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Access and utilization of collaborative tools by undergraduates for learning activities in universities in Kwara State, Nigeria

Na'allah, D. A.[1], Bolaji, H. O.[2], Ibrahim, M. B[3]
naallahabdulganeey83@gmail.com[1], hobolaji@alhikmah.edu.ng[2], ibrahimmutiu007@gmail.com[3]

Abstract

The proliferation of collaborative tools such as Google Meet, WhatsApp, Learning Management System (LMS) and so, on. has made learning open, easier and provided concrete learning. Furthermore, it enables the implementation of inclusive and equitable quality education, specifically in relation to Sustainable Development Goal 4. However, there is limited empirical studies on the use of Technology Access Theory (TAT) to understand these technologies among undergraduate students. Therefore, this study investigated the accessibility and utilisation of collaborative learning tools among undergraduate students in Kwara State, Nigeria, guided by the Technology Access Theory (material, motivation and utilisation access). This study employed a descriptive cross-sectional survey design, with data collected from a sample of 383 students across three universities (federal, state, and private) using a validated and reliable questionnaire (α=0.85). Results indicated that students commonly use collaborative tools are Google Meet, WhatsApp and LMS and have motivational and material access to these tools. The study concluded that while motivation, material and utilisation access is adequate, targeted institutional strategies, such as improving internet reliability, providing training, and integrating tools into structured pedagogical activities, are essential to bridge the gap between access and meaningful educational utilisation. Recommendations are offered to promote more equitable and effective digital learning environments.

Keywords: Access, Collaborative Learning, Collaborative Tools, Student Learning, Utilisation

1. Introduction

Education constitutes a major infrastructure for national development and personal capacity building, and recent technological advancements have reshaped how knowledge is accessed and delivered. Higher education institutions increasingly deploy e-learning and collaborative platforms to foster flexible, student-centered learning environments (Haleem et al., 2022; Oskarita & Arasy, 2024). In Nigeria, undergraduate learning remains foundational to the development of future professionals, and recent transformations in the university ecosystem reflect a gradual transition from educator-centered instruction to digital and collaborative modalities (Balalle, 2024; McCarthy et al., 2023). Collaboration tools such as Google Docs, Microsoft Teams, Zoom, and WhatsApp enable real-time peer interaction and knowledge sharing across spatial boundaries (Baskaran, 2025; Pei et al., 2023). Technology Access Theory offers a relevant analytical lens by emphasizing that meaningful technological access depends on motivational, material, skills, and usage dimensions rather than mere device availability (Habibi et al., 2023; Al-Kfairy et al., 2024). The theory draws attention to socio-economic and institutional factors that shape disparities in access and adoption of collaborative tools, particularly in resource-constrained educational settings (Afridi et al., 2023; Mhlongo et al., 2023).

Despite the increased integration of digital tools in higher education, access and effective utilization remain uneven, especially within developing contexts where infrastructural limitations, digital literacy gaps, and socio-economic inequalities persist (Passey et al., 2024; van de Werfhorst et al., 2022). Research indicates that students' engagement with collaborative technologies is influenced by institutional support, internet connectivity, device ownership, and socio-demographic characteristics such as gender and academic discipline (Kordova & Hirschprung, 2023; Goyibova et al., 2025). While collaborative tools enhance flexibility, motivation, and academic performance, disparities in access continue to widen the digital divide and constrain inclusive participation in group learning (Abo-Khalil, 2024; Horsley et al., 2025). Understanding the extent to which undergraduates can access and utilize collaborative learning tools is therefore essential for promoting equitable digital inclusion and improving educational outcomes in the evolving landscape of higher education.

Collaborative tools play an important role in improving the learning processes of undergraduate students since they provide active participation, peer-to-peer interaction, and the development of shared knowledge among the learners. Additionally, technological tools such as Google Docs, Microsoft Teams, or learning forums allow the synchronous-asynchronous collaborative learning process among the students, thus eliminating distances in space and time. Moreover, collaborative tools are useful as they support various learning styles. Moreover, the United Nations have reiterated the significance of learning digital tools since they are considered crucial in the implementation of inclusive and equitable quality education, specifically in relation to Sustainable Development Goal 4 (United Nations, 2020). Moreover, literature shows that the implementation of collaborative tools affects positively the performance, communication skills, and learning motivation among the students (Haleem et al., 2022e). Moreover, the rising application of digital pedagogies at the university level makes collaborative tools important since they prepare the

students on how best to work together in the present-day business environments.

Studies on the use of collaborative learning tools among undergraduates show the magnitude of adoption and the challenge faced. In this case, a survey among undergraduates in the Nigerian northeastern universities determined that though the use of smartphones and personal internet access had improved student ability to access online resources, the underlying institutional issues, including lack of cybercafé infrastructure and absence of an electronic library, had impeded their use, making the use of open-access platforms like Google and Yahoo necessary for collaborative and peer learning among the undergraduates (Adeyinka et al., 2021).

Another survey among the major tertiary institutes in the state of Oyo found that though many undergraduates had access to tools for electronic communication and collaboration tools, the use was greatly influenced by connectivity infrastructure among others (Abdulrahaman et al., 2020). Another survey among the institutes in Kogi State suggested a positive influence on academic performance with the increased use of online collaborative tools and platforms, making the use moderately effective with active use of tools installed for actual benefit (Kovari, 2025). These studies had mainly focused on the Nigerian states or the entire country or the tools for experimental research and open collaborative platforms but not the specificity of the state of Kwara among the undergraduates with a unique set of environments there as well.

Thus, the aim of the study is to comprehensively analyze the accessibility, usage, and use of collaborative learning tools by undergraduate students in the Kwara State

1.1 Purpose of the Study

The main objective of this study is to investigate the access and utilisation of collaborative tools for learning among undergraduates in Kwara State, Nigeria. Specific objectives are to:

1. Investigate the motivational access of undergraduate students to collaborative tools for learning in universities in Kwara State.
2. Investigate undergraduate students' access to materials for collaborative learning tools at universities
3. To determine the utilization of collaborative tools commonly used by undergraduate students in universities

1.2 Research Questions

The research questions to be answered in the proposed research are:

1. Do undergraduate students in universities have motivational access to collaborative learning tools?
2. Are undergraduate university students provided with physical access to collaborative learning tools?
3. What are some common collaborative tools used by undergraduate students in universities?

2. Literature Review

2.1 Theoretical Framework

The Technology Access Theory (TAT) provides a framework to interpret inequities existing and utilized by digital technology (Kuhn et al., 2023). The essence of TAT is that social inequities, which are defined by factors such as socio-economic, educational, and geographical disparities, create a gap or inequity in resource distribution, ultimately resulting in inequities in accessing technological advancements (Kuhn et al., 2023). According to TAT, inequities in accessing technological advancements prevent individuals, groups, or communities from accessing activities related to education, socialization, and business, ultimately widening existing inequities among society (Mauthner & Kazimierczak, 2018).

Another important aspect emphasized by TAT is that technological aspects also play a vital role in accessing and utilizing technological advancements, implying that social and technological factors should not be studied separately. TAT views technology access as a multidimensional concept, including physical access to devices and networks, as well as motivational, material, and skills access. Motivational access relates to the willingness and interest to use technology, material access to the availability of the necessary hardware and software, and skills access to individuals' competencies in using the technology effectively (Vaszkun & Szakács, 2025). Without adequate access in all these dimensions, the adoption and productive use of technology remain limited. Thus, the theory argues that overcoming digital divides requires addressing these multiple layers of access simultaneously (Muhammad et al., 2025).

However, the theory emphasizes the role of digital literacy and user competence to enable the use of technology. Having devices and connectivity is not enough when users lack either the competencies or support to navigate and exploit technology efficiently (Méndez-Domínguez et al., 2023). Therefore, institutions and educators play an important role in training and establishing an environment that nurtures digital self-efficacy and acceptance of technology. This support closes the gap between mere access and effective utilization of technology (Engås et al., 2023). The TAT thus links technology access from an educational perspective to broader outcomes related to knowledge creation and social participation. Technology serves as a medium through which its users interact, collaborate, and engage with information. In this light, access should therefore be seen beyond availability but in terms of participation in knowledge economies, thereby fostering learning and social equity. Ignoring disparities in access cements educational injustices and creates a limit to the impact of digital learning innovations (Olanrewaju et al., 2021). Technology Access Theory presents a holistic lens for the analysis of digital access challenges. It has been framed as a complex, multi-layered construction influenced by social, technological, and individual issues. This framework underlines the efforts toward closing the digital divide by stressing infrastructure development, motivation building, skills enhancement, and institutional support-all necessary in creating inclusive, technology-enabled learning environments (Olanrewaju et al., 2021).

2.2 Concept of Access, Access Rate and Use Collaborative Tools in Higher Education

Availability of collaboration platforms has been central to influencing the way students take part in interactive and cooperative learning processes within

higher education. Google Docs, Microsoft Teams, and Zoom platforms enable effective communication and shared creation, which has been effective in overcoming the limitations that typify physical classroom settings (Tan et al., 2022). These platforms not only ensure active participation by students but also ensure that students are equipped with critical and collaborative abilities that are useful for future professional endeavours. However, it has been a challenge to ensure level and equitable distribution, especially when faced with limitations that are a result of lack of infrastructure as well as social-economic factors (Zickafoose et al., 2024).

The rate of accessibility for higher education students to use collaboration applications is highly disparate, depending mainly upon the resource base of institutions, technology infrastructure, and support provided by the relevant authority to leverage technology in learning. Those institutions based in urban settings with a favorable technology context have high rates of accessibility, but institutions situated in resource-poor and rural areas tend to encounter difficulties with stability in internet connections and the availability of devices. This leads to a disparity of a technological divide, which inhibits regular engagement with learning and collaboration facilitated by technology (Kormos & Wisdom, 2021).

Regarding practical applications, the usage among both students and instructors is growing at an exponential rate. This is specifically utilized in learning activities such as group work, online discussions, peer evaluation, and so on. However, the usage level and effectiveness are greatly dependent on the ease with which the tools are accessible, understanding, and effective usage among the scholars (Kwiatkowska & Wiśniewska-Nogaj, 2022). Students having the right access and usage understanding are immensely active in collaborative technological tools. This has certain positive impacts on their learning outcomes as well. However, technological problems, incompatibility with software, or the right training are essential while using them at optimal levels, thereby requiring effective support tools in the process (Eltaiba et al., 2025). Collaborative tools support both synchronous and asynchronous learning. They facilitate reflective discussions, idea exchange, sharing, and understanding among individuals. At optimal levels, active learning behaviors are enhanced. This practices a culture of participation, motivation, and optimal learning performance among the scholars (Xia et al., 2025).

Ultimately, addressing the obstacles to accessing and effectively using collaborative tools is crucial for fostering an inclusive and equitable educational environment. Investments in ICT infrastructure, development of inclusive teaching strategies, and provision of digital skills training are vital to bridging access gaps (Msambwa et al., 2024). Policies focusing on affordable internet access, device availability, continuous technical support, and learner empowerment ensure that access extends beyond mere availability to meaningful and equitable use of collaborative technologies in learning (Afzal et al., 2023).

2.3 Definition, Types and Relationship Between Collaborative Tools and Student Learning in Higher Education

Collaborative tools in higher education are online applications that are designed to facilitate communication, collaboration, and the sharing of resources between and among students and educators irrespective of physical location. These platforms offer both synchronous and asynchronous interactions; hence, they provide various collaboration activities, including document co-editing, discussion, and project management, among others (Ok et al., 2024). Popular examples include Microsoft Teams, Google Classroom, Slack, and Zoom, each integrating diverse functionalities like messaging, file sharing, video conferencing, and collaborative editing. Therefore, these platforms help create a collaborative learning environment that is congruent with the latest pedagogies, emphasizing active and student-centered learning (Ok et al., 2024). Collaborative tools can be classified based on their primary functions. Communication tools such as Zoom and Skype enable real-time video and audio interaction. Document collaboration tools including Google Docs and Microsoft One Drive facilitate simultaneous editing and file sharing. Project and task management platforms like Trello and Asana organize team workflows and deadlines. Meanwhile, social media and forums support discussion and informal collaboration (Fasola et al., 2023). Recently, AI-powered collaborative tools have emerged, providing intelligent coordination and personalized learning support to enhance group work effectiveness (Kovari, 2025).

The correlation between collaborative technologies and student acquisition of learning has a notably positive impact, predominantly in terms of encouraging engagement, communication, and the building of mutual knowledge. Collaborative technologies provide avenues for students to engage, reflect, and obtain feedback, hence leading to a deeper level of comprehension and critical thinking (Khalid et al., 2023). Research indicates that students who interact with collaborative technologies demonstrate significantly improved performance, motivation, and satisfaction attributed to intensified interactions and a supportive community (Loes, 2022).

2.4 The Four Levels of Technology Access

The issue of digital inequality has also helped us to understand that access is a matter of degree, rather than of mere connectivity. In presenting such a graduated analysis, four interrelated layers can be identified: motivational, material, skills, and usage access. Motivational access refers to attitudinal barriers, while material access describes physical resources. Skills access embodies the competencies of operation, and usage access refers to the nature and quality of technological engagement Van Dijk (2019). Analyzing technology access through this four-level lens might help identify specific points of failure and create more effective strategies toward ensuring equitable digital participation.

Motivational access, or the need and willingness to use new technology, is always low when technology is introduced. In the 1980s and 1990s, surveys showed general reluctance: large groups felt they did not need a computer or an internet connection, and negative or fearful feelings about the coming "computer age" were widespread Van Dijk (2019). A simple indifference or perceived uselessness was then a major motive for half of the non-

users not to get access. However, with the growing inculcation of digital media into society, motivation across all categories rose sharply, including those for elderly and low-educated individuals, as feelings of social exclusion or being at a disadvantage regarding the possibility of communicating with family and friends became greater (Chan et al., 2023). From a theoretical perspective, motivation and the intention to gain access can be explained by factors such as perceived usefulness, ease of use, and subjective norms, the social pressure from important others (like family or employers) expecting one to use digital media. These factors intensify as technology matures and becomes a normalized part of daily life. However, significant psychological barriers persist, namely computer anxiety (a feeling of discomfort or stress when confronting computers) and technophobia (a general fear and distrust of technology's benefits) (Chan et al., 2023). These phenomena, while less pronounced over time, remain major barriers, particularly among seniors, people with low education, and a segment of the female population (Tomczyk et al., 2023).

Finally, the role of social context is an important conditioner of motivational access. Support from one's immediate social environment of family, workmates, and fellow students is an important antecedent of the motivation to adopt the new medium and the subsequent stages of material and skills access (Tezci et al., 2015). Categories of positional constraint such as living in a household where there are children of school-going age or work environments that require the use of technology give strong motivations that are obligatory. Indeed, the possibilities and potential of developing such motivation are drastically different in countries that are classified as developed versus developing countries and between affluent versus poor areas.

Among these factors, motivational access is a highly influential factor that affects undergraduates to use collaborative platforms, as their use intention is driven by perceived social and usefulness factors. Theoretically explained under technology acceptance model, "one important motivational factor is the subjective norm, that is, the perceived need to use the system as a result of others' expectation, that is, professors, teachers, or peers, that these systems should or must be used" (Nurtanto et al., 2025). In university settings, undergraduates' strong positional identity as university members also strongly enforces these requirements among undergraduates; that is, collaborative platforms become a compulsory need for group work, assignment, and communication, and these platforms have a highly imperative role in university settings. Moreover, the importance and role of a university as a strong support network cannot be denied, as it helps fellow employees and university members, that is, teachers and university students, assist one another in learning new software, directly deducting barriers regarding computer anxieties and promoting self-confidence that plays a highly imperative role in adopting these platforms. In these circumstances, when undergraduates feel highly motivated toward these strong university environments, they readily move beyond reluctance to make use of collaborative platforms to avoid being excluded from important university life (Chai & Ye, 2024).

These gaps were more evident between those with high and low levels of income and education, as well as majority and minority ethnic groups (Quintana et al., 2012). Whereas the gender gap in material access had nearly been eliminated during this time, especially in North America and Northwestern Europe, the gap for the ages showed a curvaceous pattern, with a peak among the 25-40-year-old group followed by a decline. A notable transition emerged in the early 2000s among the developed countries of East Asia, North America, and Northern Europe. As the higher income and education groups achieved close to saturation levels of access, the lower groups began to close the gap, thus reducing the material access gap (Shao et al., 2023). However, not all countries followed this transition. In the developing states, the material access gap widened and is expected to widen until they also reach a tipping point similar to the developed states, evident in the data of the International Telecommunication Union and the Millennium Development Goals Indicators.

The future development path for access to materials has been modeled by Hubing et al. (2025). His model predicts two tipping points. The first tipping point is when access starts to speed up, and, paradoxically, the difference between early adopters and others starts to grow. The second tipping point is reached when most people gain access, and then the difference between social groups becomes smaller. By the middle 2010s, developing nations were at an intermediate stage, while developed nations were already past the second tipping point (Sovacool et al., 2025).

The definite end of this development is a point of theoretical debate. Two different approaches exist side by side: Sovacool et al. suggest a future either described by the "normalization" approach, which foresees a point in which access to the material reaches a near universal status, with a 100% penetration rate, while others will follow the "stratification" approach, which foresees a future characterized by a gap separating populations in which some advantageously categorized groups will constantly lead the way with the newest and most progressive and high-cost technologies, and others left well behind.

Access to materials and the usage patterns of collaborative tools among undergraduates are profoundly influenced by the general ratio that constitutes physical access divide Joshi et al. (2025). In the developed world, where the existence of the university lies, the market has moved well past the "second tipping point," so the access to materials in basic hardware devices and internet connectivity has almost reached a ubiquitous standard Ghobadi et al. (2013), becoming little more than a nominal difference among the student body. However, the model describing permanent stratification applies in that the disparities within the access to materials are maintained in subtle forms which directly affect collaborative usage. Whereas the majority might have access to one or more devices, the nature and standard of the accessible technologies present varying levels. Undergraduates belonging to the economically superior group have the right to superior hardware standards, faster connectivity, and expensive software programs, allowing them to immediately join data-intensive or design-focused collaborative projects. Those belonging to the opposite

group might have to suffice with antiquated models, shared computers, or unreliable connectivity options found on the web, thus reducing effective active participation in collaborative learning modules.

Skills access, an equally important aspect of digital divide, is defined as the digital literacy skill sets that are necessary to use technology efficiently (De Werfhorst Herman G, et al., 2022). These skill sets are categorized into two broad divisions based on their definitions in literature. The two are defined as follows: Medium-related skill sets are generally the basic skill sets required to use technology, such as digital hardware and software, to accomplish a basic purpose, which includes navigating an interface, using a web browser, and similar operations. Content-related skill sets are advanced skill sets, which are more purpose-driven, focusing on goals such as searching, communication, creating, and informed decision-making on the internet (Stofkova, et al., 2022).

However, one major challenge that arises here is the measurement of these skills. According to Rikala et al. (2024), most digital skills are developed through actual practice and not through training, so they are difficult to measure. Many large-scale studies have focused on self-reported data, where the data is based on the estimation by the respondents themselves, which has been criticized for the lack (Jansen et al., 2022). The other method that has been considered more reliable will involve the actual observation and test of the skills through experimental work, which has been found to be labor-intensive (Waltré et al., 2023).

There have been extensive studies carried out concerning the demographic factors that affect the accessibility of skills, and the evidence has pointed towards clearer and more persistent outcomes (Rizvi et al., 2019). The most crucial demographic factor is the level of formal educational attainment attained by an individual, as those who have attained a higher level of education have been observed to perform better compared to those who have attained a lower level, concerning both the skills associated with the medium and the content (Vaszkun & Szakács, 2025). Next comes the issue of age, especially concerning the skills associated with the medium, as the youth have been observed to perform better compared to the older generation. The most striking observation, however, is that concerning the evaluation of information, the middle-aged and older adults have been observed to perform equally well or even better if the operational skills have been mastered prior to that (Craik & Craik, 2023).

One of the most interesting results from the literature is the divergence between perceived skill and actual skill, particularly in regard to gender. Contrary to the general belief that "men are more skilled in digital matters," skill assessments have shown no gender differences in actual skill (Gnambs & Gnambs, 2020). This is an important point in regard to the skills gap. A crucial aspect is that perception does not necessarily equate to skill in a real-world context but is often an expression of societal norms. The skill gap, therefore, must be remedied in a way that does not simply rely on societal assumptions about skill but on actual assessments of real digital skill.

"The material access" sets up "technological hegemony" which determines collaboration, and thereafter "skills access" determines "how well an individual can move within this hegemony." Because, even with "high-quality hardware" and "high-quality software," "a non-cognisant undergraduate in digital collaboration culture" will "be at a stark disadvantage." This transcends "rudiments of computer literacy" to include "discipline-specific skills," essentially "collaboration skills in digital culture" including "managing version history in a collaborative document," "managing workflows in platforms such as Trello/Asana," "communicating nuances in text-based messaging platforms such as Slack/Microsoft Teams," and "'shared' meeting etiquette." "A user versed in these skills," rather, "can use collaboration tools to improve group productivity and learning outcomes." However, "a user non-cognisant in these same tools" will "suffer from anxiety," "contribute at lower levels," or "unintentionally sabotage collaboration," as in "overwrite another user's contributions" or "fail to stay on top of project updates." Consequently, "whereas stratified material access gives everyone access to the collaborative space," it's "it's uneven distribution of skills access which determines which students will capitalise on this access to realise gains in terms of academic and professional capital," produced in "Johnny & Martin, 2025."

Usage access is the last and most important stage of technology access, emphasizing the application use of technology. This can be estimated using variables such as the time spent using the technology, the number of applications used for the technology, and the amount of activity from passive use to active production. Though the initial adoption of online media came from the highly educated populace, there has been a shift in some developed nations, with people from less educated backgrounds spending more time online (Ozimek et al., 2023). This also proves the importance of the type of activities done online rather than the amount of time spent online for the stage of access**,** usage access.

The "gap in applications" has been exposed through research, which has exposed different levels of disparity among various groups, largely characterized by age and level of education, and as reported, between age and education levels, the age-related disparity is currently larger, but it is projected to reverse as a result of inter-generational change (Medero et al., 2021). The disparity between genders has been reported to be small (Alabi et al., 2024). The most defining disparity seems to revolve around levels of education. Notably, individuals who are more educated exhibit a tendency to utilize advanced applications for superior capital-enhancing purposes attributable to career and educational pursuits, while individuals who are less educated primarily use less sophisticated applications for communication, business, and gaming (Afzal et al., 2023).

The usage gap is a direct continuation of the 'knowledge gap' theory of the 1970s, which argued that a greater benefit of information in mass media goes to the highly educated, and this, in turn, adds to the widening gap of social inequality (Gaziano, 2016). But perhaps the usage gap is a much wider and more significant phenomenon in society. It was seen that the knowledge gap was a reaction to mere information intake, but with the usage gap, the usage of every aspect of life comes into consideration,

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which also, to some extent, affects societal, economic, and educational aspects and performances. The differentiation and analysis of this usage gap were made possible by categorizing different usage patterns of Internet applications, which was formed by either factor analysis and/or cluster analysis (Yates et al., 2015). The different application usage patterns include information searching, news, personal development/education, entertainment, commerce and financial transactions, and gaming, and with the growing dependency of the Internet in every aspect of life, there is an increase in the usage of all applications, but, in any case, their usage is a distinct and separate activity of different aspects of society, hence leading to the existence of the usage gap that had increased with time (Nawaz, 2024).

The adoption of collaboration software by undergraduates reflects a visible aspect of usage access, going beyond connectivity, which is about technology utilization in capital-enhancing activities. Undergraduates, in general, although a privileged group with high material and skill access, may show a gap in usage access depending on their fields ofstudy and technology literacy skills (Joshi et al., 2025). Those in disciplines that emphasize technology's integrative and productive applications, like business and engineering, are most likely to adopt and apply highly advanced collaboration software for managing, creating, and connecting, in line with highly educated people using technology for improving their career and education-related activities and objectives (Przegalinska et al., 2024). However, those with less knowledge and interaction with such applications are most likely to apply simple software and applications, like probably using similar software, mostly for communication and entertainment purposes (messaging), rather than realizing those software applications' full capabilities and potential in collaborations, increasing inequality since those with knowledge and skill in collaborations, which are highly valued in current job market environments, get considerable advantages over their counterparts, thus emphasizing that even in a privileged category like undergraduates, usage access plays an essential role in their future success.

2.5 Empirical Studies on Access, Access Rate and Use of Collaborative Tools in Higher Institutions

Empirical research findings show the availability of collaborative tools for higher education is greatly influenced by the quality of infrastructures at institutional and regional levels. This means an institution with up-to-date information communication technology infrastructures and internet connectivity capabilities offers better opportunities for using collaborative tools like WhatsApp, Google Classroom, or Blackboard, among others, for improving student participation and performance (Maqbool et al., 2024). Conversely, the challenge can be a barrier for many rural higher education institution students to use the collaborative tools for their benefit (Maqbool et al., 2024).

The pace at which students use collaborative software is not uniform, owing to factors such as socio-economic background, policies in educational institutions, and digital literacy rates. Researchers who have analyzed African universities indicate that digital learning tools have an immense effect on encouraging student engagement; however, gaps in usage rates continue to be a concern owing to digital divides (Joshi et al., 2025). For example, learners from rural areas are often plagued with substandard internet connectivity and a lack of access to devices.

From a used perspective, collaboration technology is also increasingly integrated into course curriculum to encourage active participation, peer collaboration, and self-regulated learning. From an empirical perspective, it has been illustrated that students often use messaging, video, and file transfer applications to complete group work and participate in online discussions. Although several positive trends are emerging, it can also be observed that training and technological support are often factors that inhibit maximizing the potential benefits that can be achieved through collaboration technology to improve digital competency (Alieto et al., 2024).

By being synergetically combined with instructional strategies that support autonomy and reflections (Al-Khresheh, 2024), the standard of collaborative learning can be significantly enhanced. Recent literature indicates that the integration of collaborative learning tools into the curriculum can positively impact critical thinking, teamwork, or the construction of knowledge collectively. Also promising is the new generation of collaborative learning tools utilizing AI (Olasehinde, 2024).

Although technology has continued to improve, some of the challenges faced in the adoption of collaborative technology in higher learning institutions are still lack of internet reliability, cost of internet data, and lack of institutional support (Ndibalema, 2025). To address some of the challenges, there is a need to offer comprehensive policies in regard to inequity in the upgrade of infrastructure, training in technology literacy, and technical support. By filling this gap, there will be favorable use of technology in college learning, and this will lead to better quality in education delivery (Eltaiba et al., 2025).

3. Methodology

The study adopted a descriptive research design of the cross-sectional survey type, suitable for quantitative investigations of phenomena across a defined population within a single time frame. The target population comprised undergraduate students across universities in Kwara State, Nigeria. Three institutions representing federal, state, and private ownership categories were purposively selected to enable comparative analysis across governance structures. A multistage sampling strategy was employed to derive a total sample of 383 respondents from a sampling frame of 96,457 undergraduates using Cohen et al.'s sample estimation procedure at 95% confidence and 5% margin of error. Stratified selection based on institutional ownership was followed by proportionate allocation of respondents and simple random sampling for questionnaire administration, thereby ensuring representativeness and equal probability of selection.

Data were collected using a structured researcher-developed questionnaire (USACT) comprising four sections assessing demographic variables, access to collaborative tools, access rate, and utilisation patterns.

Content and face validation were undertaken by experts, and a pilot study involving 20 undergraduates was conducted to refine instrument clarity and feasibility. Reliability analysis using the split-half method and Cronbach's Alpha yielded a coefficient of 0.85, indicating satisfactory internal consistency. Ethical standards were upheld through institutional permissions, informed consent, confidentiality, and anonymity. The dataset was analysed using IBM SPSS (version 25), with descriptive statistics (frequencies, percentages, and means) used to summarise demographic characteristics and address the research questions.

4. Data Analysis and Results

This section presents analysis and results of the raised question in table with figure and corresponding interpretation

4.1 Demographic Data of the Respondents

Table 1: Gender Distribution of Undergraduate Student

	Frequency	Percent
Male	138	36.0
Female	245	64.0
Total	383	100.0

Table 1 shows the distribution of respondents by gender among the undergraduate students surveyed. Out of a total of 383 students, 138 (36%) are male, while 245 (64%) are female. This indicates that female students make up many of the respondents in the study. The higher proportion of female students may reflect the composition of the sampled population in the universities surveyed.

Table 2: Distribution of Respondents by Academic Level

Level	Frequency	Percent
100L	125	32.6
200L	64	16.7
300L	55	14.4
400L	131	34.2
500L	8	2.1
Total	383	100.0

Table 2 shows the distribution of 383 respondents across different academic levels. The largest group of respondents is 400L students, comprising 34.2% of the total, followed closely by 100L students at 32.6%. 200L and 300L students account for 16.7% and 14.4%, respectively, while 500L students make up the smallest portion at 2.1%. This indicates that the survey primarily captured responses from lower- and upper-level undergraduates, with final-year students (500L) being minimally represented. The distribution provides a balanced perspective across most academic levels, though caution may be needed when generalizing findings for 500L students due to their low representation.

4.2 Answering Research Questions

The research answers the following research questions.

Research Question One: Do undergraduate students in universities have motivational access to collaborative tools for learning?

Table 3: Motivational Access to Collaborative Tools among Undergraduate Students

Questionnaire Item	Mean	Std. Deviation
I feel motivated to use digital collaborative tools for learning activities.	3.50	1.16
I believe that using technology enhances my academic performance.	3.72	2.99
I am eager to explore new digital tools that support teamwork and learning.	3.32	.77
I find digital collaboration more engaging than traditional group work.	2.95	.89
I have a positive attitude toward learning with technology.	3.15	.84
Average Mean	3.33	

Using a grand mean benchmark of 2.50, where mean values above 2.50 indicate motivational access and values below 2.50 indicate lack of motivational access, the results show that all the questionnaire items recorded mean scores above 2.50. The individual means range from 2.95 to 3.72, indicating positive motivation toward the use of collaborative digital tools for learning. Furthermore, the average grand mean of 3.33 is clearly higher than the criterion mean of 2.50. This implies that undergraduate students generally possess motivational access to collaborative tools. They feel motivated to use digital collaborative tools, believe that technology enhances their academic performance, are willing to explore new tools, and maintain a positive attitude toward technology-supported learning.

Research Question Two: Do undergraduate students in universities have material access to collaborative tools for learning?

Table 4: Material Access to Collaborative Tools among Undergraduate Students

Questionnaire Item	Mean	Std. Deviation
I have personal access to a computer, laptop, or smartphone for academic work.	3.71	3.57
I have reliable internet connectivity to use online collaborative tools.	2.96	.81
My school provides adequate computer laboratories or digital facilities for students.	2.85	.88
I can easily access the learning management system (e.g., Google Classroom, Canvas, Moodle).	3.04	.91
The digital devices I use are efficient and support all needed applications.	3.18	.78
Average Mean	3.15	

Using a grand mean benchmark of 2.50, where mean scores above 2.50 indicate material access and scores below

2.50 indicate lack of material access, the results show that all the questionnaire items recorded mean values above 2.50. The individual mean scores range from 2.85 to 3.71, suggesting that students generally have access to the necessary devices, internet connectivity, institutional digital facilities, and learning management systems required for collaborative learning. The average grand mean of 3.15 is clearly higher than the criterion mean of 2.50. This indicates that undergraduate students generally possess material access to collaborative tools for learning. However, comparatively lower mean scores on internet reliability and institutional facilities suggest that while material access is adequate, it may not be uniform for all students.

Research Question Three: What collaborative tools are commonly used by undergraduate Students in Universities?

Table 5: Commonly Used Collaborative Tools among Undergraduate Students

Tool	Mean	Std. Deviation
WhatsApp	1.98	.28
Zoom	1.76	1.69
Google Docs	1.72	1.55
Google Drive	1.59	.49
LMS (Learning management system)	1.80	.39
Microsoft Teams	1.66	1.73
Facebook groups	1.58	.49
Google Meet	2.03	2.34
Telegram	1.66	.47
Google forms	1.75	1.54
Average Mean	1.75	

Using a criterion mean of 1.50, where mean scores above 1.50 indicate that the collaborative tool is commonly used and mean scores below 1.50 indicate that the tool is not commonly used, the results show that all the listed collaborative tools recorded mean values above 1.50. The individual mean scores range from 1.58 to 2.03, indicating varying but generally positive levels of usage among undergraduate students. The average grand mean of 1.75 is above the benchmark mean of 1.50, suggesting that undergraduate students commonly use collaborative tools for learning. Among the tools, Google Meet, WhatsApp, and LMS platforms recorded relatively higher mean scores, indicating they are more frequently used, while Facebook groups and Google Drive recorded lower but still acceptable usage levels.

4.3 Summary of the Findings

1. Undergraduate students generally have motivational access to collaborative tools for learning, ($\bar{x} = 3.33$).
2. Undergraduate students generally have material access to collaborative tools, with a grand mean of 3.15 above the benchmark of 2.50, although some areas like internet reliability vary.
3. Undergraduate students commonly use collaborative tools for learning with Google Meet, WhatsApp, and LMS platforms being most frequently used ($\bar{x} \geq 1.50$).

4.4 Discussion of findings

The finding undergraduate students have motivational access to the use of collaborative tools in learning suggested support the study aligns with the framework and recent literature. According to the Technology Access Theory (TAT) and the views held by Van Dijk (2019), motivational access through the desire and intention to use technology accelerates exponentially once technology becomes part of the societal culture. As has been suggested by the reviewed literature on the specific theme, for the undergraduate group in particular, the "subjective norm" created by the learning environment dictates that the mandatory use of collaborative technology tools is obligatory for the group work undertaken (Nurtanto et al., 2025; Chai & Ye, 2024). The score here does indicate that the learning position creates sufficient motivational pull to encourage usage past any initial inhibition, reflecting the global reality that the educational framework has transcended the learning group to the point where the lack of interest/usefulness lies well past the scope.

Undergraduates generally have access to collaboration tools with subject matter at this level in mind, with a corresponding grand mean of 3.15. Yet again, this reflects nuanced anecdotal support consistent with data on internet availability. The data offers a mixed view in this regard. The encouragement to view all factors in access positively again reflects insights suggesting basic access via device connectivity and internet availability in developed learning frameworks and increasingly within urban areas in developing countries has become more pervasive (Shao et al., 2023). Yet again, disparity in internet availability reflects anecdotal insights within empirical research on African schools and impoverished institutions worldwide (Ndibalema, 2025; Maqbool et al., 2024). Notwithstanding nuances in internet availability, mass adoption in terms of undergraduate access to collaborative tools has clearly been achieved, though disparity in infrastructure availability again supports "stratification," in which access in this case remains non-universal even within broad device-ownership access (Joshi et al., 2025; Sovacool et. 2025)

Undergraduate students tend to make frequent usage of collaboration aids for learning purposes, and Google Meet, WhatsApp, and LMS platforms were identified as the most frequently used. The results are consistent with usage pattern observations documented in empirical research work. The prominence of WhatsApp and Google Meet is evident due to their global usability for collaboration purposes with SWT & DWF and, of course, for free communication purposes as well, which is evident in the contemporary global tech-friendly world, as discussed by Maqbool et al. (2024). The usage of LMS platforms is consistent with formal learning curriculums. But this particular detail is neutral to the subtler aspect of usage access discussed in the literature. The usage pattern does not highlight the intensity of usage. The relevant literature makes it clear that the gap exists between communicative usage and deeper usage of the tool for advanced purposes such as collaboration and project management, which has been discussed by Ozimek et al. (2023) and Afzal et al. (2023).

5. Conclusion and Recommendations

The findings indicated that the undergraduate students in the studied universities possess, on average, motivational and material access to collaborative learning tools, since the grand mean score exceeds the defined benchmarking values. They make frequent use of various collaborative learning tools such as Google Meets, WhatsApp, and the university learning management systems, although the intensity and extent vary depending on the learning tools. There are results that show that the access to the collaborative learning tools does not significantly influence the usage of the tools, which indicate that other factors, including pedagogical factors and academic demands, influence the usage rather than the access. The results further show that the gender of the undergraduate students does not significantly influence the access to collaborative learning tools nor does it influence the usage. It indicates that the gap that existed in relation to ownership and usage of technology has been diminishing within the context. The findings show that although the access and motivations are adequate, efforts may still be needed to influence the usage effectively.

Recommendations for different stakeholders are discussed as follows.

1 Universities should continue promoting awareness and training on collaborative digital tools to maintain and enhance students' motivation.

1. Institutions should improve infrastructure, ensuring reliable internet connectivity and adequate computer labs to enhance equitable access.
2. Collaborative tools developers should provide training and awareness for less frequently used tools like Google Drive and Facebook groups to broaden students' collaborative skills.
3. Researchers should focus not only on providing access but also on encouraging proper utilization through structured activities and guidance.
4. Universities should maintain gender-inclusive policies, ensuring equal access to collaborative tools for all students.
5. Educators should encourage all students, irrespective of gender, to actively participate in collaborative digital learning.

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