

# Enhancing Engagement in Virtual Classroom to Transform the Traditional Classroom Experience during Post COVID -19 era: Kenyan Perspective

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**Abstract:** Using emerging technology in the education process nowadays is necessary. Technology is changing much faster than ever, so technology-related skills need to be developed early in education. Virtual classroom technology has gained attention as a transformative tool in education. It has emerged as a powerful tool with the potential to revolutionize the traditional classroom experience by providing immersive and interactive learning environments. One critical aspect of this transformation is its impact on student engagement. This discussion aims to provide insights into how virtual classroom technologies contribute to heightened levels of engagement among students especially on student engagement, learning outcomes, and the overall educational experience. The review includes insights from research studies, academic articles, and technological advancements in virtual classroom technology in education.

**Keywords:** Enhancing Engagement, Virtual Classrooms, transform, traditional classroom, technology.

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## 1. INTRODUCTION

The COVID-19 pandemic has indeed been a catalyst for the widespread adoption of virtual classroom technologies on a global scale. As governments and educational institutions grappled with the challenges posed by the pandemic, the need for continuity in education became paramount. With the closure of schools, colleges, and universities to curb the spread of the virus, institutions had to swiftly find alternative ways to ensure that education could continue. In response to the sudden closure of physical campuses, educators quickly transitioned to emergency remote teaching using virtual classroom technologies to deliver lessons and engage with students thus, Virtual classroom technology emerged as a powerful tool with the potential to revolutionize the traditional classroom experience by providing immersive and interactive learning environments. Virtual classroom technologies is transforming the way education is delivered, providing immersive and interactive experiences that enhance student engagement and learning outcomes. Virtual classroom technologies creates realistic and immersive simulations that allow students to experience educational content in a three-dimensional space (Dede, Cai, Clarke & Zheng, 2017). The immersive nature of VR captivates students' attention, increasing engagement levels, motivation and improves information retention due to the experiential nature of learning in virtual environments (Makransky, Terkildsen & Mayer, 2019). Further, a Virtual classroom technology enables the creation of realistic simulations that mimic real-world scenarios. This allows students to apply theoretical knowledge in practical situations, promoting a deeper understanding of concepts. This paper aims to provide a global overview of the current state of Virtual classroom technologies in education, focusing on its impact on the traditional classroom experience. Virtual classroom technology can create collaborative learning environments where students interact with each other and the virtual space.

This fosters a sense of community and shared learning experiences, increasing engagement (Dede et al., 2017). Some VR applications incorporate adaptive learning features, tailoring content based on individual student progress. This personalized approach contributes to sustained engagement by aligning with each student's pace and learning style (Cai et al., 2021). Moreover, Virtual classroom technology has had a profound impact on education by providing a range of tools and resources that enhance the learning experience and make it easier for students and teachers to collaborate and communicate. It is necessary to use appropriate software communication platforms, digital libraries, etc. Common software solutions for communication in virtual classroom teaching and learning include Learning Management Systems (LMS), Video Conferencing tools (VCs), Adaptive Learning Software, Online Quizzing, and Assessment Tools. LMS platforms provide a centralized hub for course materials, assignments, assessments, and student records. Adaptive learning software uses data analytics to provide individualized learning experiences based on each student's strengths, weaknesses, and learning styles. Online quizzing and assessment tools provide students with the ability to test their knowledge and receive instant feedback (Ryan, 2023). Despite the potential benefits, technical challenges such as motion sickness or hardware limitations, cost and availability remain challenges for widespread implementation in classrooms can impact the overall user experience. Addressing these issues is crucial to ensuring sustained engagement (Krokos, Plaisant, Varshney & Shneiderman, 2018).

In Kenya, as in many other parts of the world, there is a growing recognition of the potential for Virtual classroom technologies to transform the traditional classroom experience and positively impact student engagement. Several factors contribute to this potential, and examining the specific context of Kenya provides insights into how enhancing engagement through Virtual classroom technology can benefit students in the country.

Although research publications on Virtual classroom technology tend to increase every year, the trends of these studies are in different contextual frameworks and remain unclear. Therefore, it takes research to find out how Virtual classroom technologies are used in each area of research to find future novelty and research ideas. In addition, the use of Virtual classroom technology in the in secondary schools also needs to be known to be an opportunity for research studies and learning innovations in the future. Previous publications tend to immerse Virtual classroom technology in the general learning process. Despite this, researchers tend to conduct bibliometric research to compare Virtual classroom technologies and Augmented Reality trends research through Scopus over the past 20 years and not on enhancing engagement of Virtual classroom technologies in secondary school classroom teaching and learning. This study was focused on enhancing engagement of Virtual classroom technology in secondary school in Kenya. Enhancing virtual classrooms will be very useful in teaching and learning in secondary schools in the country. This paper explores how enhancing engagement in Virtual classroom technology to transform the traditional classroom experience impact on student engagement, learning outcomes, and the overall educational experience. The study includes insights from research studies, academic articles, and technological advancements in Virtual classroom technology in education.

### Primary Objective

The primary objective of this study was to advance Enhancing Engagement to Transform the Traditional Classroom Experience in secondary schools by leveraging through Virtual Classroom in teaching and learning.

## 2. RESEARCH METHODOLOGY

The study adopted exploratory and descriptive research designs. Random sampling was used in selecting the sample in the targeted population in selected secondary schools teachers in Murang'a County, Kenya. The data collected using questionnaires and analyzed descriptively. The findings are discussed and recommendations made to various concerned stakeholders.

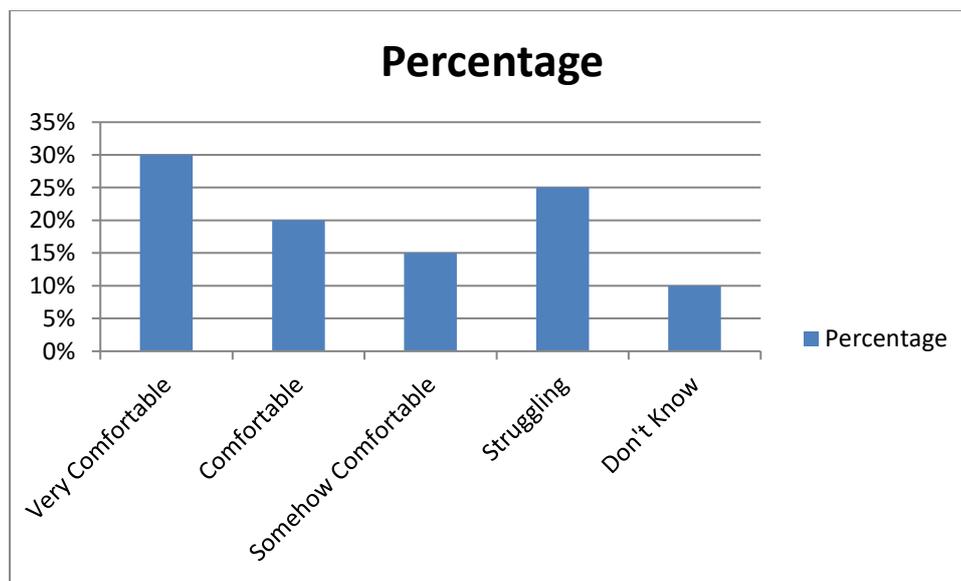
## 3. FINDINGS OF THE STUDY

The study sought to establish how long the teachers have been using virtual classroom technologies for teaching. Out of 100 respondents 65% of the teachers revealed that they have never used virtual classroom technologies, 20% revealed that they used Zoom to teach candidates during COVID-19 school closures, 15% revealed that they used Microsoft Teams to teach candidates during COVID-19 school closures while 3% revealed that they used Google Meet to teach candidates during COVID-19 school closures whereas 2% revealed that they left notes at the cyber cafes for students to pick during COVID-19 school closures only.. This was an approach which allowed for a more comprehensive assessment of how enhancing engagement of virtual classroom technologies in learning can be effectively integrated into secondary school education in Kenya.

Based on the findings, the study concluded that teachers used virtual classes during school closures only and that individual preferences among teachers may have varied on factors such as user interface, features, and institutional requirements. This concurs with Ryan (2023)'s study on Pandemic Pedagogies: Teaching and Learning during the COVID-19 Pandemic.

The study further wanted to establish how comfortable teachers felt using virtual classroom tools. Out of 100 respondents, 30% revealed that they very comfortable using virtual classroom tools 20% revealed that were comfortable using virtual classroom tools, 15% revealed that were somehow comfortable using virtual classroom tools, 25% revealed that were struggling using virtual classroom tools whereas 10% revealed that didn't know how to use virtual classroom tools as shown on table 1.

Table 1. Level of comfortability in using virtual classroom tools

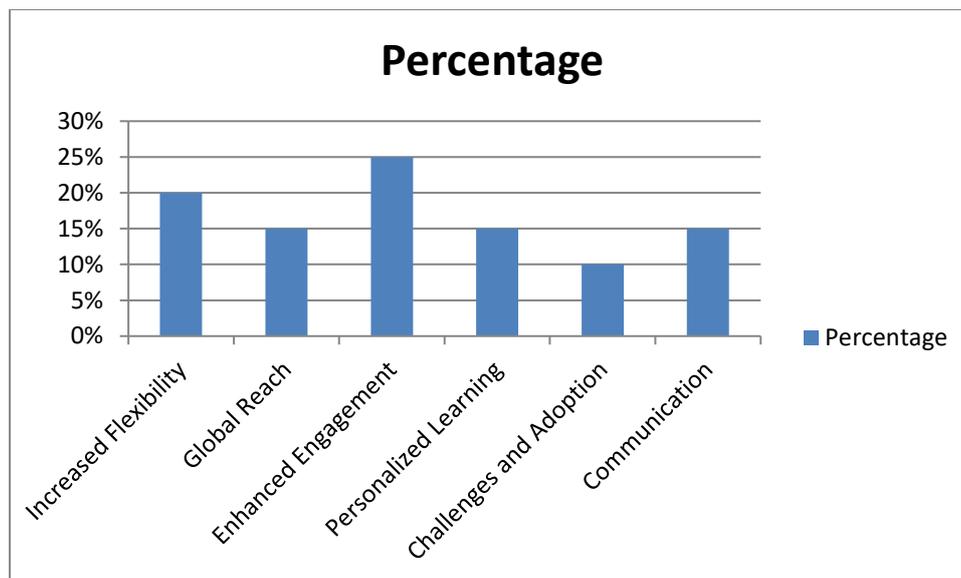


Based on the findings, the study concluded that the comfort level of teachers when using virtual classroom tools can vary widely and is influenced by several factors. This concurs with a study by Ryan (2023) on Pandemic Pedagogies: Teaching and Learning during the COVID-19 Pandemic. The study observed that it is important to note that this perception can change over time as technology evolves and educators gain more experience with virtual tools. On further probe, the study established that some factors that may impact a teacher's comfort level such as **technology proficiency** whereby Teachers who are tech-savvy and comfortable using various digital tools may rate their comfort level higher and those who struggle with technology or have limited experience may rate their comfort lower. There is need for **training and professional development** opportunities can significantly boost a teacher's confidence in using virtual classroom tools and lack of training or insufficient support may lead to discomfort and reluctance to use such tools in secondary schools in Kenya, **platform user-friendly** as the design and user-friendliness of virtual classroom platforms play a crucial role. Intuitive interfaces and well-designed tools can make the teaching experience more comfortable as technical glitches, complicated features, or unreliable platforms can contribute to discomfort, **resource availability** such access to reliable internet, appropriate hardware, and necessary software can impact a teacher's comfort level as insufficient resources or technical limitations may hinder a teacher's ability to effectively use virtual tools, **pedagogical fit** as teachers may feel more comfortable if virtual tools align well with their teaching style and pedagogical approach and resistance may arise if the tools disrupt established teaching methods or do not support the desired learning outcomes, **student engagement and interaction** as Tools that facilitate student engagement and interaction can enhance the teaching experience and contribute to a higher comfort level and lack of effective communication features or difficulty in engaging students may lead to discomfort, **security and privacy concerns** as teachers may feel uncomfortable if there are concerns about the security and privacy of virtual classroom tools, especially when dealing with sensitive student information, **experience and adaptability** as teachers with prior experience in using virtual tools may adapt more easily, leading to a higher comfort level. Moreover, adaptability to change and openness to incorporating technology into teaching practices can positively influence comfort, **feedback and support systems** as constructive feedback and a supportive environment can encourage teachers to explore

and improve their use of virtual tools however, lack of feedback or a negative experience may contribute to discomfort and finally **perceived effectiveness** as teachers are more likely to feel comfortable if they perceive virtual tools as effective in achieving educational goals as ineffective tools or skepticism about the educational value of virtual platforms may lead to lower comfort levels. The study concluded that given these factors on level of comfortability, it greatly depends on individual experiences and circumstances. However, ongoing support, professional development opportunities, and improvements in technology can contribute to an overall increase in teachers' comfort levels over time.

An item on the questionnaire sought opinion on some general insights into how virtual classroom technology would influence and impact teachers teaching methods. Out of 100 respondents, 20% opined that virtual classroom technologies will lead to increased flexibility whereby they will allow for more flexible scheduling and access to educational materials, enabling teachers to adapt their teaching methods to different learning styles, 25% opined that they will lead to enhanced engagement whereby virtual tools, such as interactive whiteboards, quizzes, and multimedia content, can increase student engagement and participation in lessons, 15% opined that they will lead to personalized learning as virtual classrooms would often provide opportunities for personalized learning experiences, allowing teachers to tailor instruction to individual student needs, 15% opined that they will lead to global reach whereby teachers can connect with students from around the world, fostering a more diverse and inclusive learning environment, 15% opined that they will facilitate communication between teachers, students, and parents through various online platforms, improving overall communication in the educational process whereas 10% pointed out challenges and adaption whereby some teachers may face challenges in adapting to virtual environments, but this shift can also encourage the development of new teaching strategies and technological skills as tabulated on Table 2.

**Table 2. Virtual classroom technologies influence teachers teaching methods**



Based on the findings, the study concluded that despite virtual classroom technologies having a profound impact on teaching methods, transforming the traditional education landscape, the impact of virtual classroom technologies can vary widely depending on factors such as the subject matter, grade level, and the teachers' adaptability and preferences. In addition, virtual classroom technologies reshape teaching methods by fostering global accessibility, flexibility, personalized learning, and innovative instructional approaches. As educators navigate this digital transformation, adapting teaching methods to harness the potential of virtual classrooms becomes crucial for delivering effective and engaging education. The study concurs with the establishment of UNESCO (2020) on Artificial Intelligence in Education: Challenges and Opportunities for Sustainable Development.

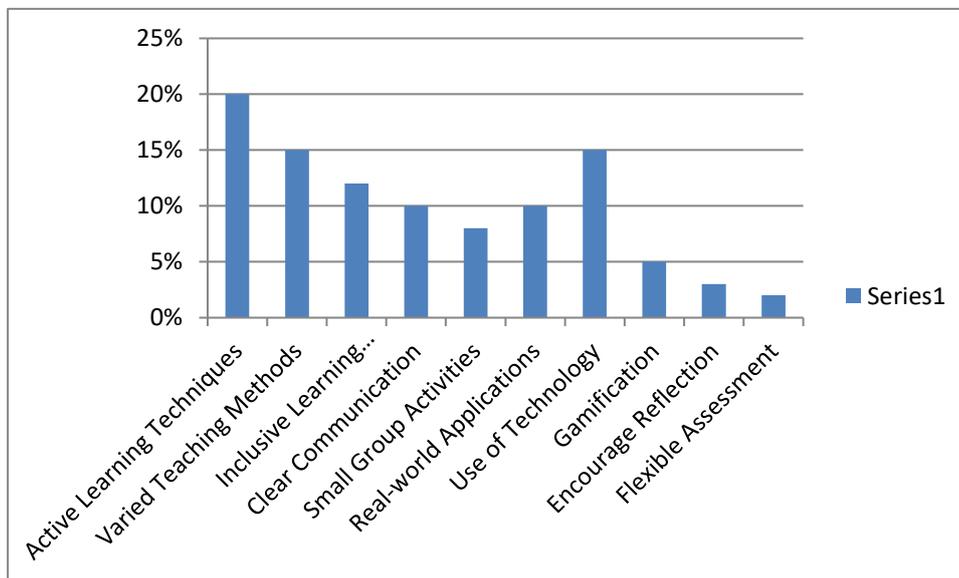
Further, the study sought opinions on what strategies would be effective in maintaining student participation and interaction. This was because maintaining student participation and interaction is crucial for creating an engaging and effective learning environment. Out of 100 respondents, 20% pointed out active learning techniques strategy which incorporate activities that require students to actively engage with the material, such as group discussions, case studies, problem-solving exercises,

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and debates and use interactive technology tools like online polls, quizzes, or collaborative platforms to keep students engaged, 15% pointed out varied teaching methods to cater to different learning styles. Some students may prefer visual aids, while others benefit more from hands-on activities or verbal explanations and integrating multimedia elements, such as videos, images, and real-world examples, to make the content more relatable and interesting 15% pointed out use of technology as a strategy to leverage online platforms and tools for collaborative projects, virtual discussions, or interactive assignments and create discussion forums or use social media groups to facilitate ongoing conversations and peer interactions, 12% pointed out inclusive learning environment as a strategy which foster a supportive and inclusive classroom environment where students feel comfortable expressing their thoughts and opinions and encourage diversity of perspectives and validate different experiences and viewpoints , 10% pointed out clear communication as a strategy which involves clearly communicating the teachers’ expectations regarding participation from the beginning of the course. Explain how participation contributes to the learning experience and providing constructive feedback on student contributions to encourage active participation, 10% pointed out real-world application to connect the course material to real-world applications. This will help students see the relevance of what they're learning and encourages active engagement and invite guest speakers or organize field trips to provide practical insights and experiences, 5% pointed out gamification as a strategy by introducing elements of gamification, such as point systems, badges, or rewards, to make the learning experience more enjoyable and motivating and Design games or simulations related to the course content to encourage participation, 3% pointed out encouraging reflection as a strategy by incorporating reflective exercises where students can share their thoughts on the learning process, challenges faced, and insights gained and providing opportunities for students to connect the course material to their personal experiences whereas 2% pointed out flexible assessment as a strategy by offering a variety of assessment methods, including both formal and informal assessments. This allows students to showcase their understanding in different ways and providing opportunities for self-assessment and peer assessment to foster a sense of responsibility for one's own learning as shown on Table 3.

**Table 3. Strategies for maintaining student participation and interaction**

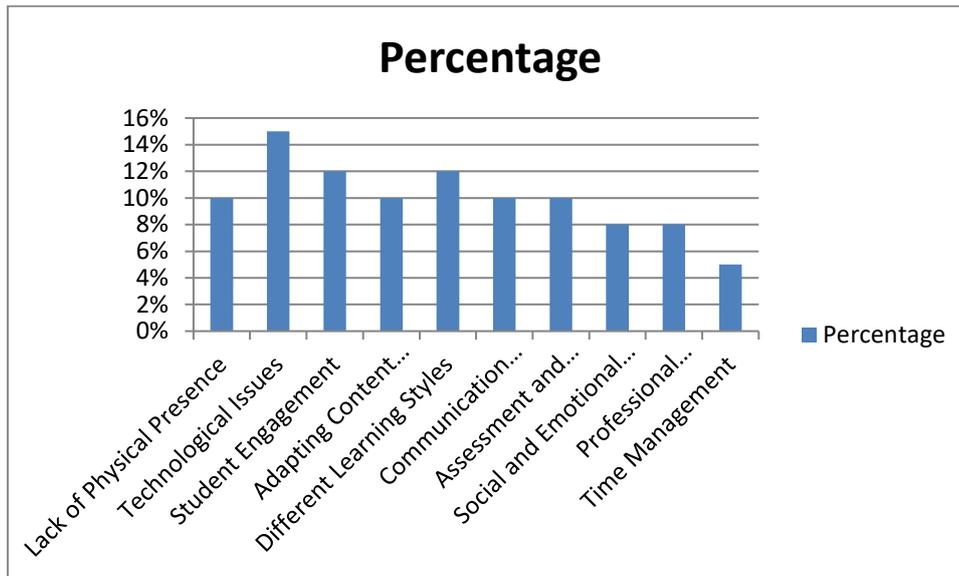


Based on the findings, the study concluded that adapting these strategies to the specific needs and dynamics of your classroom is essential. Regularly solicit feedback from students and be willing to adjust your approach based on their input and needs. The study concurs with Ryan (2023) on Pandemic Pedagogies: Teaching and Learning during the COVID-19 Pandemic.

Moreover, the study sought opinions on what challenges if any would be faced by teachers in adapting teaching style to virtual classrooms. Out of the 100 respondents 15% pointed technological issues challenge in adapting teaching style to virtual classroom, 12% pointed student engagement challenge in adapting teaching style to virtual classroom, 12% pointed different learning styles challenge in adapting teaching style to virtual classroom, 10% pointed lack of physical presence

challenge in adapting teaching style to virtual classroom, 10% pointed adapting content delivery challenge in adapting teaching style to virtual classroom, 10% pointed communication challenge in adapting teaching style to virtual classroom, 10% pointed lack of physical presence challenge in adapting teaching style to virtual classroom, 10% pointed assessment and evaluation challenge in adapting teaching style to virtual classroom, 8% pointed social and emotional connection challenge in adapting teaching style to virtual classroom, 8% pointed professional development challenge in adapting teaching style to virtual classroom whereas 5% pointed time management challenge in adapting teaching style to virtual classroom as shown in Table 4.

**Table 4. Teachers challenges in adapting virtual classroom teaching Style**

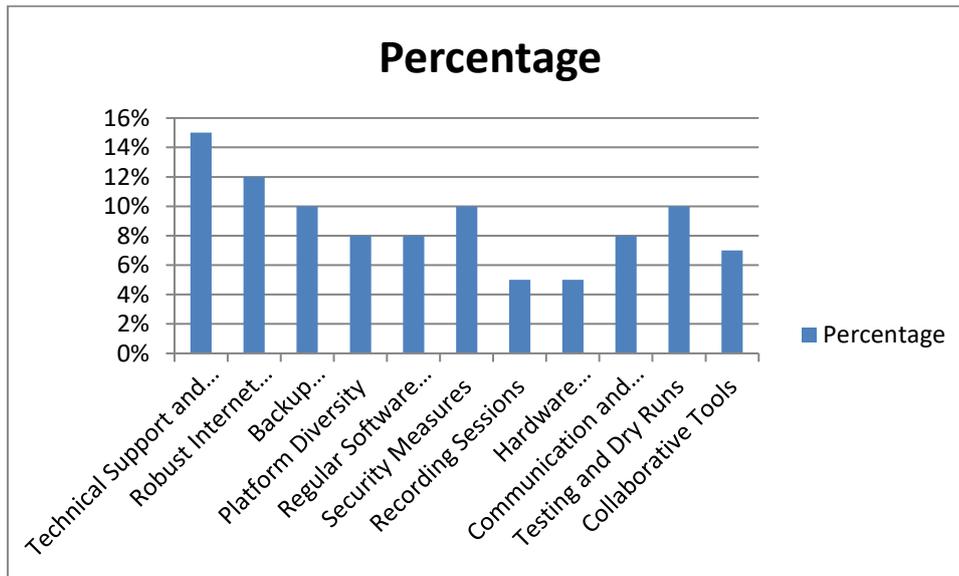


Based on the findings, the study concluded that adapting to these challenges often involves a combination of technological proficiency, pedagogical innovation, and a willingness to experiment with new teaching strategies in the virtual learning environment. The study concurs with EON Reality (2021) observation on remote learning opportunities that some students may face challenges in accessing traditional classrooms.

An item in the questionnaire sought to establish opinions on mitigation measures to any technical issues on virtual classes. Out of 100 respondents, 15% pointed out technical support and training as a mitigation measure to technical issues by providing technical support resources for students and educators, including tutorials, FAQs, and help desks and Conduct training sessions at the beginning of the semester to familiarize users with the virtual learning platform and troubleshoot common issues, 12% pointed out provision of robust internet connectivity whereby institutions can provide guidance on internet requirements and offer support for students facing connectivity issues, 10% pointed out backup communication channels by establishing alternative communication channels, such as email or messaging apps, in case the primary virtual classroom platform experiences issues and sharing contact information for technical support personnel in case students encounter difficulties, 10% pointed out security measures whereby institutions needed to implement security features, such as password protection and waiting rooms, to prevent unauthorized access to virtual classes and educate students and educators about best practices for maintaining the security of virtual meetings, 10% pointed out testing and dry runs to conduct test sessions or dry runs before important virtual classes or events to identify and address potential technical issues in advance and encourage students to test their equipment and connections before the start of the semester, 8% pointed out platform diversity whereby students are encouraged to choose virtual learning platforms that are compatible with various devices and operating systems. Ensure that students have access to suitable devices and software, 8% pointed out regular software updates by keeping virtual classroom software and related applications up to date to benefit from bug fixes, security updates, and improved performance, 8% pointed out communication and transparency with students regarding any known technical issues or updates related to virtual classes and Clearly communicate expectations and guidelines for participating in virtual classes, including technical requirements, 7% pointed out collaborative tools. That is; integrate collaborative tools and cloud-based platforms for file sharing and document collaboration to minimize issues related to file access and

sharing, 5% pointed out recording live sessions for later playback. This allows students who encounter technical issues or time zone differences to catch up on the material asynchronously sessions, 5% pointed out hardware recommendations by providing guidelines on recommended hardware specifications for optimal performance during virtual classes and encourage students to have backup devices or components (such as a second camera or microphone) in case of hardware failures whereas 2% pointed out encouraging feedback by Creating a feedback mechanism for students and educators to report technical issues promptly. Use this feedback to continuously improve the virtual learning experience. As shown on Table 5.

**Table 5. Mitigation Measures on Technical issues of Virtual Classes**



Based on the findings of the study, the study concluded that implementing these mitigation measures, educational institutions can enhance the reliability and effectiveness of virtual classes, creating a more seamless learning experience for students and educators alike. This is because mitigating technical issues during virtual classes involves a combination of proactive measures and responsive strategies. This concurs with UNESCO, (2020) establishment on addressing infrastructure challenges.

#### 4. CONCLUSION

The impact of virtual classroom on student engagement in education is multifaceted. The immersive and experiential nature of virtual classroom technology, coupled with its ability to create interactive and collaborative learning environments, holds great promise for transforming traditional classrooms. Addressing challenges and continuing research in this field will further unlock the potential of virtual classroom technology in enhancing student engagement. Further, while challenges exist, the potential impact of enhancing engagement through virtual classroom technology in Kenya is significant. Strategic efforts by the government, educational institutions, and technology providers can ensure that virtual classroom technology transforms the traditional classroom experience, fostering increased student engagement and improving educational outcomes in post COVID-19 era.

#### 5. RECOMMENDATIONS

Based on the findings of the study, the study made the following recommendations: If Virtual classroom technology is embraced in secondary schools in Kenya, Virtual classroom technology will provide a promising media for educational researchers (Budi et al., 2021; Sarioğlu & Girgin, 2020). Virtual classroom environment in terms of learners' perceptions and their conceptual learning in learning can be enhanced through engagement increased (Georgiou et al., 2020; Tsivitanidou et al., 2021). The use of virtual classroom technology in the e-learning environment will have a positive effect on students (Abdüselam & Erten, 2022).

It will lead to **Access to Diverse Learning Resources:** In many parts of Kenya, access to quality educational resources can be limited. Virtual classes can bridge this gap by providing students with immersive experiences that transport them to different environments, allowing them to explore concepts beyond the confines of traditional textbooks.

**Cultural Relevance and Inclusivity:** Virtual classroom technology can be tailored to incorporate culturally relevant content, making the learning experience more relatable for Kenyan students. This inclusivity can enhance engagement by connecting educational content with the students' own experiences and cultural context.

**Addressing Infrastructure Challenges:** While access to technology may be a challenge in some areas of Kenya, the adoption of virtual classroom technology can incentivize investments in technological infrastructure. The engagement-enhancing benefits of virtual classes may drive efforts to improve internet connectivity and provide schools with the necessary hardware (UNESCO, 2020).

**Practical Application of Knowledge:** Virtual classroom technology allows students to engage with subjects in a practical and hands-on manner. For example, students studying agriculture can virtually visit farms, providing them with a more tangible understanding of the concepts. This practical application of knowledge enhances engagement and promotes a deeper understanding of the material.

**Remote Learning Opportunities:** Kenya has diverse geographical landscapes, and some students may face challenges in accessing traditional classrooms. Virtual classroom technology can facilitate remote learning, enabling students in remote or underserved areas to participate in interactive and engaging educational experiences without the need for physical presence (EON Reality, 2021).

**Language Learning and Communication Skills:** Virtual classroom technology can be utilized to improve language learning by immersing students in virtual environments where they can practice communication skills. This approach is particularly beneficial in a country like Kenya, where multiple languages are spoken, and language acquisition is a key educational goal (Dede et al., 2017).

**Entrepreneurship and Skills Development:** Virtual classroom technology can play a role in developing entrepreneurial skills by providing simulated environments for business education. This is crucial in a country where entrepreneurship is increasingly emphasized as a pathway to economic development. Virtual classroom technology experiences can expose students to real-world business scenarios, fostering critical thinking and problem-solving skills (Cai et al., 2021).

**Government and Institutional Support:** The Kenyan government has shown commitment to improving education through technology. With strategic policies and support, virtual classroom technology can become an integral part of the educational system, ensuring that both urban and rural students have equal opportunities for engaging learning experiences (UNESCO, 2020).

**That Challenges and Considerations such as** technical challenges, infrastructure limitations, and the need for teacher training are crucial considerations for successful virtual classroom technology implementation in Kenya (Krokos et al., 2018).

Virtual Classroom Technologies have emerged as indispensable tools in the education sector, unlocking new possibilities for both educators and learners. The adaptability, accessibility, and innovation associated with virtual classrooms are reshaping the educational landscape and contributing to a more inclusive and dynamic learning environment

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