



University Students' Experiences and Participation in Using Online Teaching and Learning at a Zimbabwean State University

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Abstract: The fact that even well before the onset of the COVID-19 pandemic online teaching and learning approaches to modern students' education and training programs were already being used in some countries cannot be denied. This mixed methods research study sought to explore university students' experiences and participation in online teaching and learning after the Covid-19 pandemic. Thirty (n=30) conveniently sampled first year students who were using online teaching and learning completed a structured questionnaire to indicate the approximate amount of time they spent on the internet each week, while 10 of them participated in semi-structured interviews. Students expressed an admixture of experiences with using online teaching and learning pedagogies ranging from independent learning, cost-cutting advantages, improved use of ICT for teaching and learning to estrangement from using the unfamiliar technology, lack of resources, poor internet connectivity and difficulties in learning concepts in some subjects. Findings of this study also revealed a situation in which students indicated negligible participation in the use of internet facilities; the bedrock of online pedagogies. Recommendations were made for universities to: 1. rethink strategies and policies for enhancing more sustainable adoption and institutionalisation of the online teaching and learning pedagogies. 2. Establish strategies for subsidizing students' connectivity costs 3. Establish strategies for improvement of online infrastructural facilities and 4. Facilitate the availability of online hardware devices to students, such as smartphones.

Keywords: online teaching and learning, Students; internet, Digital technology, Pedagogies

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1. Introduction

Rapid technological advancements by way of ICT have ushered in digital technology as a well-entrenched online mode of teaching and learning, representing a decisive reconfiguration of the andragogical / pedagogical landscape in universities, worldwide. Amplified by the advent of COVID-19 which dramatically disrupted teaching and learning in almost all educational institutions across the globe, thereby inevitably replacing, and/or complementing the traditional, face-to-face pedagogies, the online mode of instruction has since evolved into a new, 21st century normal for the effective facilitation of distance, off-campus student teaching and

learning. As an integral stride towards the much-desired Fourth Industrial Revolution, which incorporates the use of advanced digital technologies such as artificial intelligence, robots and 3D printing and internet of things in the field of education (Chimbunde and Jakachira, 2024), online educational technologies. constitute a crucial springboard for propelling towards this grant trajectory. For this reason, the availability of hardware devices such as computers, tablets and smartphones along with a solid internet connectivity infrastructure has a bearing on students' experiences with the use of the remote teaching and learning modality. While most developed countries have registered considerable success in adopting and implementing fully fledged online degree programmes with the emergence of what Getenet,

Cantle, Redmond and Albion (2024) allude to as Massive Open Online Courses (MOOC), along with most Third World and Sub-Saharan African nations some of these countries have had a fair share of challenges. Getenet, *et al.* (2024) point out drawbacks which hamstring online programs in countries such as Australia, namely, network instability, technological constraints, presence of distraction and lack of engagement.

In most Sub-Saharan African countries such as Zimbabwe, most educational institutions continue to struggle with the adoption and use of digital and online instructional strategies as a result of several factors. In a study involving e-marking of students at a Zimbabwean university, Ngara (2024) found out that students lacked resources such as personal smartphones and student technological phobia. Margaret, Hebert and Joseph (2024) pinpoint limited availability of the internet as a huge challenge that is confronting university students in under-resourced settings, yet this resource forms the fundamental bedrock on which online teaching and learning is anchored. In the same vein, Chaleka (2025) also avers that many sub-Saharan African university students' participation in online teaching-learning mode is hamstrung by unreliable internet connectivity, high data costs, inadequate resources and lack of knowledge and skills in ICT usage. What arises as an extant but important area of interest in this limited study is that while several studies have paid ample attention to the importance of software learning platforms, namely, Google Class, Zoom, WhatsApp and many other associated digital devices (Dabbang, Tiking and Fadare, 2024), there is a dearth of research-based evidence to get a rough glimpse of the extent of student participation in using the most fundamental online device, the internet. Albeit the very scant literature available on the subject, approximating how much time university students spend on the internet engaging in learning activities can, though in a small way in this study, partly shed some light on how they generally experience this pedagogy.

1.1 The problem statement

Inasmuch as the university administration has mandated students to embrace and use online teaching and learning, there are symptoms of students' hesitation to use this pedagogy. Little is known about how students are experiencing and participating in their academic work using this relatively new pedagogy. The author became curious to explore positive and negative experiences that students encountered as they adopted and used the relatively new instructional innovation, as well as glean a cursory hint of their participation in using it. Key questions that motivate this study are thus 1. What are some of the positive and negative experiences that students encounter as they use online teaching and learning? 2. How much time do they spend in accessing and using the internet for their studies?

2. Literature Review

2.1 Online teaching and learning, and what it entails for students

That on a global scale, online teaching and learning modes have become the staple instructional tool in most universities for both the blended and exclusively distance learning approaches, has already been acknowledged. According to Rueda, Cerero, Cerero and Meneses (2024) online learning, also known as e-learning or virtual learning, which refers to the use of the internet to give instructions to distant, off-campus learners, is delivered virtually through computers, smartphones and tablets. Although Rueda, *et al.*, (2024) laud the online educational modality for its ability to allow learners to access educational resources and content from anywhere and at any time, this relatively new educational technology has implications to students regarding the manner in which they have to adopt and use it effectively. Arifin, Annizar, Khusnuridlo, Soebahar, and Yudiyawan (2025) further explain that online education employs technology and social media to deliver content and comprehensive learning experiences to students and that in practice requires internet network. In essence, what the online mode entails for both university students and lecturers is that they must have the necessary resources by way of computers, smartphones and tablets, regular internet connectivity and most importantly, the functional digital and literacy skills by means of which to utilise the mode. Since students must use synchronous interactions that enable them to engage in real-time lessons through video conferencing, as well as asynchronous facility for them to access instructional packages sent by lecturers, they must possess the necessary gadgets and associated digital literacy skills.

2.2 Key variables that play out on students' use of and experiences with online teaching and learning pedagogies

In this study, a more comprehensive understanding of students' online learning experiences plausibly summons a brief review of some key variables that play out on their use of and participation in online-based education. The primacy of variables emanating from within the student himself/herself (endogenous) cannot be overemphasised. Endogenous factors such as a student's attitudes towards school work in general and digital technology in particular (Abildina, Sardarova, Ozgambayeva, Janzakova, Kalykbayeva, Bitikova, Abdol, 2023), a sense of confidence and the possession of digital literacy skills for operational proficiency when using online for studies are key determinants of students' utilisation of the online mode.

Regarding factors exogenous to students, studies have indicated that while availability of digital technology, infrastructure, sustainable internet connectivity and

funding tends to motivate students to use digital technology, inadequate or non-availability of the resources has often caused frustration among university students (Sahoo, Jaldhari, Kushwa, Rout and Odame, 2025). Charisma, Winarto, Raman and Jahni (2025) contend that university students can experience a sense of achievement through well designed and organised instructional online materials. These authors further underscore the importance of university provision of students with adequate institutional support in forms of subsidising connectivity costs.

2.3 Some positive experiences of online teaching and learning

According to Zhonggen (2021), long before COVID-19, most countries of the world especially the developed ones had experienced many benefits of using e-learning devices online, to facilitate teaching and learning of students through distance learning. Jarrah, Alghazo and Alhawamdeh (2025) also note that research studies attest to the fact that some of the benefits of online teaching and learning have served as positive experiences that students enjoy, which include increased ability to participate in distance learning arrangements and easy access of learning materials. In a study of Chinese university students, Castulo (2025) identified a positive experience of increased acquisition of e-learning and ICT usage skills and confidence in use of the modern technology when learning. Pointing out some of the positive experiences that students in higher learning institution have accepted, Masezerano, Sumbiri and Ngugi (2025) say that many students who embraced online learning have acknowledged the positive benefits of drawing the students to access and extraction of important knowledge and information from ICT devices, collaboration learning opportunities from a distance and peer discussions and engagement from a distance.

Jarrah, Alghazo and Alhawamdeh (2025) observe that most students have often expressed a sense of satisfaction and enjoyment when taught using synchronous interactive devices such as Zoom since these real-time modes approximate to face-to-face teaching and learning. In this vein, a study conducted by Teane (2024) in a South African university revealed that some students experienced the positive feeling to the effect that online learning increased their familiarity with the e-learning technologies and improved general literary skills as well as digital skills. Furthermore, when students used the online devices they reported a sense of independent learning and control over their learning programmes, where they enjoyed working in a homely environment but being able to do their work even in the absence of tutors (Haarala-Muhonen, Asikainen, Katajavuori, Kinunen, Rupatti-Torniainen and Tuononen, 2025; Masezerano et al., 2025). Further amplifying the benefits from which positive experiences in students accrued is the flexibility of academic participation in a decongested physical environment

mentioned by Ghanaian university students in Sarpong's (2023) study.

2.4 Some challenges that confronted students in higher learning institutions as they used online teaching and learning

Research evidence attests to the fact that being a relatively new and unfamiliar mode of teaching and learning to most students across the world, online devices have posed a fair share of negative experiences among most students. According to Zhonggen (2021), despite the numerous benefits that students accrue from using online learning in education, many students face several challenges. Numerous scholars cite the major challenge students confront when using online teaching-learning as a lack of access to and possession of the technological tools such as computers, webcam high-speed internet and many others (Arifin, et al, 2025; Ngara, 2024; Masezerano, et al., 2025; Fadal, Sidhu, and Hilaludin, 2026; Ohazumike, 2026). In the same vein, most students' continued engagement with their studies has been reportedly compromised. Margaret, Herbert and Joseph (2025) cited poor internet connectivity as a major challenge which confront students as they use online teaching – learning modes. In a study involving universities in Botswana, South Africa and Zambia, Mphahlele *et al's* (2021) found out that students confronted the challenge poor mastery of certain concepts in their studies due to failure to enter into virtual meetings and the high costs to sustain the lecture period. Of interest to note is that even in developed nations such as China, university students for example face the major challenge of inability to afford video-streaming equipment (Zhang, Zhu, Chen and Ma, 2024). A study conducted at an Indonesian university by Rido, Kuswoyo, Madasari and Prakoso (2024) revealed that most students from marginalised families suffer a lack of the technological and financial resources to sustain their participation in online learning through both synchronous and asynchronous modes. In addition, a lack of experience, knowledge and skills in using online teaching – learning facilities posed as a common challenge for university and college students in Iraqi universities (Fadal, et al., 2026). These two authors further cited students' complaints about high costs and access to the internet as serious impediments to regular participation, including power outages that usually disrupt scheduled online teaching – learning sessions with their lecturers.

Maune (2023) observes that some of Zimbabwe's university students still lack mobile phones with efficient internet access applications, as well as computers. Underprivileged students in remote rural settings where there is no electricity cannot get online.

Given the afore mentioned challenges, it can be argued that since online teaching and learning still remains enigmatic for most higher education institution students, especially in Sub Saharan African nations including

Zimbabwe, the need for policy makers and educational leaders to support this new innovation cannot be underestimated. In this study, it remains to be seen which major challenges students at the state university confronted as they used online in their studies.

2.5 Students' use of online devices and amount spent on the internet for academic purposes

In the digital technology ecosystem, the use of the internet-based devices for information has been documented as a complex matter, granted the fact that the youth use these devices for various purposes. Interestingly, while scholars have documented university students' overuse of and addiction to internet usage in a South African university, suggesting ample availability of the resource (Nelson Mandela University, 2023). An antidote to this observation are findings of a study Karofi, Muhammad, and Usmann (2025) conducted in a Nigerian Higher Learning institution involving 250 students which revealed that for exclusively academic purposes, 12% indicated that they spent less than an hour per day, 78%; 1 to 2hrs/day; 9.3%; 3 to 4 hours/day and 0.8%- 3 to 4 hrs per day. The AI considers the standard time that students in universities should spend on internet for exclusively study purposes as 5 to 10 hours per week.

3. Methodology

Situated within the pragmatic research paradigm, this study employed the mixed methods research approach in which the predominantly qualitative design was complemented with quantitative data to enhance a more comprehensive picture of the problem (George, 2021; Creswell and Creswell, 2023). The study adopted concurrent/convergent design in order to corroborate results from the two methodologies (Creswell and Creswell, 2023) and get in-depth insights and perceptions concerning positive and negative experiences that the student teachers encountered. A sample of thirty (n=30) first year students who were using online learning were selected using the convenience sampling technique, granted the ready availability of participants with the characteristics that were appropriate for this study (Shukla, 2023) and the recommended minimum sample size of thirty (Budiu and Moran, 2025). The researcher hand-posted the questionnaire to participants and asked them to complete a structured questionnaire to indicate the amount of time that they approximately spent on the internet exclusively for study purposes. From the 30 participants who completed the questionnaire, 10 participants were randomly selected and asked to participate in semi-structured interviews. Through informed consent, the researcher asked participants for permission to audiotape the interviews. The researcher observed ethical research principles of anonymity by ensuring non-identification of the participants, confidentiality by assuring participants of non-disclosure of the information that

they supplied for any purposes other than the study (Creswell and Creswell, 2023).

Analysis of qualitative data assumed the thematic analysis method which involved open coding, axial coding and distillation of the textual data into themes (Creswell and Creswell, 2023) and narrative presentation, while quantitative data involved manual computation of the median strategy of using quartiles using in order to summarise the central tendency (Turney, 2022) of the students' responses and attain ease of approximation of amount of time that they spent on the internet per week.

4. Results and Discussion

To address the research question on students positive and negative experiences from using online teaching and learning data from interviews are presented thematically.

4.1 Improved use of ICT devices for learning

Students reported the positive experience of improving knowledge and skills in using ICT devices since they have no option if at all they are to continue with their learning during online sessions of the 10 interviewed participants, 6 of them cited the benefit of gaining of more knowledge and skills to use IT devices such as laptops, smartphones and internet. Two of the students also expressed satisfaction from using internet based online devices such as Zoom and Google Class as well as WhatsApp to communicate with fellow students. They further cited the key benefit of being compelled to practice using these ICT gadgets since they needed to complete and post assignments from lecturers. One participant had this to say:

I personally felt bad during the early days of using online teaching and learning but as time went on, I realized that I just had to learn and know how to use IT devices and to use ICT for learning as a whole. The demand for us to seek assistance from my relatives and friends on how to type assignments browse for information and complete my assignments and post them on internet to my lecturer.

Another student said that the positive experience of practising typing, downloading information from the internet, interacting with lectures and other students on WhatsApp was a rude awakening. He said:

Before we were asked to learn online, I had very few and rudimentary skills for use in learning but now I am learning the hard way. I was forced to learn how to enter into the Google Class and Zoom meetings for lectures which I really am now able to do.

These findings therefore concur with findings from a study conducted by Teane (2024) which revealed a positive sentiment from some students that online teaching and learning improved their general computer literacy skills and digital skills. The findings also go in agreement with findings from a study of use of online learning by Chinese students reported by Castulo (2025) some of them reported the positive experiences of improvement in their digital competence and improved interests in digital teaching and learning methods. Thus, students' expression of a sense of improvement in using technologies that they previously resisted reflects a promise of progressive changing from negative to positive attitudes, potentially resulting in widespread acceptance of the use of online technology.

4.2 Students enjoyed the advantage of independent learning at the convenience of their home

Data from interviews revealed that most students intimated the benefit of learning independently at the convenience of their homes. While all the 10 students commonly shared this positive experience, a spectacular expression on this point from one student ran thus:

I found it very interesting to learn how to do work on my own without direct contact with my lecturers. I learnt the habit of learning alone at my own pace which is what we as adult students must do. We therefore, took control of our learning.

This finding concurs with Haarala-Muhoneni, Asikainen, Katajavuori, Kinunen, Rupatti-Torniainen and Tuononen, 2025; Masezerano et al., 2025) observation that when students learnt through online modes, they reported a sense of independent learning and control of their studies while at their homes. Regarding the aspect of enjoying the convenience of independently learning at their homes, this finding resonates with Saporng's (2023) findings from a study with Kumasi Technological University students in Ghana who expressed the advantage of the flexibility of online and the decongestion of the usually overcrowded learning halls.

One can therefore argue that such evidence shows that students really sometimes need time to study on their own, a scenario which supports the idea of universities trying to foster student-centered teaching approaches as opposed to standing in front of them and pouring knowledge through reading lectures to them. This suggests that embracing online teaching and learning can go some way in instilling in students the culture of managing their own learning and be in the habit of consummating their own knowledge.

4.3 Students enjoyed cost-cutting advantages.

Interview data unearthed the positive experience that students indicated of the cutting costs. All the students indicated that online teaching and learning cuts the costs associated with travelling to the venue, buying food while at the venue of study and also paying for accommodation. This finding is consonant with Haarala-Muhoneni, (2025) observation that college students enjoy saving costs to travel and stay on the campus where they paid rentals. One can deduce the importance of using close effective teaching-, learning modes such as online in the context of a generally under resourced environment where students in Zimbabwe often decry financial constraints as a major challenge in their education.

Some negative experiences confronting student teachers while using online are thematically presented and discussed below.

4.4 Students felt generally estranged by onset of pedagogy

From interview responses, 5, students indicated that they felt very estranged by being asked to learn through online as they were not familiar with this mode. Two (2) of the participants said that although they believed they possessed considerable skills in ICT, they experienced a sense of discomfort in using online for their studies.

One student said, "I felt disturbed from finding myself suddenly having to study online which situation required me to be more organised. Having to make sure I had to buy data bundles and to meet class at the given times was really stressful."

Interviewed students generally reported intense pressure engendered by online teaching-learning sessions as they demand quick mastery of the online use competencies in a short time. Eight of the 10 interviewed students reported the frustration emanating from missing some lectures due to failing to operate the devices (Fadal, et al., 2026), and sudden cut offs of networks, which situation was exacerbated by what (Ngara, 2024) referred to as technological phobia. Naturally, since teachers and students disdain changes in education and prefer to stick to their old practices, they are likely to resist new innovations. However, with time and practice, they eventually master the innovation.

4.5 Students had inadequate resources for online teaching and learning

Data from interviews pointed to a lack of adequate resources for use in online lectures. The seven (10) interviewed students all shared the challenge of being unable to procure the gadgets such as laptops, loads, smartphones and to have access to ICT. Thus, due to poverty, the students' financial constraints led to their inability to purchase the required e-learning devices. One of the students said that she faced the ripple effects of

inability to afford the costs which included late submission of assignments, delayed downloading of emails and delayed access to study materials that were audio re-winded and posted on Google Class streaming. This finding concurs with Zhang, Zhu, Chen and Ma, (2024) observation that in China many university students could not access video streaming equipment. It is also consonant with findings from a study conducted by Ngara (2024) which found out that many poor Zimbabwean university students lacked resources such as personal smartphones. The finding also resonates with findings from a study that Rido, et al., (2024) conducted at an Indonesian University in which, due to lack of access to technological resources fuelled by financial constraints, many university students could not sustain online participation through synchronous and asynchronous modes.

This again concurs with findings from a survey conducted at a Zimbabwean state university by Maune (2023) which revealed that a majority of Zimbabweans in general and university students in particular did not have mobile phones with internet access, computers and dependable internet connectivity. Similarly, in resonance with this finding is the observation of the challenge of lack of electricity and internet connectivity in rural areas (Margaret, Herbert and Joseph, 2025), which made online teaching and learning a nightmare for rural students.

In the face of the above challenges, it can be implied that while policy demands use of online as a must in practice, if decisive steps to equip students with resources are not taken then e-learning technologies may continue to pose a challenge in Zimbabwe's colleges and universities. It can therefore be interpreted that high costs that the students confronted in the face of a lack of resources and poverty served as an impediment from effective use of online. By implication, while the online teaching-learning mode was reported as a convenient and positive

way of learning from the comfort of students' homes, the challenge of high costs could cause students to continue to take recourse to the face-to-face pedagogy.

4.6 Some students experienced difficulties mastering concepts in some subjects

From the interviews was revealed the data which pointed to the fact that some students did not clearly master and understand concepts in subjects which involved calculations such as Mathematics, Science and ICT. This finding concurs with Mphahlele *et al's* (2021) findings from a study of three universities in South Africa, Botswana and Zambia which revealed poor students' mastery of certain concepts in their studies due to failure to enter into virtual meetings and the high costs to sustain the lecture period. In view of these findings, it can be argued that if students are to embrace online teaching and learning, the variables of institutional support and meticulous design and organisation of teaching and learning materials that Charisma, et al., (2025) view as important in motivating student participation. Come into light. It can be argued that presentation of well-structured instructional teaching and learning materials by lecturers through both synchronous and asynchronous methods could meaningfully enhance understanding of concepts, and more efficient student participation.

In order to address the question on the participation of students in using the internet during online sessions, students ticked their responses in class intervals in Table 1 below to show the approximate amount of time they took using it per week. The author aimed at establishing a cursory hint of the approximate time students spent on the internet as the main online device used in online pedagogies using the quartile median strategy.

Table1: Approximate time students spend on the internet for study purposes (n=30)

Class interval	F	F	Class boundaries
30-39	5	5	29.5-39.5
40-49	3	8	39.5-49.5
50-59	4	12	49.6-59.5
60-69	6	18	59.5-69.5
70-79	3	21	69.5-79.5
80-89	6	27	79.5-89.5
90-99	3	30	89.5-99.5

The data in the Table 1 above shows raw data of the amount of time 30 students spent in minutes on the internet each week.

The first quartile $Q_1 = \left(\frac{1(N)thvalue}{4} \right) = \frac{1(30)}{4} = 7.5$

The cumulative frequency just greater than or equal to 7.5 is 8. The corresponding class, 39.5-49.5 is the first quartile class.

$Q_{1=1+\frac{(1N-F)w}{4}}/f$, where $l = 39.5$, the lower limit of the class, $N = 30$, the number of observations, $f = 3$, frequency of the first quartile class, $F <= 5$, cumulative

frequency of the class previous to first quartile, and $w=10$, class width.

$$Q_1 = l + \frac{(1N-F)w}{4} / f = 39.5 + \frac{(7.5-5)10}{3} = 39.5 + 9.5 + \frac{(2.5)10}{3} = 39.5 + (0.833 \times 10) = 39.5 + 8.33 = 47.83$$

Thus 25% of the students spent less than or equal to 47.83 minutes on the internet each week.

$$\text{The second quartile } Q_2 = \left(\frac{1(N)thvalue}{2} \right) = \frac{1(30)}{2} = 15$$

The cumulative frequency just greater than or equal to 15 is 17. The corresponding class, 59.5- 69.5 is the second quartile class.

$Q_2 = l + \frac{(1N-F)w}{2} / f$, where $l = 59.5$, the lower limit of the class, $N = 30$, the number of observations, $f = 6$, frequency of the second quartile class, $F \leq 11$, cumulative frequency of the class previous to second quartile, and $w=10$, class width.

$$Q_2 = l + \frac{(1N-F)w}{2} / f = 59.5 + \frac{(15-11)10}{6} = 59.5 + \frac{(4)10}{6} = 0.67 \times 10 = 59.5 + 6.7 = 66.2$$

Thus 50% of the students spent less than or equal to 66.2 minutes on the internet each week.

$$\text{The third quartile } Q_3 = \left(\frac{3(N)thvalue}{4} \right) = \frac{3(30)}{4} = 22.5$$

The cumulative frequency just greater than or equal to 22.5 is 26. The corresponding class, 79.5- 89.5 is the third quartile class.

$Q_3 = l + \frac{(3N-F)w}{4} / f$, where $l = 79.5$, the lower limit of the class, $N = 30$, the number of observations, $f = 6$, frequency of the third quartile class, $F \leq 20$, cumulative frequency of the class previous to third quartile, and $w=10$, class width.

$$Q_3 = l + \frac{(3N-F)w}{4} / f = 79.5 + \frac{(22.5-20)10}{6} = 79.5 + \frac{(2.5)10}{6} = 0.42 \times 10 = 79.5 + 4.2 = 83.7$$

Thus 75% of the students spent less than or equal to 83.7 minutes on the internet each week.

The findings above indicate that generally, students spent a negligible amount of time on the internet. Cursory estimates of 25% of the students who spent less than or equal to 47.83 minutes on the internet each week, 50% of the students who spent less than or equal to 66.2 minutes on the internet each week and 75% of the students who spent less than or equal to 83.7 minutes on the internet each week portray a situation whereby on average students spent much less than an hour on the internet per week, in all the quartiles. The finding contradicts with findings of a study Karofi, Muhammad, and Usman (2024) conducted Nigerian Higher Learning Institutions

which a staggering majority (78%) spent 1 to 2 hours per day, 12%, less than an hour per day, and 0.8%, 3 to 4 hours per day. Thus, Nigerian students spend more time than their Zimbabwean counterparts. Although AI suggests that university students should spend on average 5 to 10 hours per week on the internet for study purposes, by comparison, both students in Zimbabwe and Nigeria in these two studies reportedly spent far less than the recommended amount of time. Such evidence, though very limited, provides a glimpse of the challenge of inadequate access to the internet by students in Sub-Saharan countries, highlighted in the foregoing literature. In addition, this finding is confirmed by interview data in which students attributed inadequate access to internet to a general lack of resources such as phones with internet applications and funds to purchase air bundles. Resonating with these findings are findings from a study conducted by Maune (2023) which revealed that university students lacked mobile phones with internet access, computers and dependable internet connectivity, and Rido, et al's (2024) conclusion that many poor university students are hamstrung by a lack of access to technological resources to sustain their participation through synchronous and asynchronous modes.

5. Conclusion and Recommendations

An admixture of the experiences that university students encountered as they used online teaching and learning devices and pedagogies in this study underlines the complex dynamics attendant to adoption of technological innovations that demand mastery of working skills and adequate funding in typical sub-Saharan African countries. While positive experiences reported in this study, such as greater opportunities for diversified learning, cutting of costs and convenience in pursuing studies represent optimism in applying online pedagogies, negative experiences such as paucity of resources have serious implications for universities to strategize support systems for institutionalising this innovation. Similarly, the negligible participation of students in using the internet devices as the bedrock of online pedagogies has implications for improved policy in adopting, supporting and sustaining online modes of teaching and learning for under-resourced university students.

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