



Perceived Effect of COVID-19 on the Academic Performance and Satisfaction Level of Online Teaching of Sandwich Students

COVID-19'un Çevrimiçi Öğretim Alan Sandviç Öğrencilerde Akademik Performans ve Memnuniyet Düzeyi Üzerindeki Algılanan Etkisi

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Abstract

The study examined the perceived effect of COVID-19 on academic performance and the satisfaction level of online teaching of sandwich students on the OLA university campus. The study was a descriptive survey design with a quantitative approach. The accessible population was made up of 150 students. Through a multi-stage sampling approach, a sample size of 109 students was chosen for the study and determined using Miller and Brewer's (2003) sample size mathematical model. Data was collected using an adapted questionnaire with an $r = .727$. Data on respondents' demographic characteristics, as well as data to answer the four research questions, were analysed using descriptive statistics (frequencies, percentages, means, and standard deviations) and inferential statistics (Pearson Product Moment correlation, r). The study found a negative influence of the COVID-19 pandemic on students' academic performance who study through the sandwich mode of learning. The study found that there is a high satisfaction level of online teaching among sandwich students. However, they are faced with problems of poor internet connection and the inability to purchase internet data/bundle for online learning. Ultimately, it was discovered that the degree of pleasure with online instruction and the effect of COVID-19 on academic achievement are not significantly correlated. The Ministry of Education, the universities, and all other relevant stakeholders were advised to provide online teaching apps. Also, they should provide professional training for online teaching applications and devices, Wi-Fi facilities, affordable internet packages, and virtual resources in light of the findings.

Keywords: Academic Performance, COVID-19, Online Teaching, Sandwich Students

Öz

Çalışmada, COVID-19'un akademik performans üzerinde algılanan etkisi ve üniversite (OLA) kampüsündeki sandviç (eğitim kapsamında ilgili sektöre bir yıl yerleştirilen) öğrencilerin çevrimiçi öğretimden memnuniyet düzeyi incelenmektedir. Araştırma nicel araştırma yöntemlerinden betimsel desende yürütülmüştür. Çalışma kapsamına alınabilecek toplam erişilebilir çalışma grubu 150 öğrenciden oluşmaktadır. Araştırma için çok aşamalı örnekleme yaklaşımıyla 109 öğrenciden oluşan bir örneklem büyüklüğü seçilmiştir. Örneklem büyüklüğü, Miller ve Brewer'in (2003) örneklem büyüklüğü matematiksel modeli kullanılarak belirlenmiştir. Veriler, $r = 0,727$ olan uyarlanmış bir anket kullanılarak toplanmıştır. Katılımcıların demografik özelliklerine ilişkin verilerin yanı sıra dört araştırma sorusunu yanıtlamaya yönelik veriler, tanımlayıcı istatistikler (frekanslar, yüzdeler, ortalamalar ve standart sapmalar) ve çıkarımsal istatistikler (Pearson Moment Çarpımı korelasyonu, r) kullanılarak analiz edilmiştir. Çalışmada, COVID-19 salgınının sandviç öğrenme yöntemiyle çalışan öğrencilerin akademik performansını üzerinde olumsuz bir etkisi olduğunu bulgusu elde edilmiştir. Araştırma sonuçları, sandviç öğrencilerin çevrimiçi öğretimden yüksek düzeyde memnun olduğu bulgusuna işaret etmektedir. Bununla birlikte, öğrenciler zayıf internet bağlantısı ve çevrimiçi öğrenme için internet verilerini/paketini satın alamama sorunlarıyla karşı karşıya kalmışlardır. Sonuç olarak, çevrimiçi eğitimden alınan tatmin derecesi ile COVID-19'un akademik başarı üzerindeki etkisinin anlamlı düzeyde ilişkili olmadığı bulgusuna ulaşılmıştır. Bu sonuçlar doğrultusunda, Milli Eğitim Bakanlığı, üniversiteler ve diğer ilgili paydaşlara çevrimiçi öğretim uygulamaları sağlamları önerilmektedir. Ayrıca bulgular ışığında kurumların çevrimiçi öğretim uygulamaları ve cihazları, Wi-Fi olanakları, uygun fiyatlı internet paketleri ve sanal kaynaklara yönelik mesleki eğitim sağlamları gerekmektedir.

Anahtar Kelimeler: Akademik Performans, COVID-19, Çevrimiçi Öğretim, Sandviç Öğrenciler



Introduction

Nearly every business has been affected by the sudden coronavirus (COVID-19) epidemic, including worldwide higher education institutions (Adedoyin & Soykan, 2020). Most countries in the world shifted to online learning in reaction to the COVID-19 pandemic (Bokayev *et al.*, 2021). Ghana's government, like that of many other nations, decided to close all schools to stop the COVID-19 epidemic from spreading too quickly. The Ministry of Education decided to use an online teaching technique to make up for the teaching process after all academic institutions were closed statewide.

For several reasons, online education has greatly improved and changed during the previous 20 years in various parts of the world (Bayrak *et al.*, 2020). Due to its increased accessibility and decreased cost of education, online teaching and learning approaches are gaining popularity among college and university teachers (Green, 2010). Green (2010) went on to say that online learning could offer more chances to save time and money because it does not need anybody to seek information. Even if online learning is growing in popularity, student happiness remains the greatest measure of the environment's quality. Several elements can affect students' satisfaction with their education, such as the rapport between instructors and students (Harsasi & Sutawijaya, 2018; Kirtman, 2009). Again student-to-student interactions, the quality of the course evaluation, the internet, self-efficacy, and the learning process are other elements they cited. As a result, online learning gained a double reputation while contributing significantly to the pandemic's dire state.

Since education has always been the cornerstone of national advancement, its preservation is vital to the growth and development of all nations. The issues that have dogged education throughout history are not unique to Ghana's educational system. These issues have ranged from curriculum modifications to the shutdown of educational facilities due to staff or student dissatisfaction, illness outbreaks, or unstable national governments. The repercussions of the global coronavirus outbreak on educational institutions have resulted in the closure of several schools in the afflicted nations. Over 1.7 billion students were not enrolled in school as of March 28, 2020, due to the pandemic that kept schools closed. Nearly 90% of students worldwide are affected by the over 100 countries that have imposed countrywide shutdowns, according to UNESCO monitoring (UNESCO, COVID-19 Educational Disruption and Response, 2020). Not only does closing a school damage students, teachers, and families, but it also has extremely negative social and economic effects (Lindzon, 2020).

Governments of 49 nations declared or implemented school closures on March 13, 2020; 22 of those countries had localised closures, and 39 of them countries shuttered all of their schools countrywide (UNESCO, 2020). On March 16th, 2020, 73 countries, up from 49 at the time, will have closed their schools, according to UNESCO. Ghana was among the countries (UNESCO, 2020). As of March 19th, 2020, 850 million students had their classrooms closed globally due to a virus that needed to be controlled and its spread was slowed (UNESCO, 2020). In 102 countries, there were national closures, while in 11 countries, there were local closures.

Even if a school is just briefly closed, this interferes with students' capacity to study and has major detrimental social and economic effects. Everyone in the community is affected by the disturbances they cause, but the repercussions on disadvantaged students and their families are more severe and include disturbed learning, poor nutrition, and childcare concerns. It has, however, run upon certain particular issues specific to the student population. However, the focus of this study is on how COVID-19 has affected Ghana's educational system, namely how happy students are with online learning.

Statement of the Problem

Ghanaians' feelings of anxiety and stress have increased due to the coronavirus disease (COVID-19) outbreak. Unlike earlier occurrences that have occurred in this country, the virus causes severe symptoms and is extremely infectious. It is risky to actively plan and respond when thinking about how to provide outstanding remote educational continuity that promotes learning as well as the psychological well-being of both teachers and students (Reynolds, 2020). Unfortunately, there is not much information available on how to establish educational continuity, even though education is a kind of psychological support that helps maintain social cohesiveness during trying times. Youth and students affected by catastrophes can learn more avidly if intentional investments are made in education-based psychosocial care, emotional learning, and social and emotional learning.

Psychological health is a prerequisite for education and has a significant influence on future expectations for both individuals and nations (Reynolds, 2020). The COVID-19 pandemic is not the only one that may endanger school continuity, according to research on how climate change will alter the prevalence of infectious illnesses. Schools must develop backup plans as soon as possible to guide their emergency preparation strategies. These plans must take into account, not just school-based exclusion and safety precautions for epidemics, but also how to support and educate teachers and students even if the schools are closed. There have been several studies on the effect of COVID-19 on academic attainment in Ghana (Owusu-Fordjour *et al.*, 2020; Upoalkpajor & Upoalkpajor, 2020; Wolf *et al.*, 2021). These studies found that COVID-19 had a negative effect on the academic achievement of Ghanaian students at all levels. Investigating the caliber of online training was the aim of the current study. This necessitates a novel strategy and fills a gap created by the preceding study.

Purpose of the Study

The study's goal was to look into the perceived effects of COVID-19 on sandwich students' academic performance and their degree of satisfaction with online instruction on the OLA campus. The study specifically looks at how:

1. COVID-19 is considered to affect students' academic achievement.
2. the degree of student satisfaction with online instruction.
3. the connection between the perception of COVID-19's effect on academic achievement and the degree of satisfaction with online instruction.

Significance of the Study

The study's findings would be highly beneficial to lawmakers and curriculum developers for accounting. This is because when developing the curriculum, the issue of pandemics and its recognised contributing factors will receive considerable emphasis in both the curriculum and online training. Because they would increase understanding that can be applied to other related issues or academic programs, the findings would also be helpful to policymakers.

The results of the study would be accessible to the Ghana Education Service and the Curriculum Research and Development Division (CRDD) to assist with this (GES). The research also intends to aid teachers in assisting their students in understanding the benefits of online teaching and learning as it promotes education in this day and age. Last but not least, the report's conclusions would be useful for future research related to the current study by acting as reference materials.

Delimitation

The study's focus was just on sandwich students of the Institute of Education at the university's core (University of Cape Coast). Student academic success served as the dependent variable in the study, which considered the perceived effect of COVID-19. Another element was satisfaction with online education. Quantitative research was conducted. However, there was no specific field of study.

Literature Review

Theoretical Framework

Support for this study comes from Mezirow's (1997) notion of transformative learning. This perspective holds that a student begins to acquire new skills when they come across an uncomfortable situation. Dissonance in the worldwide educational system and paradigm alterations in higher education were caused by the COVID-19 pandemic. Transformative learning is the process of raising one's consciousness by self-adaptation to a shifting environment. Students actively learn, they assign meaning to what they are learning, changing their cognition, attitudes, and actions. This theory holds that since challenging tasks are a part of the paradigm shift, it is necessary to help students develop their critical and logical thinking skills to assess how well they understand the learning process (Hashemi et al., 2021).

Mezirow observes that transformational learning happens when students interact with their environment and become part of the educational process. Students may find it harder to get resources in poorer nations since there are fewer facilities there. Teachers who observe cognitive dissonance in their students might help them learn more efficiently by reorienting the learning process to new norms and utilising helpful tactics. Transformative learning can challenge students to navigate and overcome adversity, leading to increased resilience. The ability to adapt to new perspectives and navigate challenges positively influences mental and emotional well-being, helping students cope with the uncertainties and stressors of academic life. Transformative learning and student well-being are intricately connected. The process of critically examining and reshaping one's beliefs and perspectives can lead to increased self-awareness, resilience, critical thinking skills, social connections, a sense of purpose, and a lifelong orientation toward learning—all of which contribute to the holistic well-being of students.

Empirical Review

COVID-19 and Academic Performance

Although few studies have examined the impact of COVID-19 on students' academic performance and their satisfaction with online education during the pandemic, the researcher has made an effort to choose the articles that are most relevant to the current analysis. Vital safety precautions for both teachers and students have been included in learning settings (Oyinloye, 2020). The impact of COVID-19 incarceration on college student's academic performance was investigated in the study of Gonzalez-Sanguino et al. (2020). The results of their analysis showed that COVID-19 isolation was beneficial.

Similar research was conducted by Realyvasquez-Vargas et al. (2020), who examined the potential impact of the COVID-19 environment on academic achievement. Following their analysis, they concluded that students' academic performance was impacted by the COVID-19 epidemic's environmental influences. It was also determined by Elhadary et al. (2020) how COVID-19 affected students' academic achievement in the social sciences and sciences.

Level of Online Teaching and Learning During the COVID-19 Era

In 2020, Loton et al. examined how well students performed and how satisfied they were with online

education during the COVID-19 epidemic. Their findings showed that both the students' academic performance and their level of happiness with online education were significantly impacted by the COVID-19 epidemic. Discussions have been held regarding the participants' satisfaction with the students' performance during the COVID-19 epidemic (Fatani, 2020). Almusharraf and Khahro (2020) investigated the degree of student satisfaction with online learning during the COVID-19 pandemic. Their survey's findings showed that each participant was quite satisfied with the resources and platforms for online learning. In general, students are pretty happy with the caliber of education provided online (Bokayev *et al.*, 2021). In keeping with the findings of the investigations, Baber (2020) discovered that providing online instruction resulted in a very high level of satisfaction. Sharma *et al.* (2020) found in their published study that most participants were not happy with the online learning platforms. Similar results were found by Dinh and Nguyen (2020), who found that students favoured in-person instruction over distance learning.

Satisfaction Level of Online Teaching and the Perceived Effect of COVID-19 on Academic Performance

High levels of satisfaction were also observed in many additional studies that examined online training in different settings during the COVID-19 epidemic (Chen *et al.*, 2020; Choe *et al.*, 2020; Fatani, 2020). But Alanazi *et al.* (2020) looked at how well students did in virtual classrooms and how content they were with technology. In 2020, Chen *et al.* examined Chinese students' satisfaction with online education during the COVID-19 epidemic.

Several academics asserted during the COVID-19 epidemic that students were very satisfied with online learning, even though every study on satisfaction levels (Ali *et al.*, 2011; Bauk *et al.*, 2014; Coman *et al.*, 2020; Johnston *et al.*, 2005; Naziya & Khan, 2020; Roach & Lemasters, 2006; Sharma *et al.*, 2020; Surahman & Sulthoni, 2020). Remarkably, no information from the COVID-19 epidemic shows negative opinions about online training. Ghana is among the nations with the lowest incomes worldwide and public colleges have inferior ICT infrastructure than private ones (McMahon *et al.*, 2020; Noori *et al.*, 2020). Virtual training is a relatively new concept that most instructors and students are still unaware of (Hashemi, 2021).

The main obstacles to online education include low pedagogical preparation for utilising digital tools and apps, high Wi-Fi costs, energy limitations, and a lack of hardware for establishing virtual learning environments (Hashemi & Kew, 2021). As a result, there were several issues, complaints, and ambiguities around the usage of online instruction during the COVID-19 epidemic in Ghana.

Despite the Ghanaian Ministry of Education (MoE) developing HELMS as a substitute program and platform in response to COVID-19, for instance, most instructors were content to train their students using Google Classroom, WhatsApp, or other social media platforms. Undoubtedly, the degree of discomfort the students experienced with the platforms had an impact on their performance in the online course

Orfan (2021) claims that these circumstances are brought about by the constraints and cultural norms inherent in Ghanaian society. When the COVID-19 pandemic struck numerous states throughout the country, students' academic performance was negatively impacted by these disparities in access to the previously described tools and programs, and they were generally unsatisfied with online education. Importantly, this dissatisfaction and academic struggle could be linked to a broader impact on the overall well-being of students, highlighting the critical connection between educational access and the mental and emotional health of individuals navigating the challenges imposed by the pandemic.

The present study has significance for its contribution to the literature on Ghana and for offering novel insights to researchers, students, and the Ministry of Education in Ghana, therefore augmenting their readiness for similar circumstances in the future.

Method

Research Design

The present study set out to find out how sandwich students felt about COVID-19's impact on their academic achievement on the OLA campus and how satisfied they were with their online education. Consequently, we employed a descriptive survey approach for my research.

Population

According to Creswell (2012), the criteria for including a unit in a survey are based on the traits of respondents who are eligible to take part in the survey. 1,500 sandwich students at the Institute of Education, University of Cape Coast (UCC), were the target demographic. However, the OLA campus' sandwich students made up the whole available population. 150 students are present.

Sample and Sampling Procedure

We sampled 109 students using Miller and Brewer's (2003) technique for calculating sample size with the available population in mind. (n): $n = \frac{N}{1+N(\alpha)^2}$ where N-population, α - estimated error case of which we used .05 (5%). **Computation of students:** $n = \frac{150}{1+150(0.05)^2} = \frac{150}{1.375} = 109$.

For the sample, we employed a multi-stage process. Using a convenience sampling technique, the center was sampled. In other words, I had easy access to the two circuits. Convenience sampling, according to Ary et al. (2010), is a non-probability sample method that calls for the researcher to choose a population that is easily accessible. In the third stage student respondents were chosen using a proportionate stratified selection technique. We utilised the three classes as strata to start. The number of students that would be picked from each school was then determined by obtaining the sample frames for each stratum. Third, after determining the proportion of respondents needed to represent each stratum, a simple random number generator was used to choose the necessary number of respondents from each stratum. The study used a list of random numbers for simple random sampling since each stratum reflects a homogeneous group of students, that is, a group with comparable features (Ary et al., 2010). The final step was to combine the selected number of responses from each stratum to get the study's unit sample size, n=109.

Data Collection Instrument

Questionnaires, an instrument that was customised and had a closed-ended design, were used to gather the data. Closed-ended questionnaires were used in the study because they enabled the researcher to sample the opinions of a larger group of people (Glasow, 2005). Because respondents could freely express their thoughts without worrying about being evaluated, questionnaires were particularly helpful. The use of the questionnaire in this study may not have provided a better understanding of the difficulties, even though questionnaires are frequently employed to obtain responses to research topics.

Three components make up the questionnaire (A, B, and C). The demographic data of respondents (gender and age range) are presented in Section A with two items, and Section B, which is an adaptation of Noori, discusses the perceived effect of COVID-19 on students' academic achievement (2021). There were 10 items measured on four Likert scales: Strongly Agree (SA)-4, Agree (A)-3, Disagree (D)-2, and Strongly Disagree (SD)-1 with a total scale score of 40 and average agreement mark of 2.50. Students' satisfaction with online instruction was gauged in Section C using information borrowed from Agormedah (2020). There were eight items measured on four Likert scales: SA-4, A-3, D-2, and SD-1 with a total scale score of 32 and an average agreement mark of 2.50. The adapted questionnaire was validated and pre-tested.

According to Asamoah-Gyimah and Anane (2019), reliability is the consistency of the aforementioned outcomes, whereas validity is the suitability of the interpretation and application of instrument results. Experts verified the validity of the questionnaire to ensure its face and content validity to finetune the items. This was carried out by a suggestion made by Gay *et al.*, (2009), who argued that expert judgment may be used to determine both content validity and face validity. Thirty students from the Holy Child campus who are enrolled in the same programme but are not part of the target audience participated in a pre-test of the questionnaire. Convenient sampling was done from the pre-test schools. Ary *et al.*, (2010) acknowledge that a sample size of five to ten percent (5–10%) of the available population is enough for pre-testing of research instruments for the majority of descriptive studies utilising questionnaires. We used Cronbach's alpha values to assess the items' internal consistency. Within the allowed reliability range of $r = .60$, the reliability coefficient was $r = .727$. Fraenkel *et al.*, (2012) claim that $r .60$ is a reliable sign of robust internal consistency.

Data Collection Procedure

We provided the respondents with an orientation service on the necessity for the study with consent and semi-formal permission from appropriate institutions like IoE, UCC. Upon participating in the study, respondents received ethical assurances such as anonymity, confidentiality, and freedom. Scientific and ethical principles have been followed while carrying out. Consent forms were delivered a participant was asked to sign their agreement for their awareness and willingness. We then went ahead and administered the questionnaire to collect data. To estimate 95% to 100% returns of instruments from respondents, we took into account 10% attrition. As a result, we sent 120 questionnaires, but we only used 109 of them for the research.

Data Processing and Analysis

The answers to the surveys were verified twice. We coded and entered the data into a Microsoft Excel spreadsheet for analysis, and Jeffreys' Amazing Statistics Program (JASP) software was used to analyse the findings. Frequencies and percentages were used to analyse demographic information about respondents. To analyse the data and respond to research questions 1 and 2, descriptive statistics were employed (Mean, standard deviation, and their respective averages). Since the four-point Likert scales that were utilised were coded as SA = 4, A = 3, D = 2, and SD = 1, the analysis was performed on a baseline of 2.50. The majority of respondents were considered to agree with a statement if the mean was less than 2.50. The Pearson Product Moment Correlational Coefficient was used to analyse the data to respond to research question 3.

Results

Socio-Demographic Characteristics of Students

Table 1. Gender and Age Distribution of Students

Variable	Category	Frequency	Percentage (%)
Gender	Male	46	41.9
	Female	63	58.1
Age Range	18 – 25 years	08	7
	26 – 33 years	91	83.7
	Above 33 years	10	9.3
Total		109	100

Table 1 presents the summary of the socio-demographic information of the students. Females were in the majority ($n=63$, 58.1%) against their male counterparts ($n=46$, 41.9%). On students' age, most of them ($n=91$, 83.7%) were aged between 26 to 33 years

Analyses of Research Questions

The data was collected with four Likert scale questionnaires. The scales were coded as SA-4, A-3, D-2, and SD-1. Based on this, the baseline of respondents was 2.50 where a Mean ≥ 2.50 indicates the majority of agreement and a Mean < 2.50 indicates the majority of disagreement. This is applicable through the analyses.

Research question 1: *What is the perceived effect of COVID-19 on the academic performance of students?*

Table 2. COVID-19 Effect on Academic Performance

SN	Statement	Valid	Mean	Std. Dev.
1	My academic performance was affected by the COVID-19 pandemic.	109	3.31	0.780
2	My subject knowledge was affected by the COVID-19 pandemic.	109	2.95	0.795
3	My class projects were affected by the COVID-19 pandemic.	109	3.12	0.670
4	The quality of my learning was affected by the COVID-19 pandemic.	109	3.14	0.683
5	The load of my class assignments was affected by the COVID-19 pandemic.	109	3.19	0.740
6	My future educational goals were affected by the COVID-19 pandemic.	109	2.86	0.899
7	My educational activities were affected by the COVID-19 pandemic.	109	3.12	0.739
8	My matriculation was delayed because of the COVID-19 pandemic.	109	3.05	0.795
9	My out-of-university courses were affected by the COVID-19 pandemic.	109	3.00	0.765
10	Students' feelings were affected by the COVID-19 pandemic.	109	3.33	0.650
	Mean of means/SD	109	3.11	0.752

Table 2 depicts results that answer research question one. The table shows that the majority of the respondents agree that the COVID-19 pandemic affected my academic performance (Mean = 3.31, SD = 0.780). Similarly, the majority of respondents agree that the COVID-19 pandemic affected my subject knowledge (Mean = 2.95, SD = 0.795). This was followed by the majority of respondents agreeing to the statement "COVID-19 affected a load of my class assignments" with (Mean = 3.19, SD = 0.740). Finally, the majority of the respondents agree that the COVID-19 pandemic affected students' feelings (Mean = 3.33, SD = 0.650). The results show that COVID-19 has a negative influence on the academic performance of students who study through the sandwich mode of learning (Mean of means = 3.11, SD = 0.752).

Research question 2: *What is the level of satisfaction among students with online teaching?*

Table 3. Satisfaction level of online teaching

SN	Statement	Valid	Mean	Std. Dev.
1	I have heard of online learning/e-learning before.	109	3.50	0.634
2	I am familiar with online learning platforms like Google Classroom, telegram, UCC Moodle platform, etc.	109	3.05	0.825
3	I prefer using social media platforms like WhatsApp, zoom, Google Meetings, etc for learning.	109	2.48	0.969
4	I was aware of the resumption of academic work online.	109	2.93	0.513
5	I do online learning with devices like laptops, smartphones, tablets, etc.	109	3.12	0.803
6	I can use the above-mentioned devices for online learning effectively.	109	2.57	1.016
7	I have constant access to an internet connection for online learning.	109	1.98	0.869
8	I can purchase internet data/bundle for online learning.	109	2.36	1.032
	Mean of means/SD	109	2.75	0.833

Table 3 depicts results that answer research question two. The table shows that the majority of the respondents agree that they have heard of online learning/e-learning before (Mean = 3.50, SD = 0.634). Similarly, the majority of respondents agree that they do online learning with devices like laptops, smartphones, tablets, etc (Mean = 3.12, SD = 0.803). This was followed by the majority of respondents who agreed that familiar with online learning platforms like Google Classroom, telegram, UCC Moodle platform, etc (Mean = 3.05, SD = 0.825). The results indicate a high satisfaction level with online teaching (Mean of means = 2.75, SD = 0.833). However, Table 1 further reveals that the majority of the respondents disagree that they have constant access to an internet connection for online learning (Mean = 1.98, SD = 0.869). Similarly, the majority of respondents disagree that they can purchase internet data/bundle for online learning (Mean = 2.36, SD = 1.032).

Research question 3: *What is the relationship between the satisfaction level of online teaching and the perceived effect of COVID-19 on academic performance?*

Table 4. Relationship between COVID-19 Effect on Academic Performance & Satisfaction Level of Online Teaching

Variable		COVID-19 and Academic Performance
Satisfaction level of online teaching	Pearson's r	-0.243
	p-value	0.122

Table 4 shows that there is no significant relationship between COVID-19's effect on academic performance and the satisfaction level of online teaching with sig. value = 0.122, $p > 0.05$. This implies that the negative low correlation coefficient (- 0.243) is not significant to show the relationship.

Discussion

COVID-19 Effect on Academic Performance

The study discovered that students who learn via the sandwich method performed worse academically as a result of the COVID-19 epidemic. That is why the pandemic disproportionately affects students who learn in a sandwich fashion. The findings support the assertions made by Oyinloye (2020) that the COVID-19 pandemic affected almost all educational levels in several worldwide contexts and was incorporated into learning environments to potentially accommodate teachers and students. The findings corroborate those of Realyvesquez-Vargas et al. (2020), who found that many environmental factors influenced students' academic performance during the COVID-19 epidemic. The sandwich method, where students alternate between in-person and online learning, has been a common approach in many educational institutions. One possible explanation for the disproportionate effect on sandwich method learners during the pandemic could be the disruption caused by the sudden shift to remote learning. The sandwich method relies on a structured and predictable schedule of in-person and online classes. The abrupt transition to full-time online learning may have disrupted the rhythm of these students, leading to challenges in adapting to the new mode of instruction.

Satisfaction Level of Online Teaching

Sandwich students are happy with online learning, the survey claims. However, they are unable to buy internet bundles or data for online education, and they have trouble with slow internet connections. These outcomes support the findings of Loton et al. (2020), who discovered that students' performance and level of satisfaction with online teaching and learning were significantly impacted by the COVID-19 pandemic. Almusharraf and Khahro's (2020) findings, which showed that all participants had high levels of satisfaction with online learning platforms and resources, are also supported by the results. Finally,

students' satisfaction with the quality of online education has significantly improved (Bokayev *et al.*, 2021). This finding underscores the importance of understanding how different learning methods may be more or less resilient in the face of unexpected disruptions, such as a global pandemic. It also highlights the need for targeted support and interventions to address the specific challenges faced by students who follow the sandwich method during times of crisis.

Relationship Between COVID-19 Effect on Academic Performance and Satisfaction Level of Online Teaching

The impact of COVID-19 on academic success and the level of satisfaction with online education was shown to be insignificantly associated. According to the study, students' high level of online enjoyment had no bearing on the negative impact COVID-19 had on their academic performance. The findings support the findings of Chen *et al.* (2020), who found that the most significant factor influencing students' satisfaction levels was the availability of online applications, whereas personal traits had no discernible impact on students' happiness. In the end, it has become evident that there are different levels of pleasure; several studies conducted during the COVID-19 epidemic showed that students were extremely happy with their online education (Naziya & Khan, 2020). It is worth considering that the quality of online education can vary significantly, and individual experiences may differ based on factors such as the institution's preparedness for remote learning, the effectiveness of online teaching methods, and the availability of technological resources. The finding of an insignificant association could imply that, even in instances where online education was the primary mode of instruction, the overall satisfaction with the learning experience did not necessarily correlate with academic outcomes.

Conclusions and Recommendations

The study draws the following conclusions in light of the findings. The majority of global institutions, including those in economics, industry, religion, and education, have been affected as a result of the global epidemic known as COVID-19. The effect of the COVID-19 programmes on learning among sandwich students at the Institute of Education, UCC, was investigated in this study. It was discovered that the epidemic had harmed their learning since many of them were not accustomed to learning efficiently on their own. The revelation that the epidemic negatively impacted students' learning by highlighting their unfamiliarity with efficient independent learning sheds light on a broader concern for the overall well-being of students. The challenges posed by the pandemic not only hindered academic progress but also underscored the potential strain on the mental and emotional health of students, emphasising the importance of holistic support systems to address both the educational and well-being needs of individuals navigating unprecedented disruptions to traditional learning environments.

The majority of Ghanaian students found the recently deployed e-learning platforms difficult because of their limited internet connection and inexperience using these technological devices. The lighter planning activities must be given equal weight with the more difficult ones that would restrict the Ministry's and Universities' ability to offer education. Now that the effects on the educational system itself are being more widely acknowledged, the activity schedule also has to account for how the demand for education will be affected and how the Ministry will be able to provide this need. The majority of Ghanaian students encountering difficulties with recently deployed e-learning platforms due to limited internet connectivity and unfamiliarity with technological devices underscores a critical link to their overall well-being. The frustration and challenges posed by these technological barriers not only impede academic progress but also contribute to heightened stress and anxiety among students. Addressing these disparities is essential not only for educational equity but also for promoting the mental and emotional well-being of students, recognising the integral connection between accessible technology and a positive learning environment.

Universities, the Ministry of Education, and all other pertinent parties are recommended to provide expert training for online teaching software and devices, Wi-Fi facilities, reasonably priced internet packages, and virtual resources. A course on e-learning platforms and their successful use for instructional practice should be taught to both teachers and students, given the issues our educational system is now experiencing. The results of this study will be very helpful to policymakers in creating a long-term plan to deal with problems that arise for students during frequent breaks from school or in other circumstances. Implementing a course on e-learning platforms for both teachers and students is not only a strategic response to the current challenges in our educational system but also a proactive measure crucial for safeguarding the well-being of students. By equipping educators and learners with the necessary skills and understanding of these technological tools, we not only enhance the academic experience but also alleviate the stress and frustration associated with navigating unfamiliar learning environments. This holistic approach acknowledges the pivotal role of technology in promoting a positive and supportive educational atmosphere, ultimately contributing to the overall well-being of students in the face of evolving educational landscapes.

Limitations

One of this study's weaknesses is the fact that it only included one institution. Similar studies would need to be conducted at other campuses to evaluate the generalisability of the findings. The use of questionnaires was another issue. Some respondents flatly refused to answer the questions, while others reasoned that they would benefit nothing by doing so and continued nevertheless. Finally, we highlight important limitations in the form of selection bias and memory bias (resulting from survey items that required respondents to recall earlier experiences) (caused by voluntary answer collection).

Although measures to decrease the effect, such as orientation and attrition consideration, were taken, these limitations could have hurt the outcomes. One of this study's weaknesses is the fact that it only included one institution. Similar studies would need to be conducted at other campuses to evaluate the generalisability of the findings. The use of questionnaires was another issue. Some respondents flatly refused to answer the questions, while others reasoned that they would benefit nothing by doing so and continued nevertheless. Finally, we highlight important limitations in the form of selection bias and memory bias (resulting from survey items that required respondents to recall earlier experiences) (caused by voluntary answer collection). Although measures to decrease the effect, such as orientation and attrition consideration, were taken, these limitations could have hurt the outcomes.

Declarations

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