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Making Virtual Discussions Engaging, Effective and Equitable: Reflections from Ghana

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ABSTRACT

This study investigated students' engagement and perceptions of virtual discussions in Ghanaian higher education. As courses have increasingly moved online due to the COVID-19 pandemic, understanding how to make virtual discussions effective is crucial. However, little research exists on this topic within the African context. This study aimed to address this gap by exploring student engagement and the challenges and/or benefits of virtual discussions according to Ghanaian university students. A questionnaire was administered to 215 undergraduate students at the University of Cape Coast, Ghana, from various academic programs and levels. The survey included questions on digital equity. Descriptive statistics were used for the quantitative items. Results showed that while students felt comfortable participating in virtual discussions, building relationships and non-verbal communication remained challenging. Face-to-face discussions were preferred due to higher efficiency, though opinions varied on productivity and engagement levels between modes. Ensuring digital access and equity emerged as an important factor. This study provided valuable insights into enhancing virtual discussions in Ghanaian higher education. Strategies are needed to address relationship-building and equity concerns when discussions move online. Further research could explore different pedagogical approaches and under-represented student populations.

INTRODUCTION

Technology development, a rise in the importance of the internet in daily life, and the use of mobile communication technologies have had an immense impact on education over the last few decades. Recognizing the impact of new technologies on the workplace and everyday life, today's educational institutions have tried to restructure their educational programmes and classroom facilities to maximize teaching and learning. This has given rise to an increased use of online learning platforms that has gained so much popularity through e-learning. E-learning can be described in several ways. In the context of this research, it is described as learning processes and interactions between students and teachers that are supported by information and communication technologies (ICTs). Online education is becoming more prevalent as technology advances with over 2.5 million students enrolled exclusively in distance education courses in the US alone in 2018 (National Center for Education Statistics, 2020). The international academic community is aware that e-learning technologies must be incorporated into the educational process for society to transition to the information age. Internet-based instruction is rapidly gaining acceptance as an alternative and a supplement to traditional classroom instruction for management education (Alavi *et al.*, 1997; Rahm & Reed, 1997). It is becoming more popular as the most effective method of teaching and learning, disseminating information and knowledge in institutions of higher learning and organizations (Akaadom, 2021). According to Xu and Xu (2019), almost every U.S. public college has offered online courses. The impact of new ICTs on education is growing steadily. The market for online education is expanding quickly, with yearly growth rates exceeding 50%, according to Impey and Formanek (2021). Online communities can provide students with a variety of chances that are equivalent to in-person interactions and are crucial in collaborative settings. For instance, they can collaborate, share resources, exchange information, and comment on one another's work. Students can benefit from working online as a result (e.g., interaction is not bound to a physical meeting in the same place). Online delivery provides students flexibility and convenience, which 74% of students cited as important in a 2016 survey (Xu & Xu, 2019). Online learning communities can compel students to work cooperatively while learning and gain from sharing resources and ideas but in most circumstances, support for the learning processes is also required. E-learning is often seen as a tool for supplying teaching materials and not for improving teaching methods using interactivity (Jiang & Ting, 2020). In the past, the development of e-learning systems was nearly only technology-centered but currently, we are on the way to more human-centered concepts of using new technologies for business, learning and communication. Online communities can provide students with a variety of chances that are equivalent to in-person interactions and are crucial in collaborative settings.

Do you carry on teaching after a lengthy lecture or do you lead class discussions after each subject? Some teachers have discovered that having class discussions benefits both them and their pupils. In a classroom discussion,

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the teacher and students exchange opinions on certain matters that were previously covered in class. The demand for this knowledge is especially pressing given the increase in courses and programmes moving to hybrid and entirely online formats. Promoting and guiding class discussions can benefit students' ability to learn from one another as well as their comprehension and retention of the lecture. Implementing classroom discussions during a class has many benefits. The advantages include increasing students' interest and engagement; providing the instructor with feedback; promoting preparation; developing students' speaking skills; and controlling the classroom environment.

Students learn best when they are fully engaged in the learning process (Parsons & Taylor, 2011) therefore engagement is an important factor in the successful implementation of e-learning. Trowler *et al.* (2022) define student engagement as the investment of time, effort, and other relevant resources by both students and their institutions intended to optimize the student experience and enhance the learning outcomes; development of students and their performance as well as the institution's reputation. The National Survey of Student Engagement (NSSE) describes engagement as a multi-dimensional construct influenced by both individual and institutional characteristics (Kuh, 2009). In other words, engagement is a function of both a student's intrinsic desire and the extrinsic opportunities provided by the institution to engage with the course content (Axelson & Flick, 2011; Harper & Quaye, 2009). Fundamentally, there are three types of engagement in the classroom which are behavioral, cognitive, and affective (Fredericks *et al.*, 2004). Despite being separate, these three categories are connected.

Behavioral engagement conveys the presence of general "on-task behaviour." This entails effort and persistence along with paying attention, asking questions, seeking help that enables one to accomplish the task at hand, and not disrupting instruction. It is the observable act of students being involved in learning. Cognitive engagement connotes investment aimed at comprehending complex concepts and issues and acquiring difficult skills. It conveys deep (rather than surface-level) processing of information whereby students gain a critical or higher-order understanding of the subject matter and solve challenging problems. Cognitively engaged students often go beyond the requirements because they enjoy being challenged. Affective/Emotional engagement connotes emotional reactions linked to task investment. The greater the student's interest level, enjoyment, positive attitude, positive value held, curiosity, and sense of belonging (and the less anxiety, sadness, stress, and boredom), the greater the affective engagement.

Haywood *et al.* (2004) suggests the differential experience, confidence, or preparedness to participate, in any group, must be considered as a potential source of discrimination and inequity in online environments. Numerous perspectives may shed more light on equity issues in education including culture, age, race, gender, and socioeconomic status (Magnuson *et al.* 2004). Magnuson *et al.* (2004) suggest that it is from examining these diverse perspectives that the developing field of ICT in e-learning will most benefit. Such research can then provide the evidence base to inform the development of e-learning strategies in the educational context (Haywood *et al.* 2004).

Universities and other educational institutions that use e-learning are becoming more diverse, with an increase in international students and a broader range of abilities and backgrounds among local students. Culture is having an increasing impact on both traditional face-to-face classrooms and online virtual classrooms. In a survey by Cole, Shelley, and Swartz (2014), instrument on online instruction was distributed to 2711 Deakin University students in Victoria, Australia. Students were asked to rate their level of confidence and competency in the survey. Students were also quizzed on how they used and participated in discussion boards. The replies were sorted by culture, age, and gender to see if there were any differences in students' perceived levels of confidence and competence. The survey indicated that female students were slightly more positive about their confidence and effectiveness in their use of the e-learning environment than male students. In terms of participation in discussion forums, about 45% of students indicated that they liked posting messages and participating in online discussion forums with 25% saying they disliked it and, 30% indicating that they neither liked nor disliked posting messages and participating in online discussions. Overall, students claimed that they are willing to voice their opinions in discussion forums. Students were asked whether they thought it was valuable to work with students from diverse backgrounds in the e-learning environment. While 81% of the female students agreed or strongly agreed with this statement, only 70.3% of the male students agreed.

According to the United States-based organization the National Digital Inclusion Alliance (2019), digital equity is defined as a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services.

In their 2018 study, Resta *et al.* introduced a comprehensive framework outlining five crucial digital equity dimensions. These dimensions span a spectrum of factors critical to fostering equitable digital access and participation. They include ensuring access to essential elements like hardware, software, and internet connectivity, as well as the availability of meaningful, high-quality, culturally relevant content in local languages. Furthermore, digital equity involves promoting the capacity for creating, sharing, and exchanging digital content, the readiness of educators to effectively employ digital tools and resources, and the availability of high-

quality research to guide the application of digital technologies in enhancing the learning experience. This multidimensional approach underscores the complexity of achieving digital equity and highlights the need for a holistic perspective in addressing this vital issue. As such, digital equity and, inversely, the perpetuation of the digital divide, are significant human rights issues (La Rue, 2011). Equitable learning occurs when every learner belongs, contributes, and flourishes, regardless of race/ethnicity or socioeconomic background. As stated by the OECD (2018, p.9), "Equity does not mean that all students obtain equal education outcomes, but rather that differences in students' outcomes are unrelated to their background or to economic and social circumstances over which students have no control". Challenges arise in the context of online learning that may not be present or are less pronounced in face-to-face learning, but that must be addressed for equitable online learning (Greenhow *et al.*, 2022). Many early equity initiatives focused exclusively on access to physical devices and creating low-cost devices (Mitra, 1999). Sometimes hailed as groundbreaking contributions to equitable access, the actual long-term results of such projects are less clear, with many researchers, educators, and parents concerned that simply allowing children to use devices without supervision, instruction, or educational curriculum was ineffective and wasteful (Warschauer, 2003). Consistent with constructivist approaches that view learning as an internal mental process based on an individual's discovery of external phenomena and support the use of educational technology (Papert, 2020), social inclusion recognizes the numerous resources necessary for full participation.

Empirical evidence on the effectiveness of e-learning has not been concluded (Gambari *et al.*, 2017). For instance, according to Banditvilai (2016), an online practice directly improves the four language learning skills as well as self-directed learning and learner motivation. Mooneyhan (2012) compared the Concepts Fitness Teaching Method using the Internet as an additional teaching tool and discovered no observable differences between the two groups' pre-test and post-test results. In a different study, Kolowich (2009) emphasized the superiority of blended learning in comparison to traditional face-to-face or purely online learning. This research, focused on a local anesthesia course, evaluated students' knowledge acquisition, practical skill performance, and overall satisfaction. Participants were divided into three groups: a face-to-face lecture group, an e-learning group engaging in independent study, and a blended learning group that used e-learning resources to prepare for the lecture. Notably, the blended learning group achieved better results in theoretical knowledge tests compared to the other groups. Additionally, the study found that students highly valued the blended learning approach. These findings underscore the potential benefits of blended learning for improved teaching and learning outcomes.

Cundell and Sheepy (2018) conducted a study at Concordia University in Canada. The study aimed to learn more about effective designs of learning activities in online environments, and it surveyed students in a blended graduate seminar in university teaching. The study found that students preferred online activities that were interactive, authentic, collaborative, and reflective. The study also identified four design features that characterized the most highly rated activities: clear alignment with learning outcomes, scaffolding of deep learning, meaningful feedback, and instructor presence. Despite the perception that sub-Saharan Africa is a poor, underdeveloped region, there is still opportunity for advancement when it comes to the advancement of education, notably through e-learning. It is worth noting that distance learning and the diffusion of information technology have already made inroads within Africa (Betchoo, 2017). Based on 316 replies from 42 different African countries to a survey distributed to individuals on the e-learning Africa database in 2007, a study regarding the status of e-learning in Africa was conducted. These respondents provided a wide variety of information about their e-learning practices. Three main conclusions were drawn; there is a wide variety of different e-learning practices in Africa; e-learning is still very much in its infancy across most places of the continent; and there is much enthusiasm amongst respondents for developing the potential of e-learning in their countries. There were many various ideas offered as to how e-learning may be improved in the nations of respondents. These were some of the most often mentioned: availability of hardware (particularly computers), faster internet connectivity/improved bandwidth, improved software, appropriate policies favoring e-learning, provision of technical support for e-learning at a range of scales, lower prices for connectivity, availability of reliable electricity, appropriate content in appropriate languages, awareness raising about the value of e-learning, improved training for teachers in e-learning at all levels.

Kaliisa and Michelle (2019) presented the results of a review of practice and policy about mobile learning and its potential to enhance inclusive and equitable access to higher education in Africa. Through a review of the academic literature concerning potential barriers, the authors explored the current state of the mobile learning policy environment in 10 African countries. Specifically, the authors analyze how the policies have tried to address the prominent challenges in the adoption of mobile learning as identified in the literature. The authors point to the significant resourcing inequalities in their findings. They argue that epistemological, sociocultural, and institutional barriers remain and affect mobile learning adoption. They reveal that there is still a policy vacuum about mobile learning – specific policies within African higher education have impeded the formal integration of mobile learning into higher education and the potential for mobile learning to facilitate equitable access to learning is still largely unrealized. The article provides us with insights into policy and strategic planning for

the adoption of mobile learning to achieve inclusive and equitable access to higher education.

In a study conducted by Awudeyi, Akpan, and Udo (2012) in Nigeria, 90 randomly selected undergraduate students were divided into three experimental groups, each consisting of 30 students. This research aimed to investigate the impact of a blended learning strategy for pre-algebra instruction compared to exclusively online and offline/face-to-face approaches on students' academic performance. The findings of the study indicated that the implementation of a blended learning approach led to significantly higher achievement scores in pre-algebra when compared to both purely online and face-to-face learning methods. This observed improvement may be attributed to the blended approach, which combines online learning with in-person instruction, offering students greater flexibility in accessing supplementary resources, multimedia materials, and requesting feedback. Interestingly, this same study also revealed that students exclusively utilizing online learning and those engaging in offline/face-to-face learning achieved comparable levels of academic success in the context of pre-algebra instruction. These outcomes shed light on the potential benefits of integrating blended learning strategies into educational settings, emphasizing the advantages of combining online resources with traditional face-to-face instruction.

In another study, Gambari, Shittu, Ogunlade, and Osunlade (2017) conducted a study in Kwara State, Nigeria, to assess the impact of online and blended learning on undergraduate student performance. Employing a quasi-experimental design, the researchers utilized pretests, posttests, and control groups to investigate the effectiveness of different teaching methods. The study included three groups:

Control Group: This group likely experienced traditional or conventional teaching methods. Experimental Group 1 (E-learning): This group exclusively used online learning. Experimental Group 2 (Blended learning): This group combined online and traditional teaching methods. The study comprised 30 students as the sample, and data were collected through the Educational Materials and Methods Performance Test (EMPT). The primary finding indicated a significant difference in performance among the three groups, with blended learning producing the most favorable results. This suggests that the integration of online and traditional teaching methods (blended learning) had a positive impact on undergraduate students' performance in Kwara State, Nigeria, as compared to traditional teaching methods or exclusive online learning.

METHODOLOGY

The cross-sectional research design was chosen for this study. The reason for this choice was because it offered a practical and efficient approach to gathering the data at a specific point in time. Given the scope and objectives of the study, a cross-sectional design allowed for a snapshot of the student's experiences and perceptions related to virtual discussions. This design was particularly suitable due to its ability to provide timely insights and recommendations for enhancing virtual engagements at the University of Cape Coast. Moreover, the chosen research design aligned with the available resources and time constraints of the study, making it a practical choice for investigating the strategies employed by students. By focusing on a convenient sample of undergraduate students from specific education programmes, the study gained targeted insights that catered for the unique characteristics of the selected disciplines. Overall, the cross-sectional research design was selected based on its efficiency, suitability for the research objectives, and compatibility with the available resources and constraints of the study.

Population, Sample, and Sampling Techniques

The target population for this study consists of students enrolled at the University of Cape Coast in Ghana studying for various degrees. In selecting a sample size for the research conducted at the University of Cape Coast, the researchers used the Krejcie and Morgan (1970) table to ensure an appropriate representation of the student population. The researchers aimed to achieve a statistically significant sample with a total population size of 78,485 students, comprising 60,406 undergraduate students (77%) and 18,079 postgraduate students (23%). By referring to the Krejcie and Morgan table, which provides guidelines for determining sample size based on population size and desired confidence level, the researchers determined an optimal sample size that would provide reliable results while considering practical constraints such as time, resources, and feasibility of data collection. Convenient sampling was employed due to its practicality and feasibility within the specific research context. Convenience sampling is a non-probability sampling method where units are selected for inclusion in the sample because they are the easiest for the researcher to access. This can be due to geographical proximity, availability at a given time, or willingness to participate in the research. A sample size of 382 was chosen. The researchers needed to collect data from a targeted group of students on campus, and convenient sampling allowed them to conveniently select participants who were readily available and accessible within the university setting. This approach saved time and resources, facilitating a smoother data collection process. However, a limitation of using convenient sampling in this scenario is the potential for sampling bias. The sample obtained through convenient sampling may not be representative of the broader student population at the university, thus limiting the generalizability of the findings. Researchers needed to acknowledge this limitation and interpret the results within the context of the sampling method employed, recognizing that the findings may not apply to the entire student body at the University of Cape Coast.

A questionnaire was developed based on the research objectives, focusing on aspects related to engaging, effective, and equitable virtual discussions. The

questionnaire was administered to the selected participants in a face-to-face setting. To ensure confidentiality and voluntary participation, participants were assured of anonymity throughout the study.

It is important to acknowledge that this research has some limitations. The sample size is relatively small, and it is limited to students from the University of Cape Coast. Consequently, the findings may not be representative of the entire Ghanaian student population or generalizable to other institutions or educational programmes.

Data Analysis

Data collected from the questionnaires underwent a rigorous data analysis process. The responses were entered into a statistical software program, and descriptive statistics such as frequencies, percentages, means, and standard deviations were calculated to provide a comprehensive summary of the participant's responses. The scale to be utilized in this study employs a structured approach to assess various factors, using both Mean Values. The Mean Value scale ranges from 1.00 to 5.00, providing a quantitative measure of participants' responses. Complementing this, the estimation degree scale categorizes these mean values into descriptive levels, including "Very Low," "Low," "Average," "High," and "Very High." Generally, a very low or low mean means students are in agreement with the statement while a high or very high mean indicates that students are not in agreement with the corresponding statement. This dual-scale system allows for a nuanced evaluation of participant feedback, offering both numerical precision and qualitative categorization to better understand the perceived significance of the factors under consideration. This statistical analysis enabled a quantitative examination of the data, allowing for the identification of common themes, patterns, and relationships related to making virtual discussions engaging, effective, and equitable. The findings will contribute to a deeper understanding of the strategies that can be employed to enhance virtual discussions in Ghana, providing valuable insights for educators, policymakers, and practitioners in the field.

RESULTS

This section reports on the results of making online discussions engaging, effective and equitable by eliciting respondents' beliefs, intentions and actions on the aforementioned. The results from data analysis are presented below.

Table 1: Distribution of demographic characteristics of student respondents

Demographic variables	Variable description	Frequency	Percentage
Gender	Male	140	65.1%
	Female	75	34.9%
Programme	B.Ed. Mathematics	84	39.1%
	B.Ed. Computer Science	20	21.4%
	B.Ed. Basic Education	85	39.5%
Level	200	20	9.3%
	300	195	90.7%

The demographic section of the results obtained from the survey conducted at the University of Cape Coast presents key information about the participants' characteristics. Among the 215 respondents, the majority of participants (65.1%, n=140) were males, while 34.9% (n=75) were females. Additionally, the respondents were enrolled in three distinct academic programmes: B.Ed. Mathematics, B.Ed. Computer Science, and B.Ed. Basic Education. Regarding academic programme distribution, each program had a considerable number of participants, with B.Ed. Mathematics and B.Ed. Basic Education representing 39.1% (n=84) and 39.5% (n=85) respectively of the respondents, and B.Ed. Computer Science representing 21.4% (n=20). These suggest a diverse representation of students across different academic disciplines at the university.

Table 2: Preferred virtual discussion platforms

Variables	Frequency	Percentage
Google Classroom	30	14.4
Google Meet	40	19.2
Zoom	112	53.8
Google Classroom and Google Meet	1	.5
Google Classroom and Zoom	3	1.4
Google Meet and Zoom	19	9.1
Google Classroom, Google Meet and Zoom	3	1.4
Total	**208**	**100**

The survey also explored the preferred virtual discussion platforms among the participants. Zoom emerged as the most popular platform, with 53.8% (n=112). Google Meet was the second most favored platform, chosen by 19.2% (n=40) of participants, followed by Google Classroom, which was preferred by 14.4% (n=30) of the respondents. Other combinations of platforms were selected by a smaller portion of participants. These insights can assist the university in understanding the diversity of its student population and tailoring its academic and technological resources to better meet the needs and preferences of its students.

Table 3: Challenges Students Face During Online Discussions

Variables	Mean	Std. Deviation
Technical issues such as a bad internet connection or software glitches frequently disrupt online discussions.	1.47	.885
Face-to-face discussions provide more involvement and participation than online discussions.	1.50	.901
There is a lack of nonverbal cues (such as body language) during online charts, which makes it difficult to communicate effectively.	2.13	1.167
Online chats can be impersonal and lack the emotional and lack the emotional connection that face-to-face discussions do.	2.16	1.223
Online discussions make it harder to form relationships and create a feeling of community	2.24	1.270
Online discussions demand less effort to participate in than face-to-face discussions	2.21	1.342
Online debates can be more intimidating than face-to-face discussions because everyone's statements are recorded	2.79	1.394
Online discussions may not cater to the diverse learning styles of students	1.93	1.146
I lack the necessary knowledge to effectively navigate online platforms and discussion boards	3.01	1.382
The absence of physical presence and supervision during online discussions makes it easier for me to be distracted and lose focus	2.25	1.279

Table 3 sheds light on the challenges students face during online discussions, providing valuable insights into the difficulties encountered and perceptions of online learning. Respondents, perceived technical issues such as bad internet connections or software glitches as very problematic with a low mean of 1.47. The relatively low standard deviation of 0.885 suggests a degree of consensus, although some individuals experience disruptions more frequently than others. Similarly, face-to-face discussions are generally considered to provide more involvement and participation, earning a low mean of 1.50 with a standard deviation of 0.901 revealing variations in the extent to which individuals perceived online discussions as less participatory than their in-person counterparts. Another challenge lies in the absence of nonverbal cues during online chats, making effective communication somewhat challenging, as indicated by a mean of 2.13 with a standard deviation of 1.167 highlighting differences in the degree of struggle, with some finding it more challenging to convey their thoughts and emotions effectively. Additionally, online chats were viewed as impersonal, with a mean of 2.16 (SD = 1.223). Forming relationships and nurturing a sense of community within online discussions were deemed challenging, as suggested by a mean of 2.24. The standard deviation of 1.270 indicates differences in the extent to which individuals experience difficulties in building connections and fostering community online. Despite the perceived convenience of online discussions, they are considered less demanding in terms of effort compared to their face-to-face counterparts, with a low mean of 2.21. The standard deviation of 1.342 implies variations in the perceived effort required, with some finding online discussions less demanding than others. Furthermore, responses show that there was no clear indication whether online discussions were perceived as more or less intimidating due to the recording of statements, as indicated by an average mean of 2.79 (SD = 1.394). Also, respondents said diverse learning styles of students were catered for (M=1.93) with a standard deviation of 1.146 implying variations in the extent to which individuals feel their learning styles are accommodated in online discussions. Lastly, there was no clear indication whether respondents felt lacking in the knowledge required to effectively navigate online platforms and discussion boards, as reflected by an average mean of 3.01 (SD = 1.382). The absence of physical presence and supervision during online discussions was seen as somewhat distracting, with a mean of 2.25 (SD = 1.279). These challenges underscore the need for tailored strategies to enhance the effectiveness of online learning environments.

Table 4 below presents how respondents saw digital equity in online discussions.

Table 4: Digital Equity in Online Discussions

Variables	Mean	Std. Deviation
To participate in online learning, access to digital devices such as laptops, tablets, or smartphones is crucial	1.55	.992
I can participate in online learning within an environment that is free of distraction and noise	1.85	1.137
The school or institution provides adequate support to students with disabilities, ensuring equitable access to online learning	2.88	1.260
The school or institution provides adequate technical support to students who face issues with digital devices or online learning platforms	3.31	1.351
The inability of a student to learn is hindered by a lack of dependable internet access	2.45	1.300
Online learning systems (Moodle, Canvas, Google Classroom, Coursera, etc.) should be developed to accommodate students who have slow internet connections	1.68	.952
Students in isolated rural locations face significant challenges due to lack of internet connectivity	1.66	1.093
Internet access, particularly for students, should be recognized as a basic human right	1.78	1.046
The quality of internet connection in my area affects my ability to participate fully in online learning	1.67	.914
My participation in online learning is hindered by the cost of digital devices and internet access	1.99	1.164
More activities should be launched to bridge the digital divide (such as lack of access to personal devices, disparities in internet access, cost of internet service and personal devices, lack of access to adequate technical support, etc.) among students	1.73	.837
Government and educational institutions should devote greater resources to providing students with internet access	1.47	.893
Equal access to technology resources and Internet should be available to students irrespective of their socioeconomic background or location	1.46	.786

Access to digital devices such as laptops, tablets, or smartphones is crucial to participating in online learning. With a very low mean of 1.55, it is evident that respondents strongly believed access to digital devices is absolutely essential for effective online learning. The relatively low standard deviation (0.992) indicates a relatively unanimous consensus on this critical aspect. Participating in online learning within an environment that is free of distraction and noise helps in the concentration and engagement of students during online discussions. With a mean of 1.85 illustrating that generally, respondents prefer distraction-free environment while pursuing online education. Schools or institutions especially in developing countries like those in Africa need to provide adequate support to students with disabilities, ensuring equitable access to online learning. The average mean of 2.88 (SD = 1.26) suggests that in terms of institutions make efforts to support students with disabilities, opinions varied. The standard deviation of 1.26 signifies significant variability in responses, indicating that some respondents feel more positively about institutional support than others. With a high mean of 3.31, respondents generally perceived institutions as not providing enough technical support. However, the standard deviation of 1.351 indicates that while many are satisfied with this support, there were varying degrees of satisfaction among respondents. The inability of a student to learn is hindered by a lack of dependable internet access. The average mean of 2.45 (SD = 1.3) highlighted that respondents perceived internet access as a potential hindrance to learning, but it was not seen as an extreme barrier. Respondents believed that online learning systems should be developed to accommodate students who have slow internet connections with a low mean of 1.68. The standard deviation of 0.952 shows that while respondents generally agree, there were variations in their opinions, with some feeling more strongly about this issue than others. Students in isolated rural locations usually faced significant challenges due to lack of internet connectivity. The low mean of 1.66 emphasizes that respondents perceived significant challenges for rural students. Respondents also believed in the importance of internet access, but there may not be unanimous consensus on it as a fundamental human right. With a low mean of 1.78 and standard deviation of 1.046 suggesting varying degrees of agreement, some respondents felt more strongly about this concept than others. Respondents also acknowledged that internet quality can impact participation (M=1.67). The standard deviation of 0.914 reflects some consensus but also variability in experiences, with some being more affected than others.

The cost of digital devices and internet access was a concern, as revealed by a low mean of 1.99. Respondents perceive these expenses as hindrances to their online learning experiences though on a lower scale. The accompanying standard deviation of 1.164 underscores the varying degrees of impact on individuals, with some students being significantly affected by the financial burden, highlighting the urgency of addressing this issue. Furthermore, respondents advocated for the launch of

more activities to bridge the digital divide among students, as indicated by a mean of 1.73. While there is some agreement on the need for increased efforts, the standard deviation of 0.837 reveals differences in the extent to which respondents believe this should be addressed. In line with these concerns, respondents expressed a belief that government and educational institutions should allocate more resources to provide students with internet access. This sentiment is reflected in a mean of 1.47, indicating a shared conviction that greater investment is necessary. Furthermore, respondents underscored the importance of ensuring equal access to technology resources and the internet, irrespective of students' socioeconomic backgrounds or locations. With a mean of 1.46, this sentiment prevailed among respondents, emphasizing the need for equity. The relatively low standard deviation of 0.786 implies some consensus on this issue, with most respondents agreeing to some extent that equal access should be a fundamental principle in education, addressing disparities and promoting fairness in the digital age.

Table 5: Effectiveness of Online Discussions

Variables	Mean	Std. Deviation
Everyone has the chance to join in and voice their thoughts in online debates	2.19	1.243
Online discussions are as productive as face-to-face discussions	3.12	1.373
Online discussions are more efficient than face-to-face discussions	3.72	1.196
Online discussions are more convenient than face-to-face discussions	3.52	1.264
Online discussions allow for a wider range of perspectives to be shared	2.93	1.259
Online discussions are less effective at building relationships than face-to-face discussions	2.73	1.387
Online discussions are more inclusive than face-to-face discussions	3.53	1.211
Online discussions can be just as engaging as face-to-face discussions	3.05	1.243
Online discussions require more effort to stay focused and avoid distractions	2.36	1.295
Online discussions are an effective way to communicate ideas and thoughts.	2.40	1.144

Table 5 presents a comprehensive exploration of the effectiveness of online discussions, offering valuable insights into respondents' perceptions across various dimensions. Respondents indicated that everyone had the chance to join in and voice their thoughts in online debates, with a mean of 2.19. This signifies that there are less limitations in providing equal opportunities for participation in these digital dialogues. The standard deviation of 1.243 emphasizes the variability in respondents' feelings of inclusion, with some experiencing more exclusion than others in online debates. Regarding the productivity of online discussions compared to face-to-face interactions, respondents were indecisive as evidenced by an average mean of 3.12. In terms of efficiency, respondents believed that face-to-face discussions were more efficient than online discussions with a high mean of 3.72. This suggests a general perception of face-to-face discussions as relatively efficient. Face-to-face discussions were more convenient than online discussions according to respondents, with a high mean of 3.52. This indicated that respondents generally saw face-to-face discussions to be considerably more convenient. The standard deviation of 1.264 underscores differing levels of convenience experienced by individuals, with some finding online discussions less convenient than others. When it came to inclusivity, respondents were indecisive as to whether online discussions allow for a wider range of perspectives to be shared, with an average mean of 2.93. However, respondents expressed little concern about the effectiveness of online discussions at building relationships, with a mean of 2.73. Respondents generally viewed face-to-face discussions as more inclusive than online discussions , with a high mean of 3.53. This indicates that inclusivity is a perceived weakness of online discussions. Respondents were undecisive as to whether online discussions is as engaging as face-to-face discussions, with an average mean of 3.05. Nonetheless, respondents acknowledged that online discussions required more effort to stay focused and avoid distractions, as indicated by a mean of 2.36. This perception underscores the additional effort needed to maintain concentration in the online environment. Finally, respondents considered online discussions as an effective way to communicate ideas and thoughts, with a mean of 2.40. This suggests that while online discussions are considered moderately effective for communication, there were variations in how respondents perceive their effectiveness (SD = 1.144).

Table 6: Students' Engagement During Online Discussions

Variables	Mean	Std. Deviation
I am allowed to take part in online conversations	2.09	1.098

I think participating in online discussions is a great way to learn	2.25	1.148
When participating in online forums, I feel comfortable giving/sharing my ideas.	2.41	1.202
During online discussions, I have the capability to comprehend and interpret nonverbal cues exhibited by others. E.g., Raising my hand	2.77	1.259
I feel engaged and energized when taking part in online discussions	2.77	1.184
During online discussions, I am able to express complex ideas and thoughts.	2.85	1.246
I experience a sense of accountability and responsibility for my involvement in online discussions	2.52	1.108
I can actively interact and engage with my peers when partaking in online discussions.	2.84	1.291
I am able to develop rapport and build relationships when participating in online discussions	3.07	1.201
I perceive online discussions to be equally productive as face-to-face discussions	3.20	1.200
I experience an increase in my engagement with the content when individual activities are incorporated during online discussions	2.85	1.194
Facilitators create groups for us to engage in either individual or group activities.	2.53	1.258
Facilitators offer us the opportunity to make presentations, which are equally online.	2.69	1.302
Facilitators offer me the opportunity to ask questions during online instructions.	1.93	1.024

Table 6, delved into students' engagement during online discussions, offering significant understanding into the multifaceted aspects of their online learning experiences. The data revealed that students are given opportunities to actively participate in online conversations, as reflected by a mean of 2.09. Students generally viewed online discussions as beneficial for learning, as indicated by the low mean of 2.25. Students generally felt comfortable sharing their ideas in online discussions, with a low mean of 2.41. The results suggested that students were undecisive as to capability to understand nonverbal cues in online discussions, with a mean of 2.77. There was no conciseness in response as to whether students felt engaged and energized when participating in online discussions, as suggested by an average mean of 2.77. The data indicated that students were undecisive as to their ability to express complex ideas and thoughts in online discussions, as reflected by an average mean of 2.85. Students felt accountable and responsible for their participation in online discussions, with a low mean of 2.52. Furthermore, students responds indicate that there were no clear indication whether online discussions are effective for building rapport and relationships, with an average mean of 3.07. The standard deviation of 1.201 indicates differences in perceived effectiveness, with some students finding it more successful than others. Students responds did not show clearly whether discussions are equally productive as face-to-face interactions or not as their responses went either ways. Mean was average(M=3.20). The standard deviation of 1.200 implies variations in students' perceptions of productivity, with some seeing online discussions as equally productive and others seeing differences. The data equally suggested that respondents were undecisive as to whether individual activities actually enhanced engagement during online discussions, with an average mean of 2.85. Facilitators provided opportunities for various activities, as indicated by a low mean of 2.53. Additionally, respondents had split views as to opportunities offered to make online presentations, with an average mean of 2.69. There could be room for improvement in the opportunity for students to ask questions during online instructions, as reflected by the low mean of 1.93. Generally, respondents rated their engagement in online discussions as good but of course, not without issues that ought to be addressed.

DISCUSSIONS

The current study has unveiled a series of significant findings, some of which corroborate existing research while also exposing discrepancies within the literature. In line with Adney and Conaster (2021), it is clear that challenges related to online discussions, including technical issues, remain a pressing concern. The study's results underscore the importance of these challenges, as respondents consistently identified technical issues and the absence of nonverbal cues as substantial obstacles to facilitating effective online discussions.

These challenges contributed to the perception that online discussions are less participatory and more impersonal when compared to face-to-face interactions. Building relationships and a sense of community within online discussions were also viewed as challenging. Despite the convenience, there was variation in the perceived effort required, and uncertainty surrounding whether online discussions were more or less intimidating due to the permanence of recorded statements. Respondents expressed mixed feelings about whether diverse learning styles were accommodated effectively in online discussions, and some indicated a lack of knowledge in navigating online platforms. The absence of physical presence and supervision during online discussions was found to be somewhat distracting.

The digital divide, symbolizing the disparity between those with the necessary technological knowledge and access and those without, has the potential to significantly hinder students' educational achievements, particularly those who are already underserved (Moore et. al., 2018; Akaadom, 2019). Access to digital devices and internet connectivity plays a pivotal role in enabling effective

online learning. Furthermore, the majority of respondents express a preference for a learning environment devoid of distractions. While there are varying perspectives on institutional support for students with disabilities, there is a consensus that institutions often fall short in providing adequate technical assistance. Although the importance of internet access is recognized, not everyone concurs on whether it should be considered a fundamental human right. The quality of internet service undeniably impacts students' participation, and concerns exist regarding the cost of digital devices and internet access. In light of these findings, respondents recommend addressing the digital divide through increased dedication of efforts and resources, with a shared belief in the fundamental principle of ensuring equitable access to technology in education.

Respondents generally reported that online discussions were inclusive and open for participation. Nevertheless, their opinions regarding the productivity of online discussions when compared to face-to-face interactions varied, in alignment with previous research that suggests students view both modes of communication as equally effective (Horspool & Lange, 2012) and of comparable quality (Waldman, Perreault, Alexander, & Zhao, 2009).

Findings also indicated that students generally prefer face-to-face discussions, citing reasons of efficiency and convenience, aligning with the observation that while students are generally open to online education, they tend to favor a face-to-face learning environment (Fish & Snodgrass, 2015).

Surprisingly, the study indicated that building relationships through online discussions was not a primary concern for the participants, with face-to-face discussions being viewed as more inclusive. This contradicts the perspective put forth by Plumridge (2020), which suggested that online discussions can be more inclusive, particularly for students facing participation barriers in face-to-face settings, such as those with disabilities, language difficulties, social anxiety, or cultural differences. Additionally, the level of engagement in online discussions remained uncertain among the respondents, who perceived online discussions as requiring more effort to maintain focus.

Students often find value in actively engaging in online discussions, considering them a constructive tool for learning. While they feel at ease expressing their thoughts, the ability to grasp nonverbal cues remains uncertain. This observation is supported by Adnan and Anwar (2010), highlighting that online communication, particularly text-based exchanges, may diminish the availability of nonverbal signals, such as facial expressions, tone of voice, and body language, which typically play pivotal roles in conveying and deciphering emotions.

Students' perception of engagement in online discussions is a complex matter, influenced by various factors, including course structure, interpersonal interaction, academic resources, and personal characteristics (Martin & Bolliger, 2018). A consensus on whether students experience high levels of engagement and the ability to express complex ideas during online discussions remains elusive. Nevertheless, they express a sense of accountability for their participation. The effectiveness of online discussions in building rapport varies among students, as does their perception of productivity when compared to face-to-face interactions. Uncertainty prevails regarding the extent to which individual activities contribute to engagement, although it is acknowledged that facilitators play a pivotal role in providing opportunities for various activities. Diverse opinions exist concerning the availability of opportunities for online presentations, with room for improvement in allowing students to pose questions during online instructions. In summary, students generally rate their engagement in online discussions as positive, but they are also aware of existing issues that warrant attention and improvement.

CONCLUSION

This study explored the potential of virtual discussions to enhance student engagement, learning outcomes, and equity in Ghanaian educational settings. Through a reflective analysis of experiences implementing virtual discussions in Ghanaian classrooms, the study identified key strategies for making these discussions engaging, effective, and equitable. The findings from this study highlighted the importance of careful planning, culturally sensitive facilitation, and deliberate inclusion of diverse perspectives to create a vibrant and inclusive virtual learning environment. Findings also emphasized the need for ongoing teacher training and support to ensure that educators are equipped to navigate the technical and pedagogical demands of virtual discussions. As the world looks to the future of education in Ghana and beyond, it is clear that virtual discussions will play an increasingly vital role in expanding access to quality education, promoting diversity and inclusion, and fostering global citizenship. By harnessing the power of virtual discussions, we can create learning environments that are truly engaging, effective, and equitable for all students, regardless of their geographical location or socio-cultural background. In conclusion, the study's reflections from Ghana underscore the transformative potential of virtual discussions in education. It is envisaged that insights from this study will inspire educators, policymakers, and researchers to continue exploring innovative approaches to virtual learning, with a commitment to equity, inclusivity, and excellence in education for all.

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