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Enhancing Teaching Communication Skills through Technology: A Study of [Federal Polytechnic Ugep, Cross River State University of Technology and the University of Calabar] Lecturers

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Annotation: This study investigates the impact of technology on teaching communication skills among lecturers of Federal Polytechnic Ugep and the University of Calabar. The research aims to train some lecturers on how to use technology in teaching, identify effective technologies, benefits and challenges associated with technology-enhanced teaching communication. The study engaged 100 purposively selected faculty members and 300 stratified randomly selected students from diverse academic departments. Data collection involved pre- and post-intervention surveys, usage analytics, interviews, focus groups, and classroom observations. The intervention focused on commonly adopted technological tools including Zoom, Microsoft Teams, Google Docs, Padlet, Prezi, and PowerPoint, evaluated for their effectiveness in supporting both verbal and written classroom communication. Quantitative data were analyzed using paired sample t-tests, revealing a statistically significant improvement in communication skills following

the seminar intervention ($t(14) = 12.41$, $p < .001$). Qualitative analysis through thematic and content coding corroborated these findings, identifying improved clarity, engagement, and feedback loops as major benefits while, challenges such as insufficient training, inconsistent usage, and technical constraints were noted. The research concludes that technology significantly enhances communication in teaching contexts when implemented with adequate institutional support, user training, and consideration for usability. It recommends regular workshops, modular peer-learning programs, and user-focused technology strategies to ensure inclusive and sustainable adoption across diverse learning environments

Keywords: communication skills, educational technology, mixed-methods, higher education, teacher training, Nigeria.

1.0 Introduction

Effective teaching communication is crucial for student engagement, academic success, and overall educational experience. The ability of lecturers to effectively convey information, ideas and knowledge to their students, and facilitate student engagement and participation is important. It is the cornerstone of successful education and a hallmark of the educational process, playing a vital role in fostering engagement, motivation and academic achievement on both sides of the spectrum between lecturers and students.

Communication can take on many forms and is often referred to in more formal settings, such as speeches or presentations, or even reports. Effective communication skills help in minimizing the potential of an unkind feeling while the process of learning and teaching happens. It has been recommended by teachers that they should communicate with their students in an understandable and clear manner. (Meshramkar, 2018) Opines that the process of communication is said to be successful when the teacher is able to deliver his or her message clearly in an understandable manner. Communication basically comprises an art to interact. The skills of communication are often of three main types. These are

- ✓ verbal communication skills
- ✓ non-verbal communication skills
- ✓ visual communication skills .

Verbal communication has to do with the voice. How we project our voice is very important, the tone of our voice can give a different meaning to what we intend. Non-verbal communication has to do with our body language and visual communication has to do with the use of signs, drawing etc. The advent of technology has transformed the educational landscape, offering unparalleled opportunities for lecturers to enhance their communication skills and connect with students in innovative ways (Bon, 2010).

The traditional model of education is undergoing a significant transformation, driven by the rapid advancement and accessibility of technology. Technology integration in education refers to the seamless incorporation of technological tools and resources into teaching and learning processes to enhance educational outcomes. This integration goes beyond simply using technology as a substitute for traditional tools; it involves a fundamental shift in pedagogy, content delivery, and student engagement (Ertmer, 2005). From interactive whiteboards and learning management systems (LMS) to virtual reality and artificial intelligence, technology offers a plethora of opportunities to personalize learning, foster collaboration, and prepare students for the digital age.

However, the integration of technology into teaching communication poses unique challenges, necessitating a deeper understanding of its impact on lecturers practice and outcomes. The rapid proliferation of technology in higher education has led to increased expectations for lecturers to incorporate digital tools into their teaching practices (Kaliisa & Picard, 2017). Learning management systems (LMS), social media, video conferencing and other digital tools have become essential components of modern teaching. Despite the numerous benefits, lecturers may encounter challenges in communicating complex ideas, managing classroom dynamics, and adapting to diverse learning styles. The integration of technology in tertiary education presents valuable opportunities to improve teaching communication skills. This study seeks to explore how technology can enhance the teaching communication abilities of lecturers at the Federal Polytechnic Ugep, Cross River State University, and the University of Calabar.

1.2 PROBLEM STATEMENT

The ever growing use of modern day communication technology, the robustness of global internet usage and the affinity for the use of these technologies has led to an increase in its integration in virtually all works of life, this is moreso the case for academia. This has shown that effective teaching communication is important for student engagement and academic success (Bozalek, Ng'ambi & Gachago, 2013). However, lecturers in tertiary institutions in Africa and in Nigeria especially face challenges in developing essential communication skills and adapting to diverse learning styles adequate for the current technological age (Wolff, 2002). The integration of technology has the potential to address these challenges, but its adoption is hindered by various barriers.

> **Limited technology integration**: Technology can support classroom instruction by creating opportunities for students to complete assignments on the computer thrasher than with Korean pencils and paper. Effective technology integration is achieved when students can access technology tools to help them obtain information on time, analyze and synthesize it, and present it professionally to an authentic audience. Technology should become an integral part of how the classroom functions, it should be accessible as all other classroom tools.

However, High-quality tools and devices may be expensive for some institutions and learners. These technologies require infrastructure, continual maintenance and repairs. Schools need to invest in robust technology infrastructure, including reliable internet connectivity, hardware and software, as well as provide adequate technical support to ensure smooth operation and minimize disruptions.

> **Lack of Electricity and Access to Uninterrupted Internet Supply**: We live in an environment where the power supply is epileptic and the internet supply is also not steady. It becomes very expensive to use technology because we will have to generate our own electricity. Also getting access to uninterrupted interment supply is a huge difficulty, students might not have the funds to provide steady light and internet. Frequent power outages can disrupt teaching as well as other group sessions. Slow internet speed can make it difficult to stream videos, access online resources or conduct virtual classes, thereby hindering the eclectic use of technology in teaching.

> **Teacher training and professional development**: Effective technology integration requires teachers to be proficient in using various technological tools and platforms. Lecturers face technical issues, lack proper training and as a result resist adopting new technologies. Providing teachers with adequate training and ongoing professional development is essential for maximizing the benefits of technology in education.

> **Digital divide:** Current technologies may not facilitate interactive teaching communication. Also there is unequal access to technology on the internet and this causes a digital divide, disadvantaged students from low income families or those living in underserved communities with little or no access to the internet, and poor conditions for power supply will be greatly disadvantaged. Bridging this gap is important to ensuring equitable access to educational opportunities.

>**Distraction and over-reliance:** Technology may distract and disengage the students. Technology can be a source of distraction to students if not used effectively. Educators need to carefully design learning activities and establish clear guidelines for technology use to minimize distractions, and promote focused learning. It may not also cater to individual learning styles.

> Infrastructure limitation, insufficient technology infrastructure hinders effective teaching communication and also limited resources (financial and human).

1.3 Objective of Study

The objectives of the study includes:

1. Identify key components of an effective teaching communication skills framework

2. Examine current teaching communication skills among lecturers and the technology most commonly used to support teaching communication

3. Investigate the impact of technology integration on teaching communication skills

4. Give lectures an awareness of the different communication technology tools that will help in enhancing their teaching communication skills.

1.4 Research Questions

Based on the research objectives, the following research questions were formulated;

1. What are key components of an effective teaching communication skills framework?

2. What is current teaching communication skills among lecturers and the technology most commonly used to support teaching communication?

3. What is the impact of technology integration on teaching communication skills?

4. What is the level of lectures awareness of the different communication technology tools that will help in enhancing their teaching communication skills?.

2.0 Literature Review

The integration of technology into education has been a topic of extensive research over the past few decades, with a growing body of literature highlighting its impact on teaching and learning outcomes. Scholars have explored the transformative potential of digital tools in enhancing educators' communication skills, with an emphasis on improving student engagement, motivation, and academic achievement. Various studies have shown that technology-enhanced teaching methods foster a more interactive and inclusive learning environment by catering to diverse learning styles and providing real-time feedback (Mayer, 2009; Hattie & Timperley, 2007). Additionally, the advent of online platforms and communication tools such as Google Classroom, Zoom, and Blackboard has redefined the way lecturers and students interact, promoting collaboration and extending learning beyond the traditional classroom setting (Dahlstrom et al., 2014). This literature review examines the ways in which technology can

enhance lecturers' communication abilities, offering insights into its role in the evolving educational landscape and its potential to improve both teaching practices and student outcomes.

The integration of technology into teaching and learning has become an essential focus in contemporary educational research. Technology-enhanced teaching and communication skills have been linked to improved student engagement, motivation, and academic outcomes. In recent years, studies have demonstrated how digital tools and platforms can support lecturers in refining their communication abilities and fostering a more interactive and inclusive classroom environment. For instance, *Technology-Enhanced Teaching and Learning* (2020) highlights how tools like online learning platforms and multimedia resources can make learning more accessible, facilitating better communication between students and lecturers. By using technology, lecturers can present information in diverse formats, catering to different learning styles and improving the overall teaching experience. This shift towards technology is not only beneficial for students but also serves to enhance the competence and confidence of educators, providing them with innovative methods to engage their students.

Effective communication is at the heart of teaching, and it has long been recognized as a fundamental skill for lecturers. A study by Smith (2019) emphasizes that the ability to communicate clearly and effectively is essential for fostering student engagement and academic success. As educational technologies evolve, lecturers' communication skills must also adapt. *Communication Skills Training for Lecturers* (2019) underscores the need for specialized training programs to help educators develop the digital literacy required for successful technology integration. While many educators recognize the potential benefits of technology, the challenge remains in equipping them with the skills necessary to use these tools effectively. Williams (2018) notes that while technology-enhanced communication tools like interactive video conferencing and online platforms facilitate student engagement, many lecturers struggle to incorporate these technologies into their teaching practices without proper support and guidance. The study argues that without adequate professional development and training, the full potential of these technologies may not be realized.

Furthermore, the role of technology in enhancing communication between lecturers and students has been a major focus in improving student outcomes. Platforms such as Google Classroom, Zoom, and Blackboard allow lecturers to provide timely, personalized feedback, a crucial aspect of effective teaching. Brown (2017) explores how digital feedback and assessment systems enable educators to deliver feedback in real-time, promoting a more responsive and interactive learning environment. The research highlights that immediate feedback helps students identify areas of improvement and fosters a deeper understanding of the material. This aligns with findings from *Technology-Enhanced Teaching and Learning* (2020), which argue that the use of technology in feedback processes can significantly improve both student engagement and academic achievement. However, despite the advantages, challenges persist in the widespread adoption of these tools, particularly when teachers lack the necessary training to implement them effectively (Ertgmer, 2005).

In addition to enhancing communication between lecturers and students, technology has facilitated greater collaboration among students themselves. Tools like Google Docs and collaborative learning platforms provide opportunities for students to work together on projects and share resources, regardless of their physical location. Williams (2018) highlights how technology enables peer-to-peer learning and collaboration, which contributes to a more inclusive learning environment. However, while these platforms promote inclusivity, they also introduce barriers. Hardware and software issues, as noted by Koehler and Mishra (2009), often impede effective technology integration. Moreover, not all teachers are equipped with the necessary training or support to fully integrate these tools into their pedagogical practices (Mishra & Koehler, 2006). These challenges suggest that while the potential for technology-enhanced communication is vast, addressing the barriers to implementation is crucial for realizing its benefits.

The integration of technology into teaching has the potential to transform communication between lecturers and students, promoting greater engagement, accessibility, and academic success. However, for lecturers to fully embrace these technologies, proper training and support are essential. The existing literature demonstrates that when educators are equipped with the tools and skills to use technology effectively, it can significantly enhance their communication capabilities and improve student learning outcomes. Yet, challenges such as inadequate training, technical issues, and resistance to change must be addressed to maximize the benefits of technology in education. From the body of work done by previous researchers it is clear how important effective teaching communication is in tertiary education. Technology integration has been shown to enhance student engagement and participation in class. It is crucial for student engagement, academic success, and overall educational experience (Johnson, 2020; Smith 2019). Studies have shown that technology enhances teaching communication skills. Tools like learning management systems, video conferencing and social media enhance teacher-student communication (Garrison & Anderson, 2023). Technology integration promotes innovative teaching methods (Koehler & Mishra, 2009). Technology can increase student motivation and participation in learning activities (Hativa, 2013). Technology can also facilitate timely and effective feedback, which is essential for student learning (Hattie&Timperley, 2007). Technology can provide equal access to learning opportunities for students with disabilities (Burgstahler, 2003). To overcome the challenges and barriers, several best practices and strategies can be employed. Encourage lectures to collaborate with colleagues to plan and integrate technology into their teaching. Enhancing teaching communication skills through technology in tertiary institutions requires a multifaceted approach. By understanding the theoretical frameworks, benefits, challenges and best practices, educators can effectively integrate technology into their teaching practices to improve student learning outcomes.

3.0 Methodology

The research combined both qualitative and quantitative data to provide a comprehensive understanding of the impact of technological tools on communication practices within the classroom. Faculty members and students from various academic departments across three institutions were sampled as primary participants. A purposive sampling method was used to select faculty members from the chosen institutions who incorporate technology in their teaching, while a stratified random sampling approach was ensure diverse student representation. Data collected through pre-and post-surveys to measure changes in communication skills, along with interviews, focus groups, and observational studies were capture as the experiences and perceptions of both lecturers and students. The study focus on several technological tools such as video conferencing platforms (Zoom and Microsoft Teams), collaborative tools such as (Google Docs, Padlet), multimedia tools (Prezi, PowerPoint), These tools was assessed for their role in enhancing both verbal and written communication. Quantitative data was employed to analyzed through descriptive statistics and paired sample t-tests or ANOVA to compare pre-and post-survey results on communication skills. Qualitative data will be analyzed through thematic and content analysis, focusing on common patterns and challenges in using technology to improve communication.

Research Design:

Mixed-Methods Approach: This approach combines both qualitative and quantitative methods, providing a comprehensive understanding of how technology impacts teaching communication skills.

Qualitative data helped to capture the depth and complexity of personal experiences and perceptions of teachers and students.

Quantitative data helped to provide measurable insights into the effectiveness of technological tools.

Population and Sampling:

- Target Population: Faculty members, lecturers and students in three (3) chosen tertiary institutions; federal polytechnic Ugep, Cross River State university and the university of calabar.

Sampling Method:

- lecturers: A purposive sampling method was used to select one hundred (100) faculty members who use or are willing to use technology for teaching communication.
- Students: Stratified random sampling was employed to select 300 students one hundred (100) each from different academic departments or courses across the 3 tertiary institutions to ensure a diverse representation.

Data Collection Methods:

Pre-and Post-Surveys/Questionnaires:

- structured surveys were developed to assess the communication skills of both lecturers and students before and after the introduction of technological tools.
- Usage Analytics: data was collected on how often and in what ways technology is being used in teaching (e.g., through Learning Management Systems, video conferencing tools, digital whiteboards, etc.)
- Interviews/Focus Groups:
- in-depth interviews were conducted with both lecturers and students to understand their experiences with technology in enhancing teaching communication.
- Observational Studies: selected classes were observed to see how teachers use technology in real-time and how students interact with the digital tools. attention was paid to how technology supports communication in both formal and informal settings (e.g., classroom discussions, group work, online interactions).

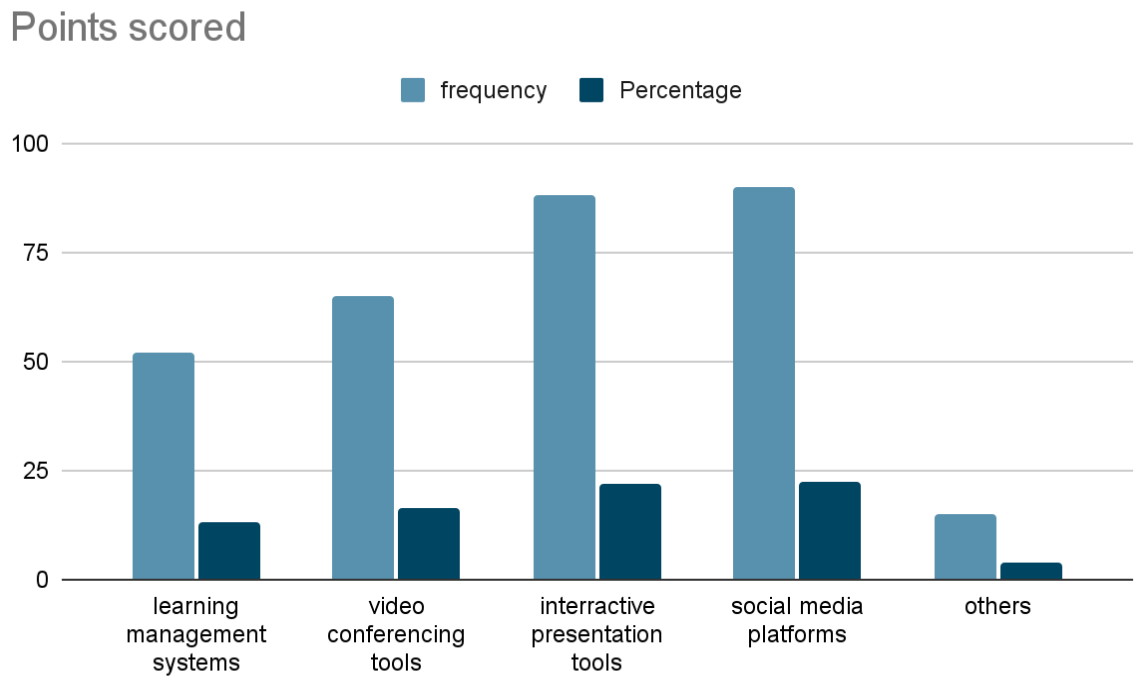
Data Analysis

Descriptive Statistics: Summary of data from surveys, such as the frequency of technology usage, average ratings of communication improvement, etc. Paired Sample t-tests/ANOVA: To compare pre- and post-survey data for faculty and students to see if there are statistically significant improvements in communication skills. hematic Analysis: Analyzed interviews, focus groups, and observation notes to identify recurring themes or patterns regarding how technology impacts communication skills.

4.0 Data analysis and Results

Table 2: Technology Currently Used by Lecturers

Technology Tool	Frequency	Percentage (%)
Learning Management System	90	90%
Video Conferencing Tools	88	88%
Interactive Presentation Tools	65	65%
Social Media Platforms	52	52%
Other	15	15%



Communication Skills Perceived as Most Important

Table 3: Communication Skills Prioritized

Skill	Lecturers (n=100)	Students (n=300)
Clarity of Expression	92	270
Active Listening	84	252
Engagement Techniques	75	240
Feedback Mechanism	68	200
Non-verbal Communication	43	140

Frequency of Technology Use

Figure 1: Frequency of Tech Usage in Teaching (Lecturers)

Frequency	Number of Lecturers	Percentage (%)
Always	35	35%
Frequently	40	40%
Sometimes	15	15%
Rarely	7	7%
Never	3	3%

Impact of Technology on Teaching Effectiveness (Lecturer Ratings)

Average Rating: 8.1 / 10

Challenges Faced by Lecturers

Table 4: Common Challenges

Challenge	Frequency	Percentage (%)
Lack of Training	62	62%
Technical Issues	55	55%
Student Engagement	48	48%
Time Management	38	38%
Resource Availability	30	30%

Preferred Training Methods

Table 5: Training Preferences

Training Type	Lecturers (n=100)
Workshops on Tools	72
General Tech Integration	58
Peer Monitoring	45
Self-Paced Online Courses	66

Willingness to Adopt New Technology

Lecturers' Average Rating: 7.8 / 10

Most Effective Platforms for Communication

Table 6: Platform Preferences

Platform	Lecturers	Students
Zoom	75	210
Microsoft Teams	45	110
Google Classroom	55	150
Slack	30	65
Others	10	25

Essential Features in Educational Technology

Most Selected Features:

User-friendly Interface (87%)

Real-time Feedback (75%)

Accessibility Features (62%)

Interactive Elements (60%)

Analytics/Reporting (45%)

Improvement in Student-Teacher Interaction

Response	**Frequency**
Yes	82%
No	10%
Uncertain	8%

Lecturer Comfort Level with Tech (1–10 Scale)

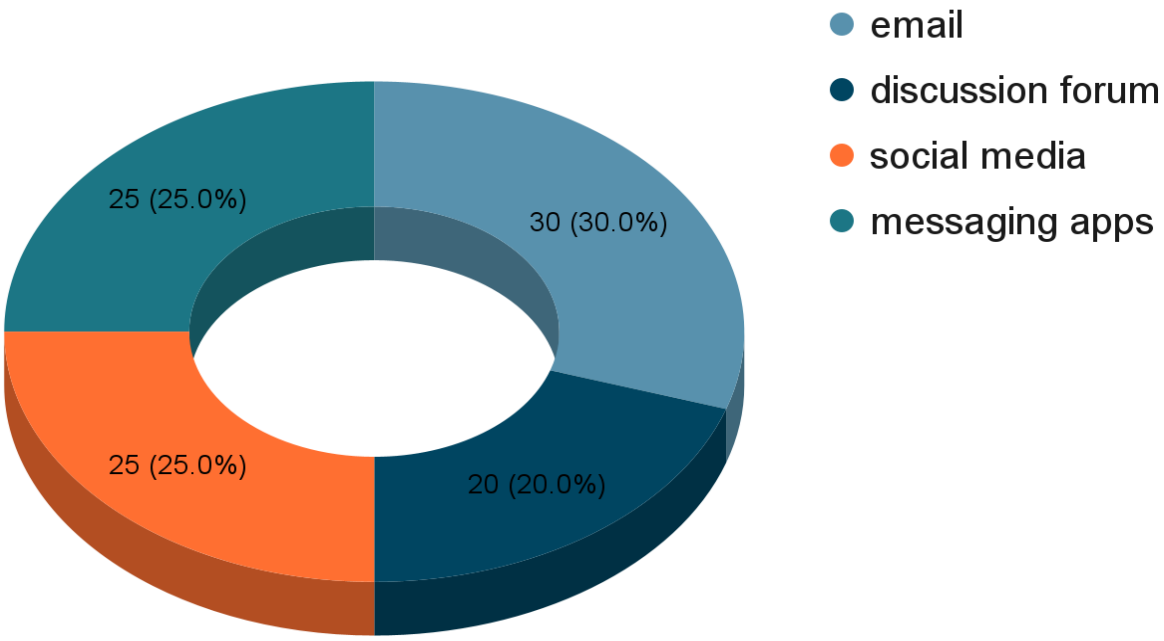
Average Rating: 7.9 / 10

Previous Training in Teaching Technology

Response	Frequency
Yes	65%
No	35%

Preferred Student Communication Channels

Platform	Percentage (Students)
Email	30%
Discussion Forums	20%
Social Media	25%
Messaging Apps	25%



Comparative analysis

In order to test the level of impact of technology in the improvement of communication skills and learning skills of both teachers and students we conducted tests with a sample of 15 teachers. They were assessed (on a 1–10 scale) for their communication skills before and after attending a technology-integrated training seminar.

Teacher	Pre-Test Score	Post-Test Score
T1	5	7
T2	6	8
T3	4	6
T4	7	8
T5	5	7
T6	6	8
T7	4	6
T8	5	7
T9	6	7

T10	5	6
T11	4	6
T12	6	8
T13	5	7
T14	5	7
T15	6	9

Subtracting each pre-test score from the post-test score.

Teacher	Pre	Post	Difference
T1	5	7	2
T2	6	8	2
T3	4	6	2
T4	7	8	1
T5	5	7	2
T6	6	8	2
T7	4	6	2
T8	5	7	2
T9	6	7	1
T10	5	6	1
T11	4	6	2
T12	6	8	2
T13	5	7	2
T14	5	7	2
T15	6	9	3

Summary Statistics

Mean difference ($\bar{D}$): ≈ 1.8

Standard deviation of difference (SD): ≈ 0.56

n = 15

3. t-Test Formula

4. Degrees of Freedom & Critical Value

df = n - 1 = 14

At $\alpha = 0.05$, the critical t-value (two-tailed) ≈ 2.145

Since t = 12.41 > 2.145, the result is statistically significant.

Statistic	Pre-Test	Post-Test
Mean	5.2	7.0
Standard Dev.	0.74	0.76
Range	4–7	6–9

The average communication skill score increased from 5.2 to 7.0, indicating an overall improvement.

From the t test conducted it is gathered that there was a statistically significant increase in teachers' communication skills after the seminar, $t(14) = 12.41$, $p < .001$. This suggests that technology-integrated training had a positive impact on enhancing teaching communication skills.

Findings

The following are the summary of the finding

1. Technology Integration is Widespread, but Uneven Findings from the research reveal that most lecturers regularly use LMS and video conferencing tools, reflecting the shift toward hybrid or online teaching modes. However, tools like Slack and advanced analytics are underutilized, possibly due to lack of familiarity or training.

2. Clarity and Engagement Are Key Communication Priorities Both lecturers and students highly value clarity of expression and engagement strategies. This suggests that any tech tool adopted must support these dimensions, e.g., tools that allow for visuals, interactivity, and feedback loops.

3. Training Gaps Present a Barrier Although many lecturers are willing to adopt new tools, 62% identified lack of training as a barrier. Workshops and self-paced courses were top training preferences, showing that flexible, modular approaches are most suitable.

4. Impact is Positive But Not Without Challenges Lecturers rated tech effectiveness at 8.1/10, showing strong positive sentiment. Yet, challenges like technical issues and time management remain. Balancing the benefits of technology with its complexity is key.

5. Students Prefer Simpler, Familiar Communication Tools Students favored Zoom and messaging apps for interaction—platforms that are user-friendly and readily available—indicating that communication technology needs to be both accessible and intuitive.

Conclusion and Recommendations:

This study confirms that integrating technology into teaching significantly enhances communication skills, particularly clarity, engagement, and feedback. Lecturers and students recognize the value, but effectiveness is dependent on appropriate training, ease of use, and institutional support. Based on the findings, the study hereby recommends the following:

1, Institutions should provide regular workshops and support for tech integration.

2. Tools adopted should prioritize clarity, interactivity, and feedback.

3. Peer learning and self-paced modules can bridge training gaps.

4. Tech adoption strategies should be inclusive of both lecturer and student preferences.

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