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The Effectiveness of Online Education during Covid-19 Pandemic-A Comparative Analysis between the perceptions of High School Students and Primary School Students from Bangladesh & the United Arab Emirates

Sohana Intasa Siddiqua[1*]

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ABSTRACT

The students in primary and high schools were the most at risk of being impacted by the Covid-19 outbreak in terms of their educational status. The whole education system slowly transited from in-class to online as per the time's demand. By examining students' online learning experiences during the COVID-19 epidemic in various situations, this study aims to present student voices of online education and explain why the implications are significant for student learning. Two nations are studied on a comparative window-Bangladesh and the United Arab Emirates-having different levels of socioeconomic development, the severity of the COVID-19 outbreak, pandemic preparedness measures, and the growth of online learning. A total of 125 students from Bangladesh and the UAE were surveyed quantitatively on the efficiency of online learning. To determine the efficacy of online education, constructs were created, and a questionnaire based on the structures was established. This study is cross-sectional and uses an inferred deductive methodology. Although many studies assert that online learning is just as successful as traditional learning, relatively few studies have examined the effectiveness of online instruction, particularly when switching from traditional learning methods to online learning. Additionally, no paper has investigated how elementary school pupils perceive the system, despite the fact that they were the most susceptible during the changeover. This essay seeks to close that gap. The results imply that students respond in a different way to virtual learning, and their response is centered around their competence in applying online devices, their capability to technically use virtual classes, and the teachers' approach in organizing education activities.

INTRODUCTION

The phrase "e-Learning" or "Electronic Learning" was first used in a lecture on Cognitive Behavioural Therapy (CBT) in 1999, and its history dates back to the 2000s. A learning technique known as "e-Learning" makes use of both online and software-based learning resources. Distance education was a word used prior to the idea of e-learning. Therefore, it can be said with certainty that education outside of the traditional school system existed even before the invention of the internet through CD-ROMs, floppy disks, mail exchange through post boxes, etc. Many colleges expanded their reach after the advent of the Internet and introduced the idea of distance learning. The British initiated this first (Arora, 2016).

e-Learning adds advantages to learning skills easily and it became accessible to the majority population with the blessing of the internet and owning personal computers and laptops. Prior studies have underlined the importance of pinpointing the issues with e-learning and coming up with a workable solution. Professional sectors, rather than general academic learning through online courseware platforms, receive more emphasis when it comes to the target population of e-learning platforms. As a result, it justifies the conduct of studies on the efficiency of e-learning in the educational field, with a particular emphasis on the needs and goals of students utilizing any online learning environment. It is vital to investigate and assess how students feel about online courses in a developing nation like Bangladesh where the educational market has just experienced a growth (Sarker *et al.*, 2019). This paper is aimed to examine the effectiveness of online education of the high school and primary school students from two countries during the Covid 19 Pandemic: Bangladesh; being a third-world country and the United Arab Emirates; being a first world country. This paper will mention the United Arab Emirates in its acronym, UAE.

Problem Statement

UNESCO reported that 1.5 billion children and youth in 195 countries experienced school closures in the middle of April 2020 (UNESCO, 2022). The schools remained closed for a period of nine months and then slowly adopted to online education even though the pandemic still existed. If this huge population remained out of education for the complete duration of the pandemic, the world would have been in a huge loss. Although, in the past, parents and students did not value online education much, during the pandemic online education was the only rescue.

This paper can help improve students' online learning experiences by finding out how they felt and experienced during that transition. It can also provide institutions and governments with information to help them prepare responsibly for the demands of future schooling in the digital era (Z. *et al*, July 2022).

[1] American University of Ras Al Khaimah, UAE
[*] Corresponding author's e-mail: sohana.siddiqua@gmail.com

Novelty of this paper

Although a few studies on subjects linked to online education were carried out in Bangladesh and the UAE, most of them were done before the pandemic started. Additionally, they concentrated on issues including the difficulties when introducing e-Learning, students' mental health, and how to apply blended learning in higher education (Islam *et al*., 2020), (Chowdhury, 2019). When searching for earlier research on the same topic in the setting of the UAE, it was discovered that only university-level students had been studied (Hussein *et al*., 2020; Alterri *et al*., 2020); no substantial research had been conducted on primary-level kids, either in Bangladesh or the UAE. Hence, this paper intends to fill up that gap in research. In fact, this paper is the first paper that studied the perceptions of primary level students regarding the effectiveness of online education during covid 19 on a comparative window between a developed country, that is the UAE and a developing country, that is Bangladesh. The table below represents a few notable papers from the Scopus indexed journals that worked on e-Learning during covid with their limitations stated on their papers. This table is created to explain why the same topic is chosen again to research when there are several studies already done on the same topic. This table explains where exactly the previous studies lacked information and what gaps this paper will fill up.

Table 1: Mentioning a few previous notable papers worked on e-Learning & Covid-19

Topic name	Journal name	Target respondents	Limitations
The Effectiveness of Online Education In Basic Medical Sciences Courses During The COVID-19 Pandemic In Saudi Arabia: Cross-Sectional Study (Alblihed *Et al*, 2021)	MDPI(Sustainability)	Medical, Applied Health And Dental Students From 3 Institutions.	The Study Explored The Perception Of Medical Science Students Only, That Too From Only Six Universities In Saudi Arabia Only (Alblihed *Et al*, 2021).
I	Elsevier	45 Random Students Of Al Ain University (Hussein *et al*., 2020).	Studied Only The Positive And Negative Aspects Of Online Education During The First Wave Of Covid 19 (Hussein *Et al*., 2020).
Online Classes For Higher Education In Bangladesh During The COVID-19 Pandemic: A Perception-Based Study (Rouf *Et al*., 2022).	Emerald	250 Respondents (University Students, Faculty Members And Administrative Officers) In Bangladesh (Rouf *Et al*., 2022).	The Study Was Constrained Only To Dhaka Region In Bangladesh (Rouf *Et al*., 2022).
Anxiety And Its Determinants Among Undergraduate Students During E-Learning In Bangladesh Amid Covid-19 (Hoque *Et al*., 2021).	Elsevier	Random 206 Undergraduate Students From Random Public Universities In Bangladesh.	Firstly, The Participants May Have Provided Biased Responses. Secondly, This Study Skipped Physiological Data Of The Participants. Thirdly, This Study Depended On An Online Survey Only Which Forced Considering Virtually Available Students Only (Hoque *Et al*., 2021).
Use Of E-Learning At Higher Educational Institutions In Bangladesh Opportunities And Challenges (Sarkar *Et al*., 2018)	Emerald	54 University Students With Different Background	Sample Size Was Tiny, And The Researchers Sensed A Biased Responses From The Survey Participants (Sarker *Et al*., 2019)

Research Objectives:

The main objective of this paper is to find out the:

1. Effectiveness of face-to-face courses and the effectiveness of online courses.
2. Need for easy access to technology and the internet for the effectiveness of online classes.
3. Importance of ability of educational institutions to prepare their teachers for the effectiveness of online courses.
4. Importance of well communication between the Teacher and the students in effectiveness of online courses.

5. Importance of ability to utilize recorded classes for the effectiveness of online courses.

LITERATURE REVIEW

The outbreak of Covid 19 pandemic in 2019 initially led to an interruption of the educational system worldwide. The government protocol urged all the educational institutions to shut down for an uncertain time. Students were in a situation where they had no clear perspective of the future. This uncertainty and the vulnerability of the education system was perturbing. This chaos even led some students to drop out of their studies (The World Bank, 2020). The degree of satisfaction among its most important stakeholders, the students, will determine the future of online education. Therefore, it is crucial to critically assess students' opinions, expectations, and feedback regarding online courses. Doing so will help to improve teaching and learning by making it more engaging, interactive, and efficient.

Face-to-face versus online education

In this chaotic event of disruption, online education proved as a rescuer by escalating Study options, transforming student populations and developing new pedagogical methods, making the education process more efficient, and less stressful for both instructors and students. Although many researchers suggest that online education still lacks behind in terms of learning outcomes and student interactivity, Fortune, Spielman and Pangelinan concluded in research of 156 students that there was no significant difference in learning preferences statistically between online and in-person students (Fortune *et al*., 2011).

However, because of problems with limited access to technology and poor internet networks, and by the weakened quality of teaching (Farrington, 2020), students have had adverse effects. Old school teaching had a few elements such as body language, facial expressions, and the teacher's voice which played as crucial learning tools. The shift to e-Learning created restrictions for the teachers on the above and decorated the importance of the speech delivered to school students on key learning, using a smaller number of words (Bao, 2020). Teachers must consider three important elements while designing the online teaching materials: easy access to technology, interactive pedagogy, and interactive theoretical materials (Cooper, 2016). To test how much this aspect still affects students, this study proposes to test these hypotheses:

Hypothesis 1 (H1)

The observation of the efficiency of face-to-face courses will positively encourage students' desire for physical class attendance.

Hypothesis 2 (H2)

The observation of the efficiency of face-to-face courses will negatively influence the perception of the effectiveness of online courses.

Factors affecting online education to be effective

To access online education, students need a laptop, or a smartphone, or a tablet, and internet connectivity. Additionally, prior training in technical skills is required for the effective use of computers and the internet. The students' perception and attitude towards the internet, their proficiency with the English language, and their time management skills are additional crucial considerations (Kebritchi *et al*., 2017). The Hung *et al*. found out that the aspects of learning motivation, self-directed learning, computer and internet quality, efficacy of online communication, and student control are indicators of the success of online education (2010). Rouf *et al*. studied a term called 'Digital Divide' in their paper. This term means the difference in those people who readily have available resources to access the online education and those who do not. They stated that digital divide, internet issues, device issues, data scarcity, poor learning environment, technophobia, no physical presence, negatively influence online education. This is based on the 44.42% respondents' positive response on the perception of digital divide (Rouf *et al*., 2021). Another paper by Islam *et al*. (2020) claims in their study that 55% of the students were unable to join online classes given the poor Internet systems, and 44.7% of the students faced difficulties in attending online classes because of unavailability of devices. To test this perception this paper developed the below hypotheses to test:

Hypothesis 3 (H3)

The students who lack the technical equipment needed for easy access to online courses will mark online education as ineffective compared to others who do possess the required technology.

Hypothesis 4 (H4)

The students who have knowledge of online browsing will assess the effectiveness of online education differently compared with the other students who lack knowledge.

Students' trust on educational institutions adapting online learning

Hussein *et al*. (2020) stated in their study that the sudden adoption of complete online education was an extensive compromise to the quality of education received. This is understandable to a level given the uncertainty and the difficulty created by the sudden outbreak of the pandemic. They added that the education sector will never be the same. However, the need of a well-planned and careful teaching design and teaching infrastructure cannot be substituted at any cost. Butnaru *et al*. (2020) claimed in their paper that high school students were less attracted to online education because they demanded participatory methods and direct interaction while learning. They also stated that online studies require more discipline from the students which seems to lack in high school students. Students gain a sense of security, trust, and love from interaction and social relationships, and

these qualities can significantly contribute to academic performance. Students who lack strong moral support from their families make up for it with the moral and social support of the teaching staff, which can significantly improve academic performance and overall achievement (Butanu *et al.*, 2020). If high school students show this point of view, then it can undoubtedly prove the same requirement for the primary school students since they are of much younger age and their nature demand more of physical touch and interaction from their loved ones. The students who value their involvement in traditional classroom settings believe that it is crucial to engage in face-to-face discussion in academic interaction because it allows them to meet their instructors and classmates in person and receive rapid feedback. Since there is less engagement with the classroom and classmates and more interaction with technology, students see online courses as being useless. Similar perceptions can be found among the teachers as well. There are a variety of issues that arise from the difficulty of converting content from a traditional to an online format. Due to a lack of control over student groups, and a barrier to resolving these issues, the teaching staff has issues with content delivery and lower student interest (Kebritchi *et al.*, 2017). To understand what role educational institutions played during the sudden adoption of online learning and what effect it had on the trust of the students, this paper is proposing these hypotheses:

Hypothesis 5 (H5)

Students' desire to physically attend classes will lead them to believe that online courses are inefficient.

Hypothesis 6 (H6)

The educational institutions' ability to administer online courses will positively affect the students' perception of the effectiveness of online courses.

Teachers' Training and its effects on the trust of the students

It is impossible to overlook the existence of online education since the pandemic broke out. Online education has become a part and parcel of the education system after the pandemic. Because the online education was not widely practiced before the breakout of Covid-19, most of the teachers weren't ready for the new normal. Faculty members and teachers who are not tech-savvy have been suffering a lot in terms of delivering lessons (Bao, 2020). Lee and Hirumi argued that even though the online education has become extremely unavoidable, many educators still lack the skills and knowledge of teaching online (Lee & Hirumi, 2004). Butnaru et.al. argued that adaptability of the teachers in learning those skills require formation of working skills with the new technologies. The simplest form of teaching that is practised for online education is delivering video lectures instead of two way communication during the class.

Song *et al.* (2016) considered in their study that the teacher-student relationship is based on a series of experiences and expectations. Students appreciate teachers who provide quick, true, and open feedback, who provide prompt responses, who know the curricula content and the teaching methods in detail, who constantly assist the students in the preparation stages, and who have a positive behaviour in the instructional/educational act. Students want their teachers to have initiative, to take the first step in the educational activities, to prepare the students for the online classes, and to have a positive behaviour, as the support and modelling offered by the teachers contribute to their subsequent success (Song *et al.*, 2016). To test this perception, this paper has suggested the following hypotheses:

Hypothesis 7 (H7)

The more lenient the teachers are, the more positive effect it will have on the perception of the effectiveness of online courses.

Hypothesis 8 (H8)

The more able the teachers are to manage online courses, the more positive effect it will have on the perception of the adaptation of the educational institution to online education. The initial theoretical model has been proposed below:

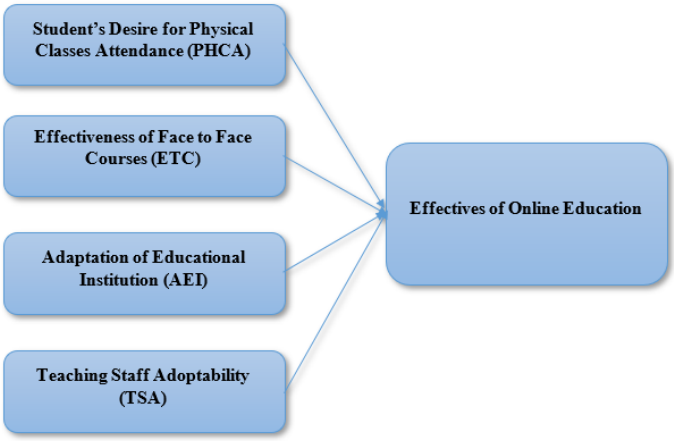

Figure 1: Conceptual Framework

METHODOLOGY

A questionnaire was used to gather information from high school and primary school pupils in Bangladesh and the UAE. These two nations were chosen because the current study's goal is to compare the effectiveness of online education for students at the same academic level from Bangladesh and the UAE, two very different socioeconomic regions. The respondents from both nations were sent an electronic version of the identical questionnaire with the same constructs. A few of them were asked to fill up the survey in-person.

Sampling and Data Collection

The questionnaire was developed by using Google Forms® (Google LLC, Mountain View, CA, USA). Snowball sampling technique has been used to an extent to reach wider number of participants, both in the UAE and in Bangladesh. The questionnaire has a summary of information about the study, assurance to withdraw from the study at any time without any negative implications. Respective due permission was taken from respective affiliated institutions and email contacts were collected from the admissions section. All the students who were emailed the questionnaire, were sent with the consent form and a detailed explanation about the research and its purpose. The primary school students were asked to get assistance from parents, teachers, or elder siblings to fill up the survey. The names of the respondents weren't noted from the emails; however, email IDs were collected in case there is further explanation needed especially from the primary school students. In demographic data, only gender, year of study, country of residence, and age group were asked. The final questionnaire had thirty-one items. Questions from demographic sections were closed ended and the rest are questions with likert scale of 01 being "Highly disagree" to 07 being "Highly agree" scale.

Data Analysis

This study used Smart PLS4 to perform partial least squaring techniques for SEM program to run the data and interpret the results. SmartPLS is a software that comes with an available graphical user interface mainly used for variance-based structural equation modelling (SEM) through Partial Least Squares (PLS). PLS-SEM is used here because it helps with small sample sizes. PLS-SEM is also very handy when it comes to models comprising many constructs and many items and is testing a theoretical framework based on predictions (Hair *et al.*, 2019). Since this paper is aimed at studying the predictive or explanatory power of EOE, no other software could have been more helpful than this PLS-SEM in this regard. This software will help calculate two models, such as the measurement model and the structural model. On one hand, measurement model calculates the latent variables or composite variables, and on the other hand, the structural model measures all the hypothetical dependencies based on path analysis (Hoyle, 2011; Kline, 2010). Furthermore, SPSS version 26 used for descriptive statistics of personal profiles of respondents and ANOVA to operationalized UAE and Bangladesh variances or vice versa.

Demographic Profile

125 people from Bangladesh and the United Arab Emirates made up the sample, which used a pre-developed survey questionnaire to examine dependent and independent factors. The survey's questions were derived from a paper by Butnaru *et al.* published in 2021 titled "The Effectiveness of Online Education during the Covid 19 Pandemic-A Comparative Analysis between the Perceptions of Academic Students and High School Students from Romania."

Participants from the RAK Academy in Ras Al Khaimah, United Arab Emirates, and Chittagong Collegiate School and College for participants from Bangladesh attended high school and primary school, respectively. From the beginning of February until the end of April 2022, the survey was distributed among the respondents for roughly three months. Emails, social media, and word-of-mouth have all been used as communication tools. This paper tested eight hypotheses focusing on Primary and High

Table 2: Demographic Profile

Respondents profile		
Information of Students	**Classification**	**Percentage**
Age	05-11 years	3.5
	12-20 years	40.4
	21-60 years	56.1
Gender	Male	52.9
	Female	47.1
Education level	1st to 6th grade	5.4
	7th to 12th grade	26.0
Ability to browse the internet	Yes	94.9
	Somewhat	4.8
	No	0.3
Owning a laptop	Yes	80.8
	No	19.2
Country of residence	Bangladesh	74.2
	United Arab Emirates	25.8

Source: Data collected through the Google form survey.

School students living in Bangladesh and in the UAE. The sample had 46.9% female respondents and 52.7% male respondents from both the countries out of which 3.5% were from primary level and 40.5% were from high school. 94.9% of them admitted were being able to browse internet and computers whereas only 5.1% admitted were being not able to browse internet. This 5.1% belonged to strictly to the primary level students. When asked about owning a computer, only 19.3% admitted not owning a device and the rest 80.7% confirmed owning a device. That 19.3% not owning a personal device resided in Bangladesh. Out of the total sample, 25.9% respondents were from the UAE and 74.1% are from Bangladesh.

ANOVA Statistics

This test accurately assesses the importance of the variable interactions, and they evaluate the variance (Chin, 1998). These tests begin by formulating a null hypothesis (Ho), which claims that the variables being examined are significantly different from one another. If the test produces statistically significant findings, the tester can accept the alternative hypothesis (H1), which states that there is no statistically significant difference between the two sets of variables, and reject the null hypothesis (Wong, 2013). The ANOVA coefficient, or F statistic, indicates the significance of the results. An F value of 1 or less indicates little to no difference in values, indicating that the difference between the groups is not statistically significant (Chin, 1998). The findings of this research are also rejecting the null hypothesis and accepting alternative hypotheses, here F statistic is the ANOVA coefficient tells us the results are significant as the value of variance between the groups of UAE and Bangladesh is 0.109 at 0.05 denotes and validate no difference among both groups. Further detailed statistics of ANOVA is given as under:

Table 3: ANOVA Statistics

	Sum of Mean Squares	Degree of Freedom (df)	Mean Square	F- Statistics	Significance
B/w the groups	69.784	1	69.784	0.109	0.05
Within the groups	78120.066	123	635.122		
Total	**78189.85**	**124**			

Findings of Measurement Model

The quality of the constructs, particularly their validity and reliability, are assessed using the measurement model. The main topic of discussion in this session is how to present the validity and reliability of the study's constructs. The scholar(s) must first evaluate the Factor Loading while submitting measurement model. How effectively an item represents the underlying concept is shown by factor loading. Researchers usually find lesser outer loadings (0.70) in social science studies, despite the fact that factor loading over.70 is typically advised (Vinzi, Chin, Henseler, & Wang, 2010). If the loading is less than.70, one should remove an item. The researcher(s) should also determine if eliminating a particular item would considerably enhance the Composite Reliability and Average Variance Extracted (AVE). The measurement for this study is shown below in Figure No. 1, which shows a substantial loading of each variable's latent indicators.

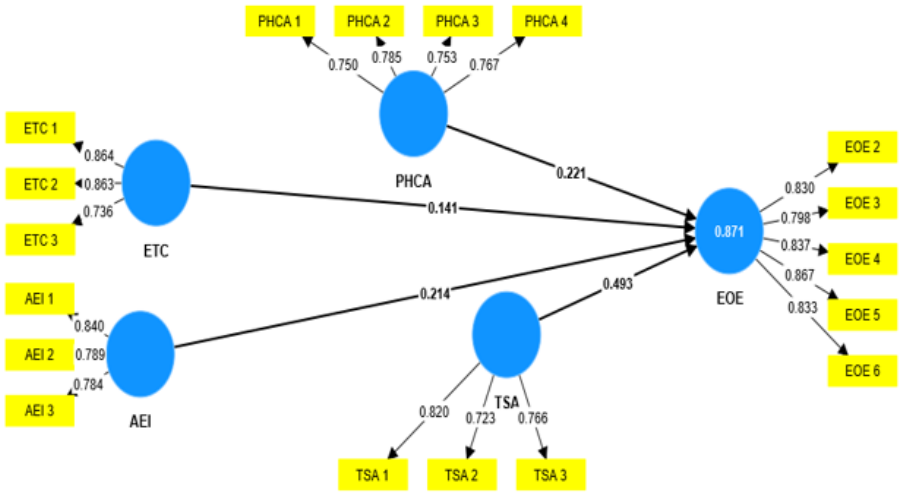

Figure 2: Measurement Model

Apart from Factor Loading, measurement model shall report the Reliability (Cronbach's Alpha and Composite Reliability) and Validity (Convergent and Discriminant Validity) which are given bellow.

Outer Loadings

Outer loading is the relationship between the replicative outline and the intended indicator variables. Regression of each indicator variable on its related construct is used to obtain the outer loading coefficient. The outer

loading value is taken into account while evaluating the reliability indication. The indication is approved when the outer loading value is greater than 0.7. To determine the impact of removing indicators on AVE and CR, those calculations need to be redone if the outer loading value is between 0.4 and 0.7. Those indicators with outer loading between 0.6 and 0.7 must be discarded if AVE and CR grow over the threshold; otherwise, they are used. The indication is disregarded if the outer loading is less than 0.6. (Wong, 2013). Below table shows the values of outer loading: As indicators are loaded pretty considerably in their respective latent variables and above from 0.7 sig. level, the outer loading of indicators in the measurement of this research's model is very strong and significant. TSA4, TSA5, TSA6, and EOE1 have been removed from the model and are not being used in future research since their loading levels were below the Signiant level of 0.7, respectively.

Table 4: Factor Analysis (Outer Loadings)

Sr. NO	Latent Indicators	PHCA	ETC	AEI	TSA	EOE
1	PHCA1	0.750				
2	PHCA2	0.785				
3	PHCA3	0.753				
4	PHCA4	0.767				
5	ETC1		0.864			
6	ETC2		0.863			
7	ETC3		0.736			
8	AEI1			0.840		
9	AEI2			0.789		
10	AEI3			0.784		
11	TSA1				0.820	
12	TSA2				0.723	
13	TSA3				0.766	
14	EOE2					0.830
15	EOE3					0.798
16	EOE4					0.837
17	EOE5					0.867
18	EOE6					0.833

wording variations of one another rather than being really representative measurements of the construct the factor reflects, according to very high composite reliability (>.90). In context of this research the value of all variables AEI, ETC, PHCA and EOE with the value of 0.742, 0.759, 0.777 and 0.890 having Sig. values of Cronbach's Alpha, however TSA having poor loading of 0.665 which bellow from the sig. level of 0.7. Similarly, in rho_A reliability test all variables having goof internal consistency reliability except TSA. Meanwhile both in Composite reliability analysis, both Independ and dependent variables having significant internal consistency reliability of above than 0.7 require value as CR is upper-bounded and covariance based reliability test. Thus all the variables having overall significant internal consistency reliability of loading in their respective variable.

Internal Consistency Reliabilities

PLS-SEM requires the convergent validity assessment for the practical evaluation of influential measurement models. Convergent validity is the extent to which a measure relates to other measures of the same phenomenon (Hair *et al.*, 2017). Composite reliability may result in larger estimations of genuine reliability compared to Cronbach's alpha. Including Cronbach's alpha, the acceptable cutoff for composite reliability is the same as for the other reliability metrics. From 0 to 1, with 1 denoting perfect predicted reliability, is the range for composite reliability. Composite reliabilities in a model should be equal to or larger than.6 for exploratory purposes, equal to or greater than.70 for confirmatory reasons (Henseler, Ringle, & Sarstedt, 2012), and equal to or more than.80 for confirmatory studies (Chin, 1998; Höck & Ringle, 2006). (for ex., Daskalakis & Mantas, 2008). The numerous indicators may only be little

Table 5: Internal Consistency Reliabilities

Latent Variables	Cronbach's Alpha	rho_A	Composite Reliability
AEI	0.742	0.792	0.846
EOE	0.890	0.892	0.919
ETC	0.759	0.769	0.862
PHCA	0.777	0.830	0.849
TSA	0.665	0.689	0.814

Convergent and Divergent Validities (AVE and Discriminant validity)

AVE can be used to assess the validity of divergent and convergent relationships. The average communality for each latent component is represented by AVE in a reflective and formative model. The AVE should be

more than.5 and greater than the cross-loadings in a valid model, which denotes that variables should explain at least half of the variance in the corresponding indicators. (Höck & Ringle, 2006; Chin, 1998) When the average falls below 50, explained variance exceeds error variance.

All of the latent variables in this study have extremely strong and substantial average of variance extraction, as shown below in table AVE values of all variables are greater than sig. value of 0.5. Additionally, the square root of AVE is displayed in the diagonal cells of the Fornell-Larcker criteria table in the SmartPLS output, and correlations are displayed below it. As a result, in absolute value terms, there is discriminant validity as indicated below in table. The significate of discriminant validity is that, diagonally their value must be greater than other correlated values and must having Signiant (sig. 0.7) variance of returns in their own family.

Table 6: Convergent and Divergent Validities

Latent Variables	AEI	EOE	ETC	PHCA	TSA	AVE
AEI	0.804					0.648
EOE	0.652	0.833				0.694
ETC	0.644	0.643	0.822			0.677
PHCA	0.723	0.659	0.638	0.763		0.583
TSA	0.701	0.700	0.712	0.671	0.770	0.594

R_Square and F_Square (Model Fit Test)

R-square, also referred to as the coefficient of determination and previously discussed and displayed above, is a metric used to determine the overall effect size of a structural model. Because the R Square value of the EOE is 0.875 above the cutoffs of 0.2 and 0.21, which are referred to as "significant" by Chin (1998) and Höck & Ringle (2006), respectively, the results of the R Square test are quite significant and demonstrate a strong adoption of impact from independent variables. The R-square would be considered to be of moderate power or effect in this case. A number of.25 would be considered "high" if the past state of the art in the pertinent subject had generated even lower values. However, what is considered "high" depends on the field.

The f-square effect size measure is another name for the R-square change impact. The f-square equation is used to represent the contribution of the R2 change to the unexplained variance (Hair *et al.*, 2014). The F Square values of all independent variables in this table are good and significant, larger than 0.00, validating the presence of the margin and the effect extraction towards the dependent variable.

Table 6: R Square and F Square Analysis (Model Fit Test)

Latent Variables	**R Square**	**R Square Adjusted**	**F Square**
PHCA	--	--	0.184
ETC	--	--	0.104
AEI	--	--	0.137
TSA	--	--	0.609
EOE	0.875	0.871	--

Findings of Structural Model

Mooney and Duval (1993) and Wood (2005) both assert that the bootstrap has several significant consequences for researchers. First off, the approach is straightforward and needs a basic understanding of mathematics. Second, the approach may be used to a wide range of statistical ideas. In this Table 6. Beta, standard error, and T-statistics analyses are included in the path coefficient table, which analyses the significance of hypotheses with various significant values. At 0.05, the beta value is significant,

Table 6: Path Coefficient

Path Coefficient			
Hypotheses	**Beta**	**Standard Error**	**T Statistics**
AEI -> EOE (H6) Adaptation of educational institutions to online education requirements to EOE	0.214	0.058	3.663
ETC -> EOE (H2) Effectiveness of traditional courses in the classroom to EOE	0.141	0.046	3.107
PHCA -> EOE (H5) Students' desire for physical class attendance to EOE	0.221	0.051	4.378
TSA -> EOE (H7) Teacher and student adaptation to EOE	0.493	0.046	10.795

and at 1.96, the T value is significant. Here, AEI is highly associated to EOE with a beta value of 0.214 and a T value of 3.669. Additionally, ETC is significantly related to EOE as a result of a direct impact with beta and T values of 0.141 and 3.107. Additionally, PHCA and TSA also having substantial connection with EOE, with beta and T values of 0.221, 0.493 and 4.378, 10.795 respectively.

Research Contributions

This paper is aimed to help education authorities to assess the students' viewpoint about the effectiveness of online education in a time when that is the only available choice. Although many studies say that online education can result as effective as old-school education, this survey tries to find out how different students react to online education based on their ability in using online tools and their capacity to technically access online courses, and to what level the instructors' pedagogy influence students' learning activities. Another uniqueness of this paper is studying the effect of online education on Primary level students. Literature review suggests that previously there was only a handful study considered this age group whereas this age group is the most crucial one to keep in mind when reforming or re-organizing the education system.

This is an empirical study where data is collected keeping in mind to provide interesting contributions and evidence for policymakers and implementers, which will prove to be helpful for decision making. The current study provides three contributions to the existing resources of online education. The literature study demonstrates that there is still a dearth of research on elementary school kids, and the majority of those studies are limited to single point surveys and specialized topics. The findings of this study also assist the educational authorities in determining the impact that elementary students had on the covid 19 pandemic. Thirdly, this essay contrasts pupils in the same age group who have access to resources at varying levels across two nations: Bangladesh, which is still in the early stages of development, and the United Arab Emirates, which is on the cusp of development.

Limitations and Future Research Direction

The study was constrained by the two countries/two states in each country (Chittagong in Bangladesh and Ras Al Khaimah in the UAE), and it is recommended that a replication be done for a larger sample size and/or that the research's geographic reach be expanded to other nations. If this study was done on different states and different district, for instance; Dhaka in Bangladesh and Dubai in the UAE. comparing students from high income and low income family, the result could have been different. However, the result of this study may possibly provide some valuable insights for future improvement of online education with special reference to the primary level students. Future research could be carried out on a national level by considering students from various other districts and including many more schools from urban and rural areas where the availability of technology and resources matter.

CONCLUSION

Online education has both benefits and shortcomings. When compared to traditional education, online instruction offers more possibilities and variety because it offers more capabilities that are not possible using the conventional approach (Perry & Pilati, 2011). With online learning, educators have access to sophisticated tools that help them with assessments and give them more innovative ways to present course material. Using communication tools, online learning can connect resources, teachers, and students to one another (Çakıroğlu *et al.*, 2019). Post COVID-19 pandemic has developed a new normal that extended education opportunities to a large scale to people of all ages by implementing online education. Although the earlier term distance education carried less value compared to regular learning, now the perceptions changed because of the blended learning system followed by a wide range of education authorities at present because of the Covid 19 lockdown. The hypotheses proposed here have been tested and accepted, providing supporting evidence from the data collected.

A priority of the reorganization of the education system is to build teams made of students, teaching staff and people outside the education system to identify responses to current emerging requirements (UNESCO, 2020).

REFERENCES

Abma, I. L., Rovers, M., & van der Wees, P. J. (2016). Appraising convergent validity of patient-reported outcome measures in systematic reviews: constructing hypotheses and interpreting outcomes. *BMC research notes, 9*, 226. https://doi.org/10.1186/s13104-016-2034-2

Alblihed, M. A., Aly, S. M., Albrakati, A., Eldehn, A. F., Ali, S. A., Al-Hazani, T., Albarakati, M. H., Abdel Daim, M., Al-sharif, A., Albarakati, A. J., & Elmahallawy, E. K. (2021). The effectiveness of online education in Basic Medical Sciences courses during the COVID-19 pandemic in Saudi Arabia: Cross-sectional study. *Sustainability, 14*(1), 224. https://doi.org/10.3390/su14010224

Alterri, D., Shubair, R. M., AlMarar, R., & Hindi, M. (2020). Transition to distance learning during the COVID-19 pandemic: Efforts within the Higher Education Sector in the United Arab Emirates. *Journal of Applied Learning & Teaching, 3*(2). https://doi.org/10.37074/jalt.2020.3.2.17

Arora, A. (2016). The evolution of eLearning from the turn of the millennium. *Explore the eLearning world with us.* Retrieved April 4, 2022, from https://www.ispringsolutions.com/blog/the-evolution-of-e-learning-from-baby-steps-to-giant-leaps#:~:text=The%20Start,easier%20to%20learn%20skills%20online.

Bao, W. (2020). COVID-19 and online teaching in higher

education: a case study of Peking University. *Human Behavior and Emerging Technologies, 2*(2), 113-115.

Butnaru, G. I., Haller, A.-P., Dragolea, L.-L., Anichiti, A., & Tacu Hârşan, G.-D. (2021). Students' wellbeing during the transition from onsite to online education: Are there risks arising from social isolation? *International Journal of Environmental Research and Public Health, 18*(18), 9665. https://doi.org/10.3390/ijerph18189665

Butnaru, G. I., Niţă, V., Anichiti, A., & Brînză, G. (2021). The effectiveness of online education during Covid 19 pandemic-a comparative analysis between the perceptions of academic students and high school students from Romania. *Sustainability, 13*(9), 5311. https://doi.org/10.3390/su13095311

Çakıroğlu, Ü., Kokoç, M., Gökoğlu, S., Öztürk, M., & Erdoğdu, F. (2019). An analysis of the journey of open and distance education: Major concepts and cutoff points in research trends. *International Review of Research in Open and Distributed Learning, 20*(1), 1-20.

Chowdhury, F. (2019). Blended learning: How to flip the classroom at Heis in Bangladesh? *Journal of Research in Innovative Teaching & Learning, 13*(2), 228–242. https://doi.org/10.1108/jrit-12-2018-0030

Cooper, S. (2016). 5 strategies to improve your online teaching. eLearning Industry. Retrieved April 13, 2022, from https://elearningindustry.com/5-strategies-improve-your-online-teaching

Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2021). *Covid-19 and student learning in the United States: The hurt could last A lifetime.* McKinsey & Company. Retrieved April 13, 2022, from https://www.mckinsey.com/industries/education/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime

Dubey, R., Gunasekaran, A., & Childe, S. J. (2019). Big data analytics capability in supply chain agility: The moderating effect of organizational flexibility. *Management Decision, 57*(8), 2092–2112. https://doi.org/10.1108/MD-01-2018-0119

Dubnikova, D. (2020). *The evolution of eLearning from the turn of the millennium. Explore the eLearning world with us.* Retrieved April 12, 2022, from https://www.ispringsolutions.com/blog/the-evolution-of-e-learning-from-baby-steps-to-giant-leaps#:~:text=The%20Start,easier%20to%20learn%20skills%20online.

Farrington, D. (2020). *Article - the consequences of covid-19 on the education system: The Legal Perspective. Education.* Retrieved April 13, 2022, from https://www.coe.int/en/web/education/article-the-consequences-of-covid-19-on-the-education-system-the-legal-perspective

Glen, S. (2015). *Convergent Validity and Discriminant Validity:Definition, Examples From Statistics HowTo.com: Elementary Statistics for the rest of us!* Retrieved April 25, 2022, from https://www.statisticshowto.com/convergent-validity/

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2–24. https://doi.org/10.1108/ebr-11-2018-0203

Hair, J.F., Hult, G.T.M., Ringle, C., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2nd ed., Sage, Thousand Oaks, CA.

Hayeon S., Jihyun K., & Wen L. (2016). Teacher–student relationship in online classes: A role of teacher self-disclosure. *Computers in Human Behavior, 54*, 436-443.https://doi.org/10.1016/j.chb.2015.07.037. Retrieved from https://www.sciencedirect.com/science/article/pii/S0747563215300480

Hoque, M. N., Hannan, A., Imran, S., Alam, M. A., Matubber, B., & Saha, S. M. (2021). Anxiety and its determinants among undergraduate students during e-learning in Bangladesh amid covid-19. *Journal of Affective Disorders Reports, 6*. https://doi.org/10.1016/j.jadr.2021.100241

Hoyle, R. K. (2011). Structural equation modeling for social and personality psychology. *Structural Equation Modeling for Social and Personality Psychology,* 1-120.

Hung, M.-L., Chou, C., Chen, C.-H., & Own, Z.-Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers & Education, 55*(3), 1080–1090. https://doi.org/10.1016/j.compedu.2010.05.004

Hussein, E., Daoud, S., Alrabaiah, H., & Badawi, R. (2020). Exploring undergraduate students' attitudes towards emergency online learning during COVID-19: A case from the UAE. *Children and Youth Services Review, 119*, 105699. Retrieved on 07 May, 2022 from https://doi.org/10.1016/j.childyouth.2020.105699

Islam, M. S., Sujan, M. S., Tasnim, R., Sikder, M. T., Potenza, M. N., & van Os, J. (2020). Psychological responses during the covid-19 outbreak among university students in Bangladesh. *PLOS ONE, 15*(12). https://doi.org/10.1371/journal.pone.0245083

Islam, M.S., Tanvir, K.M., Amin, M.A., & Salman, M. (2020). Online classes for university students in Bangladesh during the Covid-19 pandemic- is it feasible? The Business Standard. Accessed on 07 May 2022 from https://tbsnews.net/thoughts/online-classesuniversity - students-bangladesh-during-covid-19-pandemic-it-feasible-87454

Kebritchi, M., Lipschuetz, A., & Santiague, L. (2017). Issues and Challenges for Teaching Successful Online Courses in Higher Education: A Literature Review. *Journal of Educational Technology Systems, 46*(1), 4–29. Retrieved on 07 August 2022 from https://doi.org/10.1177/0047239516661713

Kline, R. B. (2015). Principles and practice of structural equation modeling. *Guilford publications.*

Mahmud, K., & Gope, K. (2009). Challenges of implementing e-learning for higher education in least developed countries: A case study on Bangladesh. 2009 *International Conference on Information and Multimedia*

Technology. https://doi.org/10.1109/icimt.2009.27

Perry, E. H., & Pilati, M. L. (2011). Online learning. *New Directions for Teaching and Learning, 128*, 95–104.

Ringle, C. M., Wende, S., & Becker, J.-M. (2015). SmartPLS 3. Boenningstedt: SmartPLS GmbH, http://www.smartpls.com.

Rouf, M. A., Hossain, M. S., Habibullah, M., & Ahmed, T. (2022). Online classes for higher education in Bangladesh during the COVID-19 pandemic: A perception-based study. Online Classes for Higher Education in Bangladesh during the COVID-19 Pandemic: a Perception-Based Study. Accessed on 20 May 2022 from https://doi.org/10.1108/prr-05-2021-0026

Sarker, M. F., Mahmud, R. A., Islam, M. S., & Islam, M. K., (2019). Use of e-learning at higher educational institutions in Bangladesh: Opportunities and challenges. *Journal of Applied Research in Higher Education*. Accessed on 07 August 2022 from https://doi.org/10.1108/JARHE-06-2018-0099

The World Bank. (n.d.). World Bank Education covid-19 school closures map. World Bank. Retrieved April 13, 2022, from https://www.worldbank.org/en/data/interactive/2020/03/24/world-bank-education-and-covid-19

UNESCO. (2020). *COVID-19 and Higher Education: Today and Tomorrow*. Impact Analysis, Policy Responses and Recommendations. Accessed on 25 May, 2022 from https://www.iesalc.unesco.org/en/

UNESCO. (2020). Education: From Disruption to Recovery. Accessed on 25 May, 2022 from https://www.unesco.org/en/covid-19/education-response

Wong, K. K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin, 24*(1), 1-32

Xu, Z., Pang, J., & Chi, J. (2022). Through the COVID-19 to Prospect Online School Learning: Voices of Students from China, Lebanon, and the US. *Educ. Sci., 12*, 472. Accessed on 25 May, 2022 from: https://doi.org/10.3390/educsci12070472