

Virtual Learning as A Determinant of Students Academic Performance in University of Ilorin During COVID-19 Pandemic

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Abstract: This study examined the influence of Virtual Learning on the Academic Performance of students in University of Ilorin during COVID-19 pandemic. Descriptive research of the survey type was employed for the study. Random sampling techniques was used to select 200 undergraduates who formed the sample size for the study. The study revealed that: Google Classroom is the most utilized virtual learning platform in the sampled schools during COVID-19 pandemic, virtual learning positively influences students' academic performance during COVID-19 pandemic, students faced challenges while using virtual learning platform for learning during COVID-19 pandemic, there was no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on area of specialization and there was no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on gender. The study concluded that virtual learning was broadly accepted during COVID-19 pandemic. It is recommended that universities should embrace and utilize more of virtual learning platforms.

Keywords: Academic Performance, COVID-19 Pandemic, Determinant and Virtual Learning

INTRODUCTION

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs and habits. Educational methods include teaching, training, storytelling, discussion and direct research. It is important to note that education is the major backbone of any civilization and it is being used as a yardstick to measure the development and growth of any society or nation. It is one of the most important needs for the wellbeing of any individual and his society, that is why it is seen as a social medium and process in the acquisition of relevant knowledge, skills, and attitude for survival in a changing world (Sanni et al., 2017). Education is simply a lifelong continuing activity that comprise the facilitation and acquisition of skills and knowledge (Ibironke et al., 2018). The advancement in technology has greatly improved and transformed all sectors and domains of human life, it has been adopted and used in various sectors from the industrial, business, health sector and even the education sector.

Information and Communication Technology (ICT) is the mode of education that use information and communications technology to support and enhance the delivery of information. ICT can lead to an improved student learning and better teaching methods. ICT includes computers, the internet, and electronic delivery systems such as radios, televisions, and projectors among others, and is widely used in today's education field. ICT also includes computer sets and application software such as spreadsheet, word processing, excel (Valsamidis et al., 2014). Storage media

(memory card, flash drive, scanner, CD-ROMs, audio and video cassettes, films, e-books, magazines), telecommunications gadgets and services such as web-based tools, mobile technologies and a broad spectrum of extent and emerging technologies that are used for processing, storage, presentation, communication and exchange of data and information (Bhukuvhani et al., 2011).

According to the World Health Organization (WHO), coronaviruses are family of viruses that cause illnesses ranging from the common cold to more severe diseases such as severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS). These viruses were originally transmitted from animals to people. SARS was transmitted from civet cats to humans while MERS moved to humans from a type of camel. Several known coronaviruses are circulating in animals that have not yet infected humans. Coronavirus comes from the Latin word corona, meaning crown or halo. Under an electron microscope, it looks like it is surrounded by a solar corona. The novel coronavirus, identified by Chinese authorities on January 7 and since named SARS-CoV-2, is a new strain that had not been previously identified in humans. Although human-to-human transmission has been confirmed (Ajazeera, 2020). Signs of infection include fever, cough, and shortness of breath, and breathing difficulties. In more severe cases, it can lead to pneumonia, multiple organ failure, and even death.

The COVID-19 pandemic has created the largest disruption of education systems in human history, affecting almost every learner especially those in university all over the world. Closures of schools, institutions and other learning spaces have impacted more than 94% of the world's student population. This has brought far-reaching changes in all aspects of our lives. Social distancing and restrictive movement policies have significantly disturbed traditional educational practices. Reopening of schools after relaxation of restriction is another challenge with many new standard operating procedures put in place (UNESCO, 2020). Within a short span of the COVID-19 pandemic, many researchers have shared their works on teaching and learning in different ways. Several schools, colleges and universities have discontinued face-to-face teachings geared by the fear of losing 2020 academic year or even more in the coming future. The need of the hour is to innovate and implement alternative educational system and assessment strategies. The COVID-19 pandemic has provided us with an opportunity to pave the way for introducing digital learning in order to bridge the gap in learning thus the birth of virtual learning during the pandemic.

Virtual learning is a type of learning that happens outside the classroom, with digital-based equipment and the learner's autonomy guaranteed. Invariably the learner does not have face to face contact with either the teacher or peers. The concept of virtual learning could be considered as a dynamic concept due to the constant evolution of digital technologies, to its features and potentialities, and to the importance that such environments have within the learning processes. Educational systems based on the web are being used by an increasing number of universities, schools and companies, not only to incorporate web technology into their courses, but also to complement their traditional face-to-face courses. These systems gather a great quantity of data which is valuable to analyze the course contents and students' use (Valsamidis et al., 2014).

Virtual learning has become imperative in promoting and sustaining educational development globally considering the disruptive effect of the COVID-19 pandemic on traditional learning (Isman, 2011). However, the closure of schools has once again highlighted the huge divide between the educational systems in developed economics compared to developing economies like Nigeria. Nigeria's education system is still largely built around traditional pedagogical learning, which is more focused on the physical learning environment. However, the outbreak of COVID-19 has revealed the inadequacies of this mode of education. Only 11 of the 170 universities in the country operate a distance learning platform while most of the institutions remain poorly equipped. Several schools make use of several tools such as Moodle, Zoom, Telegram, Edmodo, WhatsApp, Google Meet.

The educational sector has witnessed a new exploration geared by the fast-changing society. This is to enable them meet up with the challenges brought by the COVID-19 pandemic which has shook the crannies of the world and every aspect of the economy. Not every student & teacher has a personal gadget to use for online learning. Many of them are supposed to share the laptops

and computers with their parents, sisters/brothers to stay on track. Another problem everyone's faced is a computer crash that usually happens at the most unexpected moment, also millions of people around the world are experiencing technical difficulties because of the high usage rate of online learning systems, video streaming software & other digital tools. The education sector has move from the conventional classroom teaching to virtual learning to bridge the gap created by the COVID-19 pandemic which affected the academic year. Although this innovation is quite impressive but has its limitations as most parents are not able to afford it for their children which impedes their academic performance (Ajazeera, 2020).

Academic performance is unavoidable in any formal educational institution. It is a standard or test for determining the capabilities of a student from which his ability could be inferred (Joe et al., 2014). Joe et al. (2014) further stated that academic performance is the observed and measured aspect of a student's mastery skill or subject content. The academic performance of students in most universities has become an object of inquiry of researches nowadays. It has become a top priority among educators who have vowed to make a difference locally, regionally, nationally and globally. Such education, trainers and researchers have long been interested in exploring variables which significantly contribute to the performance of learners. These variables are both external and internal. Internal factors are mostly student-related while external factors contributed to the external environment of students that are beyond their control. The former includes personal conditions and study habits while the latter include home-related factors, school-related and teacher-related factors (Alshammari et al., 2018).

Statement of the Problem

Virtual education starts its life as an innovation to provide education access beyond the campus walls. It is the system of linked computer terminals where students could access course materials as well as listen to recorded lectures. Virtual education has grown rapidly and globally in the past few years with diversified online courses at all levels including K-12, colleges, universities and lifelong learning institutions. The concept of virtual learning could be considered as a dynamic concept due to the constant evolution of digital technologies, to its features and potentialities, and to the importance that such environments have within the learning processes (Valsamidis et al., 2017).

The COVID-19 pandemic has caused a massive disruption in the way traditional higher education institutions deliver their courses. Unlike transitions from face-to-face teaching to blended, online or flipped classroom in the past, changes in emergency remote teaching, a temporary shift of instructional delivery to an alternate remote delivery mode due to crisis circumstances happen suddenly and in an unplanned way (Iglesias-Pradas et al., 2021). Thus, gaining an understanding of virtual learning and COVID-19 which will dramatically reshape the way global education is delivered. Olatunde & Ogunode (2021) examined how millions of learners have been affected by educational institution closures due to the pandemic, which resulted in the largest online movement in the history of education. However, with this sudden shift away from classrooms in many parts of the globe, universities had to rapidly shift to virtual and digital strategies. Many believe that the adoption of online distance learning will persist after pandemic. A new hybrid model of education is expected to emerge, and, given the digital divide, new shifts in education approaches could widen equality gaps. Therefore, it is germane to gain an insight into the influence of virtual learning on academic performance of students in University of Ilorin during COVID-19 pandemic.

This study provided answers to the following research questions: (i) what the virtual learning platforms are available for learning during COVID-19 pandemic; (ii) what is the influence of virtual learning on students' academic performance during COVID-19 pandemic; and (iii) what are the challenges faced in the use of virtual learning platforms for learning during COVID-19 pandemic. The following hypotheses were tested in this study. H01: There is no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on area of specialization H02: There is no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on gender.

METHOD

The study was a descriptive research of the survey type. Survey was chosen for this study because enabled the researcher to collect information about influence of virtual learning on the academic performance of students in University of Ilorin during COVID-19 pandemic. A researcher-designed questionnaire was used to collect information. The populations for the study was all undergraduates in university of Ilorin, Nigeria. The target population for this study consisted of undergraduates in five faculties in the University of Ilorin, Nigeria which was purposively selected. Random sampling technique was used to draw 200 undergraduates who constituted the sample size for this study (Table 1).

Table 1. List of Selected Faculties in University of Ilorin, Population and the Sample Size

S/N	Faculties	Population	Samples	Percentage (%)
1.	Education	10, 896	101	5.65%
2.	CIS	2,217	21	10.3%
3.	Arts	4563	42	21.21%
4.	Engineering	1,164	11	5.41%
5.	Social science	2,670	25	12.41%
	Total	21,510	200	100.0

A researchers-designed questionnaire titled “Influence of Virtual Learning on the Academic Performance of Students in University of Ilorin during COVID-19 Pandemic” was used to gather relevant data regarding this study. The questionnaire was divided into four sections. Section A consisted of demographic data of the respondents; section B seek the use of virtual learning platform utilized for learning during COVID-19 pandemic. The items in this section was rated on a multiple response mode; section C examined the influence of virtual learning on student’s academic performance during COVID-19 pandemic, the items were rated on a Likert scale response mode of SA=Strongly Agree, A=Agree, D=Disagree, SD= Strongly Disagree; Section D investigated the challenges faced by the students in the use of virtual learning during COVID-19 pandemic, the questionnaire items were rated on a Likert scale of SA=Strongly Agree, A=Agree, D=Disagree, SD= Strongly Disagree.

RESULT AND DISCUSSION

Demographic Information of the Respondent

Table 2 shows that the total number of Students that participated in this study was 200. Out of these 200 Students, 120(60.0%) were male while 80(40.0%) were female. The result from this table shows that male Students participated more than female Students in the study. Figure 1 further presents the distribution in pie chart.

Table 2. Distribution of the Participants Based on Gender

Gender	Frequency	Percentage	Cumulative
Male	120	60.0	60.0
Female	80	40.0	100.0
Total	200	100.0	

Table 3 shows the distribution of the respondents across the sampled faculties. The total number of the Students that participated in this study was 200 of which Education 92(46.0%), Arts 39(19.5%), Engineering 28(14.0%), Social Science 22(11.0%) and Computer Science 19(9.5%) respectively. Figure 2 further presents the distribution in pie chart.

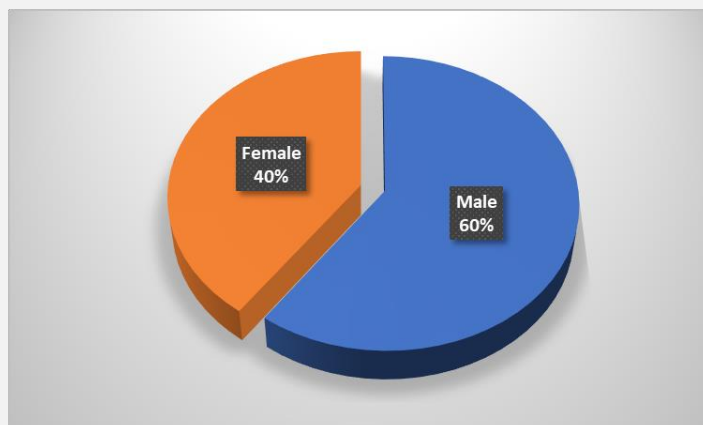


Figure 1. Distribution of the Participants Based on Gender

Table 3. Distribution of the Participants Based on Area of Specialization

Specialization	Frequency	Percentage	Cumulative
Education	92	46.0	46.0
Arts	39	19.5	65.5
Engineering	28	14.0	79.5
Social Science	22	11.0	90.5
Computer Science	19	9.5	100.0
Total	200	100.0	

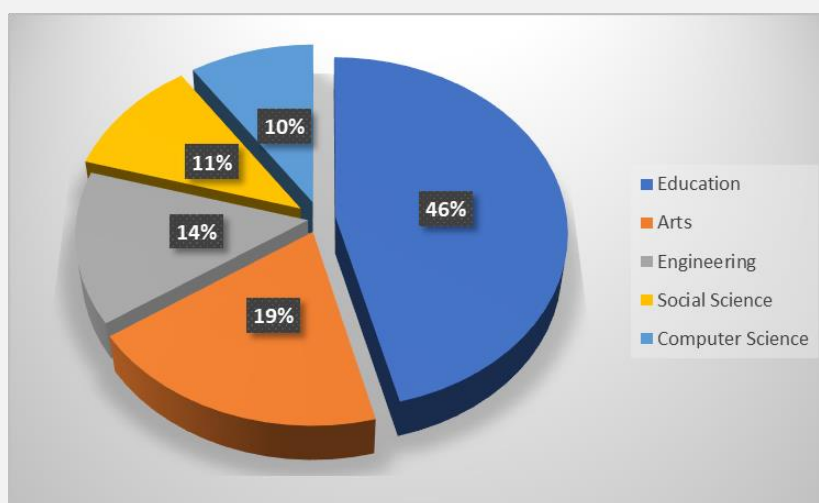


Figure 2. Distribution of the Participants Based on Area of Specialization

Virtual Learning Platforms Utilized During COVID-19

Table 4 shows the frequency and the percentage of the number of virtual classroom platforms utilized for learning during COVID-19 pandemic. It can be deduced from Table 4 that Google Classroom 169(20.3%) has the highest frequency follow by Zoom 166(20.0%), Edmodo 137(16.5%), Google Meet 134(16.1%), Microsoft Teams 119(14.3%) and Moodle 107(12.9%) respectively. Therefore, it can be inferred that that Google Classroom is the most utilized virtual learning platform used for learning by the students during COVID-19 pandemic. Figure 3 further presents the result in pie chart.

Table 4. Frequency and Percentage of Virtual Learning Platforms Utilized for Learning during COVID-19 Pandemic

S/No	Items	Frequency	Percentage
1.	Google Classroom	169	20.3%
2.	Zoom	166	20.0%
3.	Edmodo	137	16.5%
4.	Google Meet	134	16.1%
5.	Microsoft Teams	119	14.3%
6.	Moodle	107	12.9%

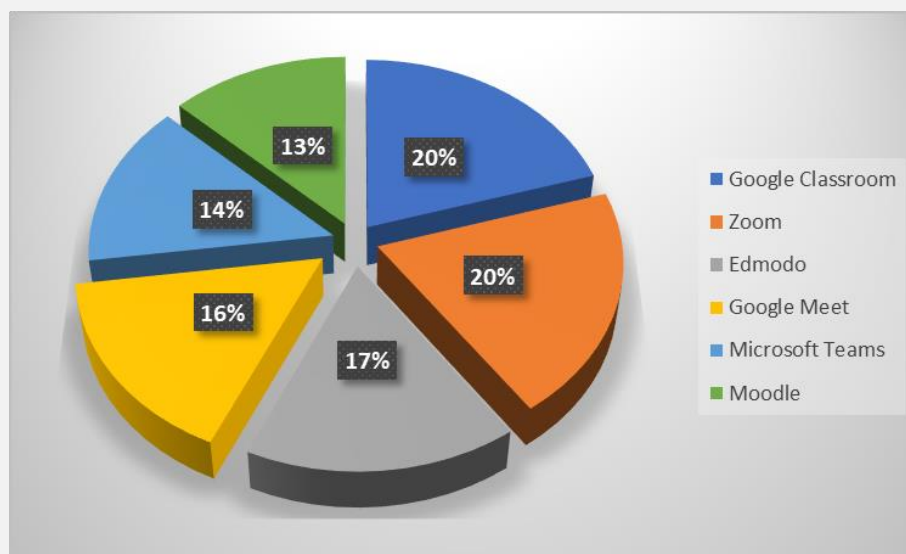


Figure 3. Percentage of VLP Utilized during COVID-19 Pandemic

Influence of Virtual Learning on Students' Academic Performance During the COVID-19 Pandemic

Table 5 shows the influence of virtual learning on students' academic performance during COVID-19 pandemic. The level of which the students agreed to the items on the Table 5 is as follows: Virtual learning fosters my understanding than traditional method of learning ($\bar{x} = 3.60$), I performed better in my academics when I used virtual learning platforms ($\bar{x} = 3.35$), I utilize virtual learning during the pandemic which helps to acknowledge that learning can take place and well understood despite geopolitical barrier ($\bar{x} = 3.23$), With the use of virtual learning platforms, I could learn at my own pace ($\bar{x} = 3.25$), I utilized virtual learning platform for the purpose of learning only without technical problem ($\bar{x} = 3.53$), Virtual learning helps to improve my problem-solving skill which influenced my academic performance ($\bar{x} = 3.10$), I comprehended very fast when using virtual learning platform for learning during COVID-19 pandemic ($\bar{x} = 3.28$), I find it easy to do my assignment with the use of virtual learning platforms ($\bar{x} = 3.26$), Virtual learning promotes personalized and better learning outcome ($\bar{x} = 3.25$), Virtual learning platform lessons can be explored anywhere and this enhances my learning during the pandemic ($\bar{x} = 3.13$), Using virtual learning platform has aided my online presence and greatly improved my academic performance ($\bar{x} = 3.20$).

Using virtual learning platform has enlightened me about the use of information technology for learning ($\bar{x} = 3.24$), I utilized virtual learning platform during COVID-19 pandemic to share ideas with my mates so as to be updated and conversant with my studies ($\bar{x} = 3.20$), Virtual learning platform serves as a way out to gain knowledge during COVID-19 pandemic ($\bar{x} = 3.18$) and using virtual learning can be very interesting, effective, and efficient and as well influence my academic performance ($\bar{x} = 3.26$). Meanwhile based on the value of the Grand Mean (3.27 out of

4.00 maximum value obtainable) which falls within the decision value for *positive*, it can be inferred that the influence of virtual learning on students' academic performance during COVID-19 pandemic is positive. Therefore, virtual learning positively influences students' academic performance during COVID-19 pandemic.

Table 5. Frequency and Mean Score on Influence of Virtual Learning on Students' Academic Performance during COVID-19 Pandemic

S/N	Item	SA	A	D	SD	Mean
1.	Virtual learning fosters my understanding than traditional method of learning	141	45	6	8	3.60
2.	I performed better in my academics when I used virtual learning platforms	86	101	9	4	3.35
3.	I utilize virtual learning during the pandemic which helps to acknowledge that learning can take place and well understood despite geopolitical barrier	77	94	26	3	3.23
4.	With the use of virtual learning platforms, I could learn at my own pace	75	105	14	6	3.25
5.	I utilized virtual learning platform for the purpose of learning only without technical problem	118	74	3	5	3.53
6.	Virtual leaning helps to improve my problem-solving skill which influenced my academic performance	72	96	11	21	3.10
7.	I comprehended very fast when using virtual learning platform for learning during COVID-19 pandemic	84	89	25	2	3.28
8.	I find it easy to do my assignment with the use of virtual learning platforms	74	104	21	1	3.26
9.	Virtual learning promotes personalized and better learning outcome	79	97	19	5	3.25
10.	Virtual learning platform lessons can be explored anywhere, and this enhances my learning during the pandemic	67	94	36	3	3.13
11.	Using virtual learning platform has aided my online presence and greatly improved my academic performance	78	93	20	9	3.20
12.	Using virtual learning platform has enlightened me about the use of information technology for learning	18	92	21	6	3.24
13.	I utilized virtual learning platform during COVID-19 pandemic to share ideas with my mates so as to be updated and conversant with my studies	72	99	26	3	3.20
14.	Virtual learning platform serves as a way out to gain knowledge during COVID-19 pandemic	75	93	24	8	3.18
15.	Using virtual learning can be very interesting, effective, efficient and as well influence my academic performance	85	87	22	6	3.26
Grand Mean (X)						3.27

Key: SD = Strongly Disagree, D= Disagree, A = Agree, SA = Strongly Agree
Decision Value: *Negative*=0.00-2.44, *Positive* = 2.45-4.00

Challenges Faced by Students Using Virtual Learning Platforms During the COVID-19 Pandemic

Table 6 shows the challenges faced by the students while using virtual learning platform during COVID-19 pandemic. The extent to which the students agreed to the listed challenges is as follow: Learning became stressful and much tedious when learning virtually during the pandemic ($\bar{x} = 2.62$), I needed experts to put me through while using virtual learning platform during COVID-19 pandemic ($\bar{x} = 2.45$), Technicians were needed in order to set the online platform for

learning ($\bar{x} = 2.46$), It was very hard to communicate easily with teachers while learning virtually during COVID-19 pandemic ($\bar{x} = 2.52$), There was always a network problem while attempting to learn virtually during COVID-19 pandemic ($\bar{x} = 2.66$), I lost focus using virtual learning platform unlike traditional learning ($\bar{x} = 2.45$).

Virtual learning platform was hard to navigate ($\bar{x} = 2.44$), Virtual learning platform was not user friendly, hereby, dangerous to my comprehension ($\bar{x} = 2.33$), I lack comprehension in virtual learning unlike physically present class ($\bar{x} = 2.31$) and it was always teacher centered during virtual learning and this was a detriment to my learning ($\bar{x} = 2.34$) respectively. Meanwhile based on the value of the Grand Mean (2.46 out of 4.00 maximum values obtainable) which falls, within the decision value for *positive*, it can be inferred that the students faced challenges while using virtual learning platform during COVID-19 pandemic.

Table 6. Frequency and Mean Score of the Challenges Faced by the Students while Using Virtual Learning Platform during COVID-19 Pandemic

S/N	Item	SA	A	D	SD	Mean
1.	Learning became stressful and much tedious when learning virtually during the pandemic	56	45	66	33	2.62
2.	I needed experts to put me through while using virtual learning platform during COVID-19 pandemic	31	74	48	47	2.45
3.	Technicians were needed in order to set the online platform for learning	32	72	51	45	2.46
4.	It was very hard to communicate easily with teachers while learning virtually during COVID-19 pandemic	40	64	56	40	2.52
5.	There was always a network problem while attempting to learn virtually during COVID-19 pandemic	50	67	48	35	2.66
6.	I lost focus using virtual learning platform unlike traditional learning	39	51	71	39	2.45
7.	Virtual learning platform was hard to navigate	43	48	62	47	2.44
8.	Virtual learning platform was not user friendly, hereby, dangerous to my comprehension	37	44	67	52	2.33
9.	I lack comprehension in virtual learning unlike physically present class	33	49	64	54	2.31
10.	It was always teacher centered during virtual learning and this was a detriment to my learning	36	50	59	55	2.34
Grand Mean (X)						2.46

Key: SD = Strongly Disagree, D= Disagree, A = Agree, SA = Strongly Agree
Decision Value: *Negative*=0.00-2.44, *Positive* = 2.45-4.00

Hypotheses

Hypothesis One: There is no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on area of specialization.

Table 7. The ANOVA of Virtual Learning and Student's Academic Performance during COVID-19 Pandemic Based on Area of Specialization

Sources of Variance	Sum of Squares	Df	Mean Square	F	Sig.	Remark
Between Groups	38.48	4	9.62	.40	.81	Not Rejected
Within Groups	4692.52	195	24.06			
Total	4731.00	199				

Table 7 reveals that no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on area of specialization due to $\{F(4,195) = .40, p = .81\}$. The result shows that the p value .809 is greater than the Alpha value .05. Thus,

the null hypothesis is not rejected. Therefore, there is no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on area of specialization.

Hypothesis Two: There is no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on gender

Table 8. t-test Showing Significant Difference Between Virtual Learning and Student's Academic Performance During COVID-19 Pandemic based on Gender

Gender	N	X	SD	Df	t	Sig.(2-tailed)	Decision
Male	120	49.37	5.38	198	1.29	.20	Not rejected
Female	80	48.46	3.97				
Total	200						

Table 8 indicates that df (198), $t = 1.29$, $p = .20$. This means that the null hypothesis was not rejected. This was as a result of the t-value of 1.29 resulting in .20 significance value which was greater than 0.05 alpha value. Thus, the stated null hypothesis was established: There was no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on gender. In addition, female students had a mean score greater than male students' virtual learning and academic performance during COVID-19 pandemic.

Discussion

This study investigated the influence of virtual learning on the academic performance of students in University of Ilorin during COVID-19 pandemic. The discussion of this study was based on the findings of the research questions and stated hypotheses. In simplest form, virtual learning generally refers to instruction in a learning environment where teacher and student are separated by time or space, or both. Generally, virtual education starts its life as an innovation to provide education access beyond the campus walls.

Google Classroom is deduced has the virtual learning platform with the highest frequency utilized during COVID-19 pandemic. [Froment et al. \(2017\)](#) supported this study by stating that teachers and students should actively use virtual learning platforms for better learning experiences. [Chang & Fang \(2020\)](#) also concluded that virtual learning platforms provides web-based environment that allows you to participate in live training events without the need to travel. [Aduba & Mayowa-Adebara \(2020\)](#) in their research goes against this finding by stating that WhatsApp is the most utilized virtual learning platform during COVID-19 pandemic.

It is observed that virtual learning positively influences students' academic performance during COVID-19 pandemic. This view aligned with [Chakraborty & Nafukho \(2014\)](#) who concluded that the use of virtual learning results to students' proper engagement, including behavioral, emotional and psychological engagement, which is central to effective learning, student success and welfare. [Isman \(2015\)](#) also made it clear that virtual learning fosters understanding than traditional method of learning and there is a two-way communication between teacher and student as well. Through this communication process, students have active role in distance education compared to traditional classroom environment.

It is also observed that students faced challenges while using virtual learning platform for learning during COVID-19 pandemic. This supported the earlier findings of [Aboagye et al. \(2020\)](#) where the scholar stated that moving from conventional classroom and face-to-face learning to computer-based training in a virtual classroom makes the learning process radically different. [Iglesias-Pradas et al. \(2021\)](#) also reported technical problems that might occur during virtual learning activities that required more data transmission than the regular amount, with loss of connection or delay and decrease of fluency.

The study revealed that there was no significant difference between virtual learning and student's academic performance during COVID-19 based on area of specialization which goes against the findings of Howard (2020) who opined that areas of specialization will affect students' usage and performance. He also concluded that a competent teacher that is qualified in a given field of study will demonstrate effective knowledge in the content area. There was no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on gender. However, Empirical studies from Agbatogun (2010) reported that educators, regardless of gender, use ICT tools for private or educational purposes.

CONCLUSION

The result obtained from data gathered and analyzed in this study indicated Virtual learning has been invested into to substitute for the face-to-face learning. It concluded that there was no significant difference between virtual learning and student's academic performance during COVID-19 pandemic based on gender. The study also concluded that virtual learning positively influences students' academic performance during COVID-19 pandemic. Recommended among others was that universities should make the use of virtual learning platforms mandatory as well as make it mandatory for all lecturers to be proficient at both creating and adopting virtual learning that are well-suited to the needs of learning.

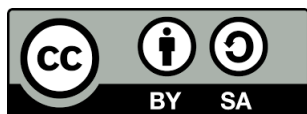
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