physical Connect during Online Classes State Problems of Connectivity Ex-Haustion. Hindustan Times. Available online: <https://www.hindustantimes.com/pune-news/teachers-students-miss-physical-connect-during-online-classes-state-problems-of-connectivity-exhaustion/story-R2SnDK4ZlyTpMEDzhRpb0N.html> (accessed on 15 October 2020).
15. Farooqui, S. Education in the Time of COVID-19: How Institutions and Students are Coping. Business standard. Available online: [https://www.business-standard.com/article/education/education-in-the-time-of-covid-19-how-institutions-and-students-are-coping-120043001575\\_1.html](https://www.business-standard.com/article/education/education-in-the-time-of-covid-19-how-institutions-and-students-are-coping-120043001575_1.html) (accessed on 1 May 2020).
16. Muthuprasad, T.; Aiswarya, S.; Aditya, K.; Jha, G.K. Students' perception and preference for online education in India during COVID -19 pandemic. *Soc. Sci. Humanit. Open* **2021**, *3*, 100101. [CrossRef]
17. Blog, Challenges Faced by Teachers and Students during COVID-19 Lockdown. Amc Group of Education. Available online: <https://www.amcgroup.edu.in/blog/challenges-faced-by-teachers-and-students-during-covid-19-lockdown/> (accessed on 20 November 2020).
18. Shetty, S. Academic Crisis during COVID19: Online Classes, a Panacea for Imminent Doctors. *Indian J. Otolaryngol Head Neck Surg.* **2020**, *82*, 299–300.
19. Joshi, A.; Vinay, M. Impact of corona virus pandemic on the Indian education sector: Perspectives of teachers on online teaching and assessments. *Interact. Technol. Smart Educ.* **2020**. [CrossRef]
20. Kulal, A.; Nayak, A. A study on perception of teachers and students toward online classes in Dakshina Kannada and Udupi District. *Asian Assoc. Open Univ. J.* **2020**, *15*, 285–296. [CrossRef]
21. Chandra, Y. Online education during COVID-19: Perception of academic stress and emotional intelligence coping strategies among college students. *Asian Educ. Dev. Stud.* **2020**, *10*, 229–238. [CrossRef]
22. Sajjad, H.; Iqbal, M.; Siddiqui, M.A.; Siddiqui, L. Socio-economic determinants of primary school dropout: Evidence from south east Delhi, India. *Eur. J. Soc. Sci.* **2012**, *30*, 391–399.
23. Ahmed, S.; Siddiqui, M.Z. Disparity in Access to Quality Education and the Digital Divide. Ideas for India. Available online: <https://www.ideasforindia.in/topics/human-development/disparity-in-access-to-quality-education-and-the-digital-divide.html> (accessed on 9 July 2020).
24. Pushkarna, V. Delhi Remote Learning during COVID-19 Leaves Less Well Off grappling with Digital Divide and Teacher Ruing Lack of Training. Firstpost. Available online: <https://www.firstpost.com/india/in-delhi-remote-learning-during-covid-19-leaves-less-well-off-grappling-with-digital-divide-and-teachers-ruing-lack-of-training-8688121.html>25 (accessed on 9 August 2020).
25. Singh, A. Online Education for All during and after COVID-19 Pandemic. Financial express. Available online: <https://www.financialexpress.com/education-2/online-learning-and-education-for-all-during-and-after-covid-19-pandemic/2021940/> (accessed on 13 June 2020).
26. Gaur, A.S.; Gaur, S.S. *Statistical Methods for Practice And Research*; Sage publication: New Delhi, India, 2006.
27. Lv, H. The effects of family income on children's education: An empirical analysis of CHNS data. In Proceedings of the 2017 4th International Conference on Information Technology and Career Education, Bangkok, Thailand, 29–30 April 2017; Volume 4, p. 02002. [CrossRef]
28. Chevalier, A.; Harmon, C.; Sullivan, V.O.; Walker, I. The impact of parental income and education on the schooling of their children. *IZA J. Labor Econ.* **2013**, *2*, 8. [CrossRef]
29. Hair, J.F.; Black, W.C.; Babin, B.J.; Anderson, R.E.; Tatham, R.L. *Multivariate Data Snalysis*; Pearson (Prentice Hall): Upper Saddle River, NJ, USA, 2009.
30. Sekaran, U.; Bougie, R. *Research Methods for Business: A skill Building Approach*; John Wiley & Sons: Hoboken, NJ, USA, 2016.
31. Adnan, M.; Anwar, K. Online learning amid the COVID-19 pandemic: Students' perspectives. *J. Pedagog. Sociol. Psychol.* **2020**, *2*, 45–51. [CrossRef]
32. Jacques, S.; Ouahabi, A.; Lequeu, T. Remote Knowledge Acquisition and Assessment during the COVID-19 Pandemic. *Int. J. Eng. Pedagog. (ijEP)* **2020**, *10*, 120–138. [CrossRef]
33. Murphy, M.P.A. COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemp. Secur. Policy* **2020**, *41*, 492–505. [CrossRef]