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STUDENTS' AND LECTURERS' PERSPECTIVES ON PODCASTING AS A LEARNING TOOL: A CASE STUDY OF MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY

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ABSTRACT

Podcasting has emerged as a transformative tool in education, renowned for its ability to foster flexibility, accessibility, and interactivity among learners and educators. This study investigates the perspectives of students and lecturers at Mbarara University of Science and Technology (MUST) regarding the use of podcasting as a learning tool. Employing a mixed-methods approach, the research examines the perceived benefits, challenges, and preferences associated with podcasting in higher education. Quantitative data reveal that 82% of participants reported enhanced engagement, while 79% highlighted improved understanding of course materials facilitated by podcasting. Qualitative findings underscore its role in accommodating diverse learning styles and bridging accessibility gaps for students in remote areas. Despite these benefits, significant challenges persist, including inadequate infrastructure, limited internet connectivity, and resistance to adopting new technologies. The study concludes with actionable recommendations, emphasizing the need for robust ICT infrastructure, capacity-building initiatives, and the integration of podcasting into academic curricula to maximize its potential in enhancing teaching and learning outcomes.

Keywords: Podcasting, E-Learning, Educational Technology, Higher Education, Uganda.

I. INTRODUCTION

1.1 Introduction to the study

The rapid advancement of technology has transformed nearly every sector of society, with education being no exception. In the 21st century, digital tools have become indispensable in addressing the evolving needs of learners and educators. Among these tools, podcasting has gained recognition as a versatile and innovative medium, enabling the dissemination of educational content in accessible and interactive formats. Unlike traditional teaching methods that often rely on face-to-face interactions, podcasting provides an alternative that accommodates the diverse lifestyles and learning preferences of modern students, particularly those who juggle academic commitments with personal and professional responsibilities (Evans, 2022; McCombs & Liu, 2021).

Podcasting's potential lies in its ability to deliver audio and video content asynchronously, allowing learners to engage with materials at their convenience. This flexibility not only enhances the accessibility of educational resources but also fosters active learning by encouraging students to review and reflect on content at their own pace. In developed countries, podcasting has become a staple of higher education, seamlessly integrated into learning management systems and widely embraced by students and educators alike. For instance, studies in the United States and Europe reveal that students use podcasts extensively for revision, comprehension, and supplemental learning, highlighting the medium's effectiveness in improving retention and engagement (Schoenborn et al., 2021; Lee & Chan, 2020).

In contrast, the adoption of podcasting in sub-Saharan Africa remains limited, hindered by infrastructural challenges, lack of awareness, and resistance to technological change (Alsied & Pathan, 2019; Ng'ambi & Lombe, 2012). Uganda, like many other countries in the region, faces a significant digital divide, with many higher education institutions grappling with inadequate internet connectivity and limited access to modern devices. These challenges are particularly pronounced at Mbarara University of Science and Technology (MUST), where traditional pedagogical approaches dominate despite the increasing availability of digital tools (Mugwanya et al., 2011).

Understanding the perspectives of key stakeholders—students and lecturers—is critical to bridging this gap and unlocking the potential of podcasting in higher education. Students, as end-users, can provide valuable insights into their preferences, expectations, and perceived benefits, while lecturers play a crucial role in driving adoption and ensuring the effective integration of technology into teaching practices (Davis, 1989; Venkatesh et al., 2020). By exploring these perspectives, this study aims to identify the benefits and challenges of podcasting at MUST and propose strategies for its successful implementation.

This research is guided by three primary objectives: to examine students' and lecturers' perceptions of podcasting as a learning tool, to identify the key benefits and challenges associated with its use, and to develop actionable recommendations for integrating podcasting into the university's curriculum. By addressing these objectives, the study seeks to contribute to the growing body of knowledge on educational technology in sub-Saharan Africa, offering practical insights for institutions seeking to enhance teaching and learning outcomes through innovative solutions.

As Uganda strives to achieve the United Nations Sustainable Development Goal 4 (SDG 4), which emphasizes inclusive and equitable quality education, the adoption of podcasting and other digital tools represents a critical step toward modernizing higher education (United Nations, 2015). This introduction sets the stage for a comprehensive investigation into the role of podcasting in transforming the educational landscape at MUST, shedding light on its potential to overcome traditional barriers and foster a more engaging, flexible, and accessible learning environment.

1.2 Problem statement

Despite the transformative potential of digital tools in education, the integration of innovative technologies such as podcasting in higher education remains limited in sub-Saharan Africa, particularly at Mbarara University of Science and Technology (MUST) in Uganda. While podcasting has proven to be an effective learning tool in developed countries, its adoption in Uganda faces significant barriers, including inadequate infrastructure, limited access to digital devices, and a general resistance to technological change (Alsied & Pathan, 2019; Ng'ambi & Lombe, 2012). These challenges hinder the full utilization of podcasting as an alternative, flexible, and accessible medium for learning.

At MUST, where traditional teaching methods still dominate, students and lecturers may have varying perceptions of the value and feasibility of incorporating podcasting into the curriculum (Davis, 1989; Venkatesh et al., 2020). Without a clear understanding of these perspectives, it becomes difficult to implement strategies that can effectively bridge the digital divide and leverage podcasting's potential to enhance teaching and learning. This gap in knowledge regarding the benefits and challenges of podcasting in the context of MUST is further compounded by the lack of empirical studies exploring the factors influencing its adoption and integration into higher education in Uganda (Mugwanya et al., 2011).

This study aims to investigate the perceptions of students and lecturers at MUST regarding podcasting as a learning tool, identify the benefits and challenges they associate with its use, and propose strategies for overcoming barriers to its successful implementation. By addressing this gap, the research seeks to contribute to the development of actionable recommendations for integrating podcasting into the university's curriculum, thereby enhancing the quality of education and promoting more inclusive and equitable learning opportunities in the region (United Nations, 2015).

1.3 Objectives

1. To examine students' and lecturers' perceptions of podcasting as a learning tool.
2. To identify the benefits and challenges of podcasting in teaching and learning at MUST.
3. To propose strategies for effective integration of podcasting into the university's curriculum.

1.4 Research Questions

1. What are students' and lecturers' perceptions of podcasting as a learning tool?
2. What are the key benefits and challenges associated with podcasting at MUST?
3. How can podcasting be effectively integrated into teaching and learning practices?

II. LITERATURE REVIEW

The integration of podcasting as an educational tool in higher education has gained significant attention over the past few years, with research highlighting its potential to enhance learning experiences through flexibility, accessibility, and engagement. Podcasting has been widely adopted in many developed countries, where it is used as a supplementary tool in various academic disciplines. However, the adoption of podcasting in sub-Saharan Africa, including Uganda, is still in its infancy, and much of the existing literature focuses on the challenges of integrating such technologies in resource-constrained settings. This literature review explores key themes relevant to the study, including the potential benefits of podcasting in education, barriers to its adoption, and the perspectives of students and lecturers in the context of higher education in sub-Saharan Africa.

2.1 The Benefits of Podcasting in Education

Podcasting, an audio-based form of content delivery, offers several benefits that make it a valuable addition to traditional pedagogical methods. One of the primary advantages is the flexibility it provides for both learners and educators. Podcasts allow for asynchronous learning, enabling students to access educational content at their own pace and convenience (Schoenborn et al., 2021). This flexibility is particularly important for students who balance academic commitments with personal or professional responsibilities, as it accommodates a range of learning preferences, including auditory and visual learning styles (Evans, 2022). Asynchronous learning not only increases accessibility but also encourages self-regulation and independent learning (Lee & Chan, 2020), which are crucial for student success in higher education.

In addition to flexibility, podcasts have been shown to enhance retention and engagement. Several studies highlight the effectiveness of podcasts in improving students' understanding of complex concepts (Schoenborn et al., 2021; Lee & Chan, 2020). The ability to listen to podcasts multiple times helps reinforce learning and improves long-term retention of information. Furthermore, podcasts can be designed to incorporate multimedia elements, such as video, graphics, and interactive features, which further enhance the learning experience (McCombs & Liu, 2021).

Podcasting has also been found to support active learning. By listening to podcasts, students are encouraged to reflect on the content, take notes, and engage in discussions with peers or instructors. This active engagement can foster a deeper understanding of the material and encourage critical thinking (Evans, 2022). In some cases, podcasts are integrated into flipped classroom models, where students listen to lectures or content outside of class and engage in interactive, collaborative activities during class time (Schoenborn et al., 2021).

2.2. Barriers to Podcasting Adoption in Sub-Saharan Africa

Despite its potential benefits, the adoption of podcasting in sub-Saharan Africa faces several significant barriers. One of the most prominent challenges is the digital divide, which refers to the gap between individuals or communities who have access to digital technologies and those who do not (Ng'ambi & Lombe, 2012). In Uganda and other countries in the region, limited access to reliable internet connectivity, modern devices, and electricity hampers the widespread use of educational technologies such as podcasting (Mugwanya et al., 2011; Alsied & Pathan, 2019). In rural and underprivileged areas, students and lecturers may struggle to access the necessary resources to participate in digital learning, further exacerbating inequalities in education.

Another barrier to podcasting adoption in sub-Saharan Africa is the resistance to technological change among both educators and students. In many institutions, traditional pedagogical methods, which prioritize face-to-face interactions and printed materials, are still dominant (Ng'ambi & Lombe, 2012). Educators, particularly those who are not well-versed in digital technologies, may be reluctant to incorporate podcasting into their teaching practices, fearing it may disrupt established workflows or require additional training (Davis, 1989; Venkatesh et al., 2020). Similarly, students may have limited exposure to digital learning tools and may be hesitant to embrace new technologies, especially if they are not confident in their technological skills (Alsied & Pathan, 2019).

Infrastructural challenges also contribute to the slow adoption of podcasting in sub-Saharan Africa. In many cases, universities lack the necessary technical infrastructure, such as Learning Management Systems (LMS) and digital platforms, to effectively support podcasting and other forms of digital learning (Mugwanya et al.,

2011). Additionally, the lack of awareness of the benefits of podcasting among students and lecturers may further hinder its integration into the curriculum (Ng'ambi & Lombe, 2012).

2.3 Students' and Lecturers' Perspectives on Podcasting

Understanding the perspectives of both students and lecturers is critical to the successful integration of podcasting into higher education. Students, as end-users of digital learning tools, play a pivotal role in determining the success of podcasting as a learning medium. Research has shown that students generally appreciate the flexibility and convenience offered by podcasts (Lee & Chan, 2020). They find that podcasts provide a useful supplement to traditional lectures, allowing them to review course material and reinforce their understanding of complex topics (Evans, 2022). Moreover, podcasts are seen as an effective tool for revision, particularly during exam periods, as they allow students to listen to key content repeatedly (Schoenborn et al., 2021).

However, students' attitudes towards podcasting can vary depending on factors such as technological proficiency, access to resources, and the perceived value of the medium. Some students may struggle to adapt to podcast-based learning, particularly if they lack the necessary devices or internet access (Ng'ambi & Lombe, 2012). Additionally, students' learning preferences may influence their views on podcasting, with some preferring traditional face-to-face interactions over digital content delivery (Alsied & Pathan, 2019).

For lecturers, the adoption of podcasting presents both opportunities and challenges. On the one hand, lecturers recognize that podcasting can enhance student engagement, foster active learning, and increase the reach of their teaching materials (McCombs & Liu, 2021). On the other hand, some lecturers may view podcasting as an additional workload or a distraction from more conventional methods of teaching (Davis, 1989). Furthermore, lecturers' perceptions of podcasting may be influenced by their own comfort level with technology and their understanding of its pedagogical potential (Venkatesh et al., 2020).

In the context of MUST, where traditional pedagogical methods prevail, the perspectives of both students and lecturers will be instrumental in determining the feasibility of adopting podcasting as a mainstream educational tool. By examining these perspectives, this study aims to identify the key factors that influence the successful implementation of podcasting at MUST and propose strategies for overcoming the barriers to its adoption.

2.4. The Role of Podcasting in Achieving Educational Goals

The integration of podcasting in higher education aligns with broader global educational goals, particularly the United Nations Sustainable Development Goal 4 (SDG 4), which calls for inclusive and equitable quality education. As part of the effort to modernize education systems worldwide, digital tools such as podcasting can help bridge the educational divide by providing more accessible and flexible learning opportunities (United Nations, 2015). In sub-Saharan Africa, where educational resources are often limited, podcasting offers a promising solution to expand access to quality education, particularly in remote or underserved areas (Mugwanya et al., 2011).

By embracing podcasting, universities in sub-Saharan Africa can enhance the learning experience for students, improve retention and engagement, and foster a more inclusive educational environment. Moreover, podcasting can contribute to the development of digital literacy skills, which are increasingly important in the modern workforce. As such, the adoption of podcasting has the potential to not only enhance educational outcomes but also prepare students for the demands of the digital age.

2.5 Summary

The literature highlights the significant potential of podcasting as an educational tool, particularly in terms of flexibility, engagement, and accessibility. However, the adoption of podcasting in sub-Saharan Africa, including Uganda, is hindered by several barriers, including infrastructural challenges, limited access to technology, and resistance to technological change. The perspectives of students and lecturers are crucial in understanding the feasibility of podcasting adoption and identifying strategies to overcome these barriers. This study seeks to contribute to the growing body of knowledge on educational technology in sub-Saharan Africa, with a particular focus on podcasting at Mbarara University of Science and Technology.

III. METHODOLOGY

3.1 Research Design

This study employed a mixed-methods approach to gather both quantitative and qualitative data from students, lecturers, and administrators at Mbarara University of Science and Technology (MUST). A mixed-methods design was chosen to provide a comprehensive understanding of the perceptions, challenges, and opportunities regarding the use of podcasting as an educational tool in the context of a Ugandan university. The use of both qualitative and quantitative data collection methods allowed for a rich, nuanced exploration of the research questions and provided the ability to triangulate findings from multiple sources. This approach has been widely used in educational research, as it combines the strengths of both methods, providing a holistic view of the phenomenon being studied (Creswell & Plano Clark, 2017; Teddlie & Tashakkori, 2009).

The quantitative component of the study allowed for the collection of measurable data from a large sample, while the qualitative component enabled a deeper exploration of the experiences, perceptions, and attitudes of participants, which are crucial for understanding the context-specific factors that influence the adoption of podcasting (Bryman, 2016). The integration of both data types also contributed to the validity and robustness of the findings, ensuring a more comprehensive analysis of the research problem.

3.2 Population

The study targeted a population of 300 students and 50 lecturers from various faculties at MUST. Stratified random sampling was employed to ensure representation from different academic disciplines, including the faculties of Science, Education, and Social Sciences, ensuring that the sample reflected the diversity of students and faculty at the university. Stratified random sampling is particularly useful in ensuring that subgroups within the population are adequately represented, which helps to improve the generalizability of the findings (Cohen et al., 2017).

Students were selected from a variety of academic programs, including those enrolled in Bachelor's and Master's programs, to ensure that the perspectives of both undergraduate and graduate students were captured. Similarly, lecturers were selected from a range of departments, ensuring that the views of faculty members from different academic backgrounds and levels of teaching experience were included in the study.

The inclusion of both students and lecturers allowed for a comprehensive understanding of the potential benefits, challenges, and barriers to adopting podcasting in the university's curriculum. Given that lecturers play a central role in the delivery of content, their perspectives on the feasibility and effectiveness of podcasting were essential for understanding the broader institutional context in which podcasting might be integrated (Venkatesh et al., 2020).

3.3 Data Collection Methods

The study employed a combination of surveys, focus group discussions, and key informant interviews to collect both quantitative and qualitative data. Each data collection method was chosen based on its ability to address specific aspects of the research questions and provide a comprehensive view of the perceptions and challenges associated with podcasting in the educational setting.

3.3.1 Surveys

The primary method for collecting quantitative data was structured questionnaires, which were distributed to the 300 students and 50 lecturers. The questionnaire was designed to assess participants' perceptions, preferences, and experiences with podcasting as a learning tool. The survey instrument included both closed-ended questions, which allowed for the collection of quantifiable data, and Likert scale items, which provided insight into the strength of participants' opinions on specific aspects of podcasting (Likert, 1932).

The survey questions were developed based on a review of the literature on podcasting in education, ensuring that they were relevant to the specific context of MUST. Questions focused on topics such as familiarity with podcasting, perceived benefits and challenges, willingness to adopt podcasting, and preferred types of content delivery. A pilot study was conducted with a small group of students and lecturers to test the clarity and reliability of the questionnaire, following which minor adjustments were made to improve the instrument's validity and reliability (Cohen et al., 2017).

3.3.2 Focus Group Discussions

Focus group discussions (FGDs) were conducted with 10 groups of students and lecturers. Each group consisted of 6-8 participants and was facilitated by a trained moderator. FGDs were selected as a qualitative data collection method because they allow for in-depth discussion and interaction among participants, which can provide rich insights into their attitudes, experiences, and perceptions of podcasting (Kitzinger, 1995). In particular, FGDs provided an opportunity to explore participants' views in a group setting, allowing for the emergence of shared themes and perspectives that may not have been captured in individual interviews or surveys.

The FGDs focused on exploring the specific benefits and challenges of using podcasting in the context of MUST. Topics discussed included the perceived advantages of podcasting for learning, the barriers to its adoption, and suggestions for overcoming these barriers. The discussions also addressed how podcasting could be integrated into the curriculum and the type of content students and lecturers believed would be most effective in podcast format.

Each focus group session was audio-recorded with participants' consent and transcribed verbatim for analysis. The use of multiple focus groups enabled the research team to capture a range of perspectives, increasing the credibility of the findings (Patton, 2002).

3.3.3 Interviews

Key informant interviews were conducted with administrators at MUST to explore institutional challenges and opportunities related to the adoption of podcasting in the university's teaching and learning practices. The administrators included faculty deans, directors of technology services, and academic heads who were responsible for decision-making related to curriculum development, educational technology, and resource allocation. These interviews provided insights into the institutional factors that may facilitate or hinder the adoption of podcasting at MUST, including policies, infrastructure, and training opportunities (Davis, 1989).

The interview protocol was semi-structured, allowing for flexibility in the conversation while ensuring that key topics were addressed. The interviews focused on understanding the institutional vision for educational technology, the perceived benefits of podcasting for the university, and the challenges that administrators anticipated in the adoption process. Interviews were conducted in person or via virtual platforms, depending on the availability of the informants, and were recorded with the participants' consent for transcription and analysis.

3.4 Data Analysis

The data analysis process involved both quantitative and qualitative techniques to ensure that the findings were robust and comprehensive.

3.4.1 Quantitative Data Analysis

The quantitative data collected through the surveys were analyzed using Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize the demographic characteristics of the participants and to provide an overview of their responses to the survey questions. Measures of central tendency, such as means and standard deviations, were used to assess participants' overall perceptions of podcasting. Inferential statistics, including chi-square tests and t-tests, were employed to examine differences in perceptions between different groups of participants (e.g., students vs. lecturers, or faculties), allowing for a deeper understanding of the factors influencing the adoption of podcasting.

3.4.2 Qualitative Data Analysis

The qualitative data collected through the focus group discussions and interviews were analyzed using thematic analysis. Thematic analysis is a widely used method for identifying and interpreting patterns in qualitative data, and it allows researchers to organize and analyze the data in a way that reflects participants' experiences and perspectives (Braun & Clarke, 2006). The transcripts from the FGDs and interviews were read and re-read to identify recurring themes and categories. These themes were then coded and analyzed to identify patterns and relationships between different aspects of the data. The analysis also included identifying any discrepancies or contradictions in participants' responses, which helped to provide a more nuanced understanding of the findings (Patton, 2002).

To ensure the credibility and trustworthiness of the qualitative findings, multiple researchers were involved in the coding process, and inter-coder reliability was checked. Additionally, participant validation was used to confirm the accuracy of the data by sharing key findings with a subset of participants for feedback (Lincoln & Guba, 1985).

3.5 Ethical Considerations

Ethical considerations were central to the design and implementation of this study. Informed consent was obtained from all participants, who were assured of their right to confidentiality and anonymity. Participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw from the study at any time without consequence. The study adhered to the ethical guidelines set forth by the institutional review board at MUST, and all data were stored securely to protect participants' privacy.

3.6 Conclusion

The mixed-methods approach used in this study allowed for the collection of comprehensive data that captured both the breadth and depth of participants' perspectives on podcasting as a learning tool. By employing multiple data collection methods, including surveys, focus group discussions, and interviews, the study was able to provide a nuanced understanding of the benefits, challenges, and institutional factors influencing the adoption of podcasting at MUST. This methodology ensures that the findings of the study are both valid and reliable, offering valuable insights into how podcasting can be successfully integrated into higher education in Uganda.

IV. RESULTS

4.1 Participant Demographics

A total of 350 participants were involved in this study, consisting of 300 students and 50 lecturers from various faculties at Mbarara University of Science and Technology (MUST). The demographic breakdown of the participants is as follows:

4.1.1 Students

- 60% of the students were undergraduates, while 40% were postgraduate students.
- The undergraduate participants represented a broad range of academic disciplines, ensuring diverse perspectives regarding the potential use of podcasting in different fields of study.
- The postgraduate students, primarily enrolled in research-based programs, offered valuable insights into how podcasting could supplement advanced-level learning and research.

4.1.2 Lecturers

- Among the lecturers, 70% were full-time faculty members, while 30% were part-time lecturers.
- Full-time lecturers were more likely to have experience with pedagogical tools and methods, while part-time lecturers, who may have more flexibility in their teaching styles, provided a unique viewpoint on adopting new technologies in teaching.

4.1.3 Device Ownership

- A significant 88% of students reported owning smartphones, which are increasingly used for educational purposes, including accessing podcasts.
- 95% of lecturers owned smartphones, highlighting the widespread access to mobile technology among academic staff, which could facilitate the adoption of podcasting for teaching and learning purposes.

The high rate of smartphone ownership among both students and lecturers indicates that, despite challenges in infrastructure, mobile devices may serve as an effective medium for the distribution and consumption of educational podcasts.

4.2 Key Findings

The results were categorized into perceived benefits and challenges of using podcasting as a learning tool, based on both student and lecturer responses. The key findings are summarized as follows:

4.2.1 Perceived Benefits

Participants identified several potential benefits of podcasting for teaching and learning, particularly in enhancing engagement, improving comprehension, and increasing accessibility for remote learners.

- **Enhanced Engagement (82%):** A majority of participants (82%) felt that podcasting could significantly enhance student engagement. Students reported that podcasting would offer them the flexibility to interact with content at their own pace, leading to more active learning experiences. Similarly, lecturers believed that podcasts could promote deeper learning by enabling students to revisit materials outside of class, helping to reinforce concepts and improve overall engagement (Schoenborn et al., 2021).
- **Improved Comprehension of Course Content (79%):** Seventy-nine percent of the participants indicated that podcasts could improve their comprehension of course material. Students reported that listening to podcasts helped them grasp difficult concepts better than traditional lectures. Lecturers noted that podcasting allows students to review content multiple times, aiding retention and deeper understanding (McCombs & Liu, 2021).
- **Increased Accessibility for Remote Learners (74%):** Seventy-four percent of students and lecturers recognized the value of podcasting in increasing accessibility for remote learners. Many participants highlighted that podcasts could offer an alternative learning tool for students who have limited access to campus or who face barriers in attending synchronous classes due to geographical, financial, or personal constraints. This aligns with research suggesting that digital tools, including podcasts, play a crucial role in supporting learners in rural or underserved areas (Alsied & Pathan, 2019).

4.2.2 Challenges

Despite the perceived benefits, participants also identified several challenges hindering the widespread adoption of podcasting at MUST.

- **Limited Internet Connectivity (62%):** Sixty-two percent of the participants highlighted limited internet connectivity as a major barrier to the adoption of podcasting. In a context where internet infrastructure remains underdeveloped, the high cost of data and unreliable connections were cited as significant obstacles to accessing online educational content. This challenge is consistent with findings from previous studies on digital divide issues in sub-Saharan Africa (Ng'ambi & Lombe, 2012).
- **Resistance to Technology Adoption Among Lecturers (45%):** Forty-five percent of the participants, particularly students, reported that resistance to technology adoption among lecturers was a significant barrier to the use of podcasts in education. Some lecturers were unfamiliar with podcasting or were hesitant to adopt new technologies due to concerns about the time investment required for creating podcasts, as well as perceived difficulties in integrating this medium into existing teaching practices. This finding aligns with the Technology Acceptance Model (Davis, 1989), which suggests that perceived ease of use and perceived usefulness are critical factors influencing the adoption of new technologies in educational settings.
- **Lack of Institutional Support (40%):** Forty percent of participants identified a lack of institutional support as a challenge. This included the absence of policies or infrastructure to encourage the use of podcasts in teaching and learning. Both students and lecturers emphasized that without institutional buy-in, such as funding for equipment, training for faculty, and resources for students to access podcasts, the adoption of podcasting would be limited. This challenge mirrors concerns raised in studies examining the role of higher education institutions in fostering digital learning environments (Venkatesh et al., 2020).

Figure 1: Student Engagement with Podcasts

This figure illustrates the level of student engagement with podcasts across different subject areas at MUST. It highlights that engagement was generally high among students, particularly those in practical or applied fields, where podcasts were seen as a useful supplementary learning tool.

Table 1: Perceived Benefits of Podcasting

Benefit	Percentage
Engagement	82%
Comprehension	79%
Accessibility for Remote Learners	74%

The table above summarizes the key benefits identified by participants. It reveals that the majority of respondents perceive podcasting as an effective tool for increasing engagement, improving comprehension, and enhancing accessibility.

Figure 2: Barriers to Podcasting Adoption

This figure illustrates the barriers to podcasting adoption as identified by participants. The data shows that limited internet connectivity is the most significant challenge, followed by resistance from lecturers and lack of institutional support.

Table 2: Challenges Identified by Participants

Challenge	Percentage
Limited Internet Connectivity	62%
Resistance to Technology Adoption	45%
Lack of Institutional Support	40%

The table above highlights the primary challenges to podcasting adoption at MUST. As indicated, internet connectivity issues were the most frequently cited barrier, followed by lecturer resistance and lack of institutional support.

V. DISCUSSION OF FINDINGS

This section discusses the key findings of the study in relation to the research objectives and the existing literature, with a focus on how these findings contribute to understanding the potential and challenges of podcasting as a learning tool at Mbarara University of Science and Technology (MUST).

5.1. Objective 1: To Examine Students' and Lecturers' Perceptions of Podcasting as a Learning Tool

The findings of this study reveal that both students and lecturers at MUST perceive podcasting as a valuable learning tool, supporting earlier research that highlights the increasing acceptance of podcasting in education (Schoenborn et al., 2021; McCombs & Liu, 2021). Specifically, **82%** of participants noted that podcasting could enhance student engagement, **79%** believed it could improve comprehension, and **74%** recognized its potential to increase accessibility for remote learners.

- **Enhanced Engagement:** The high level of engagement reported by students is consistent with previous studies that suggest podcasts can facilitate a more interactive and flexible learning experience (Lee & Chan, 2020). Podcasting allows students to consume content at their own pace, offering an asynchronous learning experience that accommodates diverse schedules. This aligns with findings from McCombs & Liu (2021), who argue that flexibility in educational tools enhances learner participation and motivation.

- **Improved Comprehension:** Similarly, the perceived improvement in comprehension (79%) supports literature emphasizing the effectiveness of podcasts in reinforcing complex content and improving retention (Schoenborn et al., 2021). Podcasting enables students to revisit material multiple times, fostering deeper understanding and better retention of academic content. This finding aligns with the cognitive theory of multimedia learning, which suggests that audio-visual content can enhance learning by engaging multiple senses, thereby increasing retention (Mayer, 2005).

- **Increased Accessibility for Remote Learners:** The finding that 74% of participants identified podcasts as enhancing accessibility aligns with the literature that emphasizes the role of digital learning tools in bridging educational gaps in remote or under-resourced areas (Alsied & Pathan, 2019). Podcasts can be a cost-effective means of delivering educational content to students who may have limited access to face-to-face instruction, aligning with the goals of inclusive education outlined in the United Nations' SDG 4.

Despite these positive perceptions, there are notable differences between the findings of this study and those of developed countries, where podcasting is more widely adopted (Schoenborn et al., 2021; Lee & Chan, 2020). This discrepancy may be attributed to the unique challenges faced by institutions like MUST, including limited infrastructure and digital literacy gaps, which are discussed below.

5.2. Objective 2: To Identify the Key Benefits and Challenges Associated with Podcasting

5.2.1. Benefits

The study identified several benefits that align closely with the broader body of literature on podcasting in education:

- **Enhanced Engagement and Improved Comprehension:** As discussed earlier, these benefits are consistent with findings from Schoenborn et al. (2021) and McCombs & Liu (2021). By providing content that students can engage with outside of traditional classroom hours, podcasts offer greater control over learning and foster deeper comprehension. As students report using podcasts for revision and clarification, this supports the idea that podcasting can act as a supplementary tool that aids in retention (Lee & Chan, 2020).
- **Increased Accessibility:** As with other studies on the subject, including those by Alsied & Pathan (2019), this study found that podcasts can offer increased access to educational materials for students who may face physical, financial, or geographic barriers to traditional learning. This aligns with the argument that podcasts can bridge the gap for students in underserved regions, where access to high-quality learning resources is often limited (Ng'ambi & Lombe, 2012).

5.2.2. Challenges

Despite these perceived benefits, the study also highlighted several challenges to podcasting adoption, many of which are consistent with the literature on the digital divide and barriers to technology integration in sub-Saharan Africa (Mugwanya et al., 2011; Venkatesh et al., 2020).

- **Limited Internet Connectivity (62%):** This challenge is well-documented in the literature and aligns with studies that identify poor internet infrastructure as a key barrier to the widespread adoption of digital learning tools in developing countries (Alsied & Pathan, 2019; Ng'ambi & Lombe, 2012). The high cost of data and unreliable internet access are particularly problematic in sub-Saharan Africa, where the digital divide remains a significant obstacle to the equitable distribution of educational resources (Mugwanya et al., 2011).
- **Resistance to Technology Adoption Among Lecturers (45%):** Resistance from lecturers was identified as a significant barrier to the adoption of podcasting. This finding aligns with the Technology Acceptance Model (Davis, 1989), which suggests that individuals' attitudes towards technology—particularly their perceived ease of use and usefulness—affect their willingness to adopt new technologies. Resistance can also be attributed to a lack of familiarity with podcasting tools, concerns over additional workload, and insufficient training (Venkatesh et al., 2020). This is especially relevant in contexts like Uganda, where digital literacy may be lower among some faculty members.
- **Lack of Institutional Support (40%):** The lack of institutional support is a recurring challenge in the literature (Venkatesh et al., 2020). Without sufficient funding for infrastructure, training, or technical support, the adoption of podcasting in higher education is often hindered. This is consistent with Mugwanya et al. (2011), who note that inadequate institutional policies and resources are significant barriers to the integration of technology in African universities. Institutional support is critical for the successful integration of podcasting, including providing training for lecturers and ensuring students have access to the necessary technology.

5.3. Objective 3: To Develop Actionable Recommendations for Integrating Podcasting into the University's Curriculum

The study's findings suggest several actionable recommendations for integrating podcasting into the curriculum at MUST, in line with addressing the challenges identified:

- **Improving Internet Connectivity and Access to Technology:** To address the issue of **limited internet connectivity**, it would be essential for the university to invest in reliable internet infrastructure and explore low-cost data options for students. Collaborative efforts with telecommunication companies could be a way to subsidize the cost of data for educational purposes, as suggested by Alsied & Pathan (2019).
- **Providing Training and Support for Lecturers:** Given the resistance among lecturers to adopting podcasting, it would be beneficial to offer professional development opportunities to faculty members. Training workshops and pilot programs could help lecturers build confidence and competence in using podcasting as an educational tool. Additionally, encouraging early adopters among faculty could foster a culture of technological innovation at MUST (Venkatesh et al., 2020).

- **Securing Institutional Support and Funding:** To overcome the lack of institutional support, the university must prioritize podcasting as part of its digital education strategy. This could include funding for equipment, dedicated technical support staff, and the development of policies that encourage the use of digital tools in teaching and learning. Additionally, universities could collaborate with organizations like RUFORUM (who funded this research) to secure external funding for these initiatives.

VI. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made to enhance the adoption and integration of podcasting as a learning tool at Mbarara University of Science and Technology (MUST). These recommendations address both the benefits and challenges identified by students and lecturers, and align with the university's strategic goals of improving educational outcomes through the use of technology.

1. Improving Internet Connectivity and Access to Technology

The study revealed that **limited internet connectivity** (62%) is a significant barrier to the adoption of podcasting at MUST. To overcome this challenge, the following actions are recommended:

- **Invest in Robust Internet Infrastructure:** The university should collaborate with local internet service providers to ensure stable, high-speed internet access across campus. This could include exploring partnerships with mobile telecommunications companies to subsidize data costs for students and staff.
- **Affordable Data Plans:** Implement affordable data packages or zero-rated internet access specifically for educational purposes, so that students can access educational podcasts without incurring high data costs. Similar initiatives have been successfully implemented in other developing regions to bridge the digital divide (Alsied & Pathan, 2019).
- **Provide Access to Digital Devices:** The university could provide loaner devices such as smartphones, tablets, or laptops for students who lack access to modern digital tools. This would ensure that students, regardless of their socioeconomic background, can benefit from podcast-based learning.

2. Enhancing Lecturer Capacity and Addressing Resistance to Technology Adoption

The study found that **resistance to technology adoption among lecturers** (45%) is another key challenge that needs to be addressed. To overcome this resistance, the following actions are recommended:

- **Training and Professional Development:** Regular workshops and training sessions should be organized for lecturers to familiarize them with podcasting tools and how to integrate them into their teaching methods. Training should focus on both the technical aspects of creating and sharing podcasts, as well as the pedagogical benefits of using podcasts to support active learning and student engagement.
- **Peer Support and Mentorship:** Faculty members who are already proficient in using podcasting as an educational tool could be enlisted to mentor and support their colleagues. Establishing a "peer champion" network could encourage lecturers to embrace new technologies in a collaborative, less intimidating way.
- **Incorporating Podcasting into Teaching Strategies:** Podcasting should be included as a core part of the university's teaching strategy. Lecturers should be encouraged to use podcasts for delivering lectures, reinforcing key concepts, and offering additional learning resources outside of traditional classroom settings. This could be integrated into teaching evaluations to assess the impact of podcasting on student learning outcomes.

3. Securing Institutional Support and Resources for Podcasting Integration

The study identified a **lack of institutional support** (40%) as a major barrier to podcasting adoption. To address this issue, the following recommendations are proposed:

- **Develop Clear Policies on Educational Technology:** The university should establish policies that support the integration of digital tools like podcasting into the curriculum. These policies could include guidelines for creating, distributing, and using podcasts in the classroom, as well as incentives for lecturers who adopt these tools.
- **Allocate Funding for Podcasting Infrastructure:** The university should allocate specific funding to support the creation and distribution of podcasts. This includes investing in podcasting equipment (e.g.,

microphones, editing software), and ensuring that students and lecturers have access to necessary resources, such as training or technical assistance.

- **Create a Centralized Podcasting Platform:** To streamline podcast access, the university could create a centralized online platform where students and lecturers can upload, access, and share podcasts. This could be integrated with existing Learning Management Systems (LMS) or set up as a dedicated podcast library accessible to all students and staff.

4. Fostering a Culture of Innovation and Collaboration

The study highlighted the potential for podcasting to increase **student engagement** and **improve comprehension** (82% and 79%, respectively). To fully harness these benefits, the following steps are recommended:

- **Promote Collaborative Content Creation:** Encourage students and lecturers to co-create podcasts. This collaborative approach can foster a sense of ownership among students and enhance their learning experience. For example, students could record podcasts summarizing lecture content or discussing key course topics, further reinforcing their understanding.
- **Encourage Student-Led Podcasting Projects:** In line with the benefits of **increased accessibility** (74%) and active learning, the university should encourage students to create podcasts as part of their coursework or extracurricular activities. This could be incorporated into assessments, where students create podcasts as a form of project or report. This strategy has been shown to increase both engagement and critical thinking (Schoenborn et al., 2021).

5. Monitoring and Evaluation of Podcasting Impact

To ensure that podcasting is effectively enhancing teaching and learning, the university should implement a continuous **monitoring and evaluation** framework. This framework could include:

- **Feedback Surveys and Focus Groups:** Conduct regular surveys and focus group discussions with students and lecturers to assess the effectiveness of podcasts in supporting learning. This feedback would provide valuable insights into how podcasts are being used, what works well, and where improvements can be made.
- **Assessing Learning Outcomes:** Evaluate the impact of podcasting on student learning outcomes, such as comprehension and retention, through both qualitative and quantitative measures. For example, comparing test scores and assignment results for students who regularly engage with podcasts could provide concrete evidence of the tool's effectiveness in enhancing learning.

6. Expanding the Use of Podcasts Beyond the Classroom

Finally, the university should explore opportunities to expand the use of podcasts beyond traditional academic subjects:

- **Use for Student Support and Well-being:** Podcasts could be used as a tool for student support services, such as mental health awareness, career advice, or peer mentorship. These could be designed to help students navigate university life more effectively, especially for remote or part-time students.
- **Incorporate Podcasts into University Outreach Programs:** Podcasts could be used to reach prospective students, alumni, and the wider community. By creating informative and engaging podcasts about university programs, research, and events, the university can expand its reach and build a stronger connection with external stakeholders.

VII. CONCLUSION

This study explored the perspectives of students and lecturers on podcasting as a learning tool at Mbarara University of Science and Technology (MUST), focusing on its perceived benefits, challenges, and potential for integration into the university's curriculum. The findings underscore the transformative potential of podcasting in higher education, highlighting its ability to enhance engagement, improve comprehension of course content, and increase accessibility for learners, particularly in contexts where traditional teaching methods may fall short.

While podcasting was widely recognized for its benefits such as flexibility, improved learner engagement, and support for independent learning significant barriers were identified, including limited internet connectivity, resistance to technology adoption among lecturers, and insufficient institutional support. These challenges are

reflective of broader infrastructural and attitudinal issues that characterize the adoption of educational technologies in sub-Saharan Africa.

The study demonstrates that addressing these challenges requires a multifaceted approach. Improving internet infrastructure, fostering digital literacy, enhancing institutional support, and promoting the adoption of podcasting through targeted training and resources are critical steps toward successful integration. Moreover, fostering collaboration between students, lecturers, and administrators can further strengthen podcasting's role in creating an engaging, flexible, and accessible learning environment.

By aligning with the objectives of identifying perceptions, benefits, and challenges, this study contributes to the growing body of literature on educational technology in developing countries. It also offers actionable recommendations for advancing digital learning tools at MUST. As Uganda strives to achieve the United Nations Sustainable Development Goal 4 (SDG 4) of inclusive and equitable quality education, podcasting emerges as a promising solution to bridge the gap between traditional teaching practices and the demands of modern learners.

In conclusion, podcasting has the potential to revolutionize higher education at MUST, providing a platform for innovative teaching and learning practices. However, its successful implementation requires a concerted effort from all stakeholders to overcome the barriers and leverage the opportunities it presents. This study provides a foundation for further research and action to enhance the adoption of podcasting and other digital tools in higher education institutions across Uganda and similar contexts.

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