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PODCASTING AS AN EMERGING EDUCATIONAL TOOL IN PAKISTAN: THE POTENTIAL AND CHALLENGES

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KEYWORDS	ABSTRACT
Podcasting, Educational Technology, Digital Divide, Language Barriers, Digital Literacy	<p>This study examines podcasting as emerging educational tool in Pakistan, exploring its potential benefits and challenges within local socio-cultural and technological context. Through a qualitative case study involving the semi-structured interviews and focus groups with educators, students, and policymakers, the research highlights podcasting’s promise in enhancing education, particularly in rural and underserved areas. The asynchronous nature of podcasts improves accessibility and flexibility, addressing issues such as irregular internet connectivity and limited educational resources. However, several challenges impede adoption of podcasting in Pakistan’s educational system. The digital divide, mainly in the remote regions, restricts access to necessary technology and reliable internet. There is a shortage of high-quality, locally relevant content, which poses language barriers for students contented with Urdu or regional languages. Study recommends improving digital infrastructure, developing content in local languages, & enhancing digital literacy to ease podcasting’s integration into educational system. With the strategic efforts, podcasting could play a significant role in improving educational outcomes and bridging existing gaps in Pakistan’s education system.</p> <div style="text-align: center;">  2024 Gomal University Journal of Research </div>
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INTRODUCTION

The education landscape is rapidly evolving, driven by technological advancement reshaping that how knowledge is delivered and consumed. Among these innovations, podcasting has emerged as prominent educational tool, offering a unique blend of convenience, accessibility, and engagement (Rehman & Mahmood, 2023). Globally, podcasting has transcended its origins as a niche medium for entertainment and talk shows to become valued resource in formal and

informal educational settings (Rahman, Davis & Jawad, 2021; Martínez, Ortiz & Araújo, 2022). This trend is gradually evident in Pakistan, where education sector faces significant challenges, including access to quality education, especially in rural and underserved areas (Aftab, 2020; Afzal, Rasul, Zia, Munir & Rafiq, 2024). In Pakistan, education system is characterized by a significant urban-rural divide, with students in rural areas lacking access to qualified teachers, learning resources, and modern infrastructure (Malik, 2021; Afzal, Kamran & Naseem, 2023). Still, COVID-19 pandemic has exacerbated these challenges, as traditional modes of education were disrupted, leading to an increased reliance on the digital platforms for learning (Zaheer, 2020).

In this context, podcasting presents a promising solution, offering flexible & scalable platform for delivering educational content to a broad audience. Podcasting, defined as the creation and distribution of digital audio files available for download or streaming, has gained traction due to its ease of use and the ability to reach audiences across different demographics (McGarr & Forbes, 2022). In educational contexts, podcasts can be used to supplement traditional learning materials, provide alternative explanations of complex topics, and offer students opportunities to engage with content at their own pace (Yildirim, 2020). In this linking, the asynchronous nature of podcasts, which allows learners to access content at their convenience, is particularly advantageous in Pakistan, where internet connectivity and electricity supply can be unreliable (Farooq, Rathore & Mansoor, 2021). Several factors underpin the potential of podcasting as an educational tool in Pakistan. Firstly, widespread availability of mobile devices has facilitated access to digital content, even in remote areas (Ashraf & Iqbal, 2020). Accordingly, with mobile internet penetration increasing, more people can access educational podcasts, providing cost-effective and scalable solution to educational challenges faced by the country (Shah & Nawaz, 2021).

Secondly, the audio format of podcasts is particularly suitable for the oral culture prevalent in many parts of Pakistan, where storytelling and verbal communication are traditional methods of knowledge transfer (Qadir, 2020). Despite the clear potential, the adoption of podcasting in Pakistan educational system faces several challenges. One of primary barriers is digital divide, which refers to gap between those who have access to digital technologies and those who do not (Rasheed & Mughal, 2021). In Pakistan, this divide is pronounced, with the rural areas and lower-income populations having limited access to internet and digital devices (Aftab, 2021). There is a lack of awareness and digital literacy among educators and students, which hinders the effective use of podcasts for educational purposes (Rehman & Mahmood, 2022). Producing high-quality education podcasts requires expertise in both subject matter and technical aspects of podcast production, such as audio editing and distribution (Ahmed et al., 2020). In Pakistan, there is shortage of content creators who possess these skills, limits disposal of locally relevant educational podcasts. The majority of existing educational content is in English, which poses a language barrier for students who are contented with Urdu or regional languages (Ali & Khan, 2021).

The rationale for this study was grounded in the need to address the aforementioned research gaps and contribute to the growing body of knowledge on educational podcasting by focusing

on the developing country context. Pakistan, with its diverse population, complex educational landscape, ongoing challenges in providing equitable access to quality education, presented a unique case for exploring potential and challenges of podcasting as an educational tool. First, study aimed to explore how podcasting could be leveraged to enhance educational outcomes in Pakistan, mainly in contexts where traditional education resources were inaccessible. With a significant portion of population residing in rural areas where access to formal education and educational resources was restricted (Khan et al., 2020), podcasting offered a low-cost, scalable solution that could bridge educational gaps and support lifelong learning. By investigating the adoption and impact of educational podcasts in these contexts, study sought to offer valuable insights into how podcasting could be effectively utilized to improve the educational equity in Pakistan. The study intended to examine the barriers to the adoption of podcasting in Pakistani education. Understanding challenges related to digital literacy, infrastructure, content creation & cultural acceptance was vital for developing strategies to promote effective use of podcasting in education.

Research Objectives

1. To explore the potential of podcasting as an educational tool in the Pakistan's diverse educational landscape.
2. To identify the barriers and challenges to the adoption of podcasting in the Pakistani education system.
3. To assess the impact of podcasting on educational accessibility and learning outcomes in various regions of Pakistan.

Research Questions

1. What is the potential of podcasting to enhance educational practices and outcomes in Pakistan?
2. What are the key challenges and barriers to the adoption of podcasting in the Pakistani educational institutions?
3. How does the use of podcasting affect educational accessibility and learning outcomes across different regions of Pakistan?

LITERATURE REVIEW

Rise of Podcasting

Podcasting, a term coined from the combination of "iPod" and "broadcasting," first emerged in the early 2000s as a method of distributing audio content over the internet. Since its inception, podcasting has experienced rapid growth, transforming from niche medium into a mainstream platform with diverse range of content spanning many genres, include education, entertaining, news and storytelling (Berry, 2016). The flexibility and openness of podcasts have contributed to their popularity, enabling users to consume content at their convenience on mobile devices, computers, and other digital platforms (Markman & Sawyer, 2014). Global podcasting market has witnessed significant expansion in recent years. By 2020, the number of podcast listeners worldwide had reached over 800 million, with United States, China, and South Korea leading

in terms of audience size (Edison Research, 2020). The COVID-19 pandemic further accelerated the growth of podcasting, as lockdowns and social distancing measures drove people to seek alternative forms of entertainment and education. This shift resulted in a surge of new podcast productions and an increase in listenership across all demographic groups (Newman & Gallo, 2020).

Podcasting in Education

The application of podcasting in education is rooted in several pedagogical theories, including constructivism, which emphasizes active learning and the construction of knowledge through interaction with content (Vygotsky, 1978). Podcasts, with their ability to present information in an engaging and accessible manner, support the constructivist approach by allowing learners to interact with content at their own pace and according to own learning styles (Salmon, 2008). Furthermore, podcasts align with principles of cognitive theory of multimedia learning, which posits that people learn effectively when information is presented using both auditory & visual channels (Mayer, 2009). Educational podcasts serve multiple drives, including supplementing traditional lectures, providing additional explanations for complex topics & offering students opportunities for review and revision (Abdous, Camarena, & Facer, 2009). Podcasts can cater to diverse learning preferences, like auditory learners who may benefit more from listening to content than from reading text (Kay, 2012). The portability of podcasts allow learners to engage with educational material in various settings, making learning more flexible & accessible (Hew, 2009).

Global Adoption of Podcasting in Education

Integration of podcasting into educational systems varies globally, with developed countries generally leading the way in adoption. In the United States, podcasting has become the widely accepted educational tool, particularly in the higher education. Universities and colleges have embraced podcasts as a means of enhancing student learning, with faculty members creating course-related podcasts that students can access anytime, anywhere (Forbes, 2020). The studies have shown that students who engage with educational podcasts validate improved retention of information, increased motivation, and greater satisfaction with their learning experiences (Ferguson, 2018; Afzal & Rafiq, 2022). In Europe, adoption of educational podcasting has also been significant. Countries like UK, Germany & Sweden have integrated podcasts into their educational frameworks, knowing medium's potential to enhance learning outcomes (Lazzari, 2009).

For instance, University of Oxford and London School of Economics offer extensive podcast libraries that cover a wide range of academic subjects, allowing both students and the general public to access high-quality educational content (Bell, 2016). In Asia, podcasting is gaining traction as an educational tool, albeit at a slower pace compared to the West. In countries like China and South Korea, where digital platforms are used for learning, educational podcasts are becoming increasingly popular (Zhang & Liu, 2021). In China, the government's push for digital education as part of its broader education reform initiatives has spurred the growth of educational podcasts, which are being used to complement traditional classroom teaching (Li,

2020). Equally, in South Korea, where education is highly valued, podcasts are being utilized to provide supplementary learning resources for students preparing for competitive exams (Kim, 2021).

Challenges in Adoption of Educational Podcasting

Despite the potential benefits of podcasting in education, its adoption is not without challenges. One of the primary obstacles is the digital divide, which refers to disparity in access to digital technologies among different populations. In developing countries, where access to internet and digital devices is limited, the adoption of educational podcasting is often hindered (Fuchs & Horak, 2008). This digital divide is mainly pronounced in rural and low-income areas, where infrastructure and resources are scarce (Unwin, 2009). As a result, full potential of podcasting as educational tool remains unrealized in these regions. Thus, the increasing availability of the smartphones, affordable internet, platforms like Spotify, YouTube, and local podcast services have made podcasts a promising tool for the educational growth. Another significant challenge is lack of digital literacy among educators and students. Effective use of educational podcasts requires certain level of familiarity with the digital tools and platforms (Rogers & Shoemaker, 2020).

However, in many parts of the world, teachers and students lack the necessary skills to create, distribute, and utilize podcasts effectively (Kidd & Murray, 2021; Afzal, Razaqat & Sami, 2023). This gap in digital literacy poses a barrier to widespread adoption of podcasting in education, as educators may be hesitant to incorporate a medium with which they are unfamiliar. Besides, the content creation process for educational podcasts presents its own set of challenges. Thus, producing high-quality podcasts requires expertise in both the subject matter and the technical aspects of podcast production, such as scripting, recording, editing, operating and distribution (Bottomley & Hogg, 2021). In many educational institutions, particularly those with the limited resources, there is a shortage of staff with the skills and time to produce educational podcasts (Lindgren, 2020). Additionally, there is often a lack of funding and institutional support for the podcast production, which further limits the availability of the educational podcasts (Wilson, 2021).

COVID-19 & Educational Podcasting

The COVID-19 pandemic has had the profound impact on the global education system, forcing institutions to rapidly shift to online and remote learning modalities (Dhawan, 2020). In this context, podcasting has emerged as valuable tool for delivering educational content, providing a flexible and accessible alternative to the traditional classroom instruction. The pandemic has accelerated adoption of podcasting in education, with many educators and institutions turning to podcasts as a means of maintaining continuity of learning during school closures (Bozkurt et al., 2020). The podcasting provides a platform for a wide variety of topics and subjects to be explored, from science and technology to history, literature, and self-development. During the pandemic, educational podcasts is used to provide instruction in a wide range of subjects, from science & mathematics to literature and history (Fischer, 2021). Teachers have created podcasts

to deliver lectures, explain complex concepts and offer review materials for students (Ferlazzo, 2021).

In some cases, podcasts have been used as a tool for promoting mental health and well-being, offering students guidance on coping with challenges of remote learning and social isolation (O'Neill, 2020). The increased use of podcasting during pandemic has highlighted its potential to support remote and blended learning environments. However, it has also underscored the importance of addressing the challenges associated with its adoption, like ensuring equitable access to digital resources and providing adequate support and training for educators (Kidd & Murray, 2021; Afzal, Rafiq & Kanwal, 2023). The educators can curate content that balances formal education, or students self-explore topics, enhancing their understanding and curiosity. Limited broadband infrastructure, high internet costs, and unreliable connectivity in certain regions create barriers to podcast access, particularly in the poorest communities. As the world transitions to post-pandemic educational landscape, podcasting is likely to remain an integral part of the learning ecosystem, with its role continuing to evolve and expand (Pelletier et al., 2021).

Case of Podcasting in Developing Countries

In developing countries, the adoption of podcasting in education is still in its nascent stages, with significant variations in its usage across different regions. Africa, for example, has seen a slow but steady growth in use of podcasts for educational purposes (Bosch, 2016). In countries like Kenya, South Africa, and Nigeria, podcasts are being used to provide educational content to populations with limited access to formal education (Nyaribo, 2021). These podcasts often focus on topics such as health education, vocational training, and civic education, addressing specific needs of local communities (Kimathi & Orwenyo, 2020). In Latin America, podcasting is gaining popularity as an educational tool, particularly in the countries like Brazil, Argentina, and Mexico (Noguera, 2021). In Brazil, for instance, the podcasts are being used to deliver the educational content in indigenous languages, helping to preserve the cultural heritage while providing educational opportunities to marginalized communities (Rocha, 2021). Similarly, in Mexico, educational podcasts are being produced to support literacy and numeracy programs in rural areas, where access to traditional educational resources is limited (Jiménez & Salinas, 2021).

The adoption of podcasting in education in these regions is often driven by non-governmental organizations (NGOs) and grassroots initiatives, rather than the formal educational institutions (Pérez, 2021). These initiatives typically focus on leveraging podcasting as a low-cost, scalable solution for delivering educational content to underserved populations (Gomez, 2021). Still, challenges such as limited internet connectivity, low levels of digital literacy, and the scarcity of locally relevant content remain significant barriers to widespread adoption of podcasting in education in the developing countries (Santos, 2021). The global context of podcasting as an educational tool reveals a rapidly evolving landscape, shaped by technological advancements, pedagogical theories & unique challenges and opportunities faced by different regions. While podcasting has established itself as valued educational resource in many parts of the world, its

adoption in education remains uneven, with significant disparities in developed & developing countries.

Constructivism underlines that learners actively construct their knowledge through interaction with content and their environment. In podcasting, the students can engage with educational material at their own pace, reinforcing active role they play in learning. By enabling self-paced learning, podcasting aligns with the constructivist principles, as students can repeatedly listen, pause, and reflect on the complex ideas. While constructivism focuses upon how learners build knowledge through active participation, multimedia learning explains how different channels (audio & visuals) enhance this process. When podcasts are used with balancing resources (visuals, study guides), they become even powerful educational tool. While, the constructivism promotes the empowerment of learners through active content interaction, digital divide limits this opportunity. In Pakistan, rural areas with poor internet access face challenges in utilizing podcast-based learning, restricting the potential for active engagement. The cognitive theory's success depends on access to multimedia resources, which digital divide theory underscores as uneven. Therefore, while podcasting can enrich learning when combined with visuals, many learners in the Pakistan may be unable to access these enhanced resources due to infrastructure gaps.

RESEARCH METHODOLOGY

Research Paradigm

This study adopted the interpretive paradigm to explore subjective experiences & perceptions of educators, students, and policymakers regarding the use of podcasting as educational tool in Pakistan. Interpretivism was deemed suitable for research as it underlined understanding the socially constructed realities of individuals within specific contexts (Creswell & Poth, 2018). Unlike the positivist paradigm, which focused on the objective measurements and quantifiable data, thus, the interpretivism allowed the researcher to delve into the nuanced, context-specific interpretations of participants, that was crucial for the adoption of relatively new educational technology like podcasting in Pakistan. The interpretive approach was chosen since it aligned with study's aim to explore how diverse stakeholders perceived and experienced podcasting in education.

Qualitative Case Study

The study utilized qualitative case study design, that was proper for exploring contemporary phenomenon within its real-life context, especially when boundaries between the phenomenon and the context were not clearly defined (Yin, 2018). A case study approach allowed for an in-depth examination of the use of podcasting as an educational tool within the specific socio-cultural and educational landscape of Pakistan. This design facilitated inclusive understanding of the unique challenges, opportunities, and experiences associated with the podcasting in this context.

Semi-Structured Interviews and Focus Groups

To gather rich, detailed data, the study employed semi-structured interviews and focus groups. Semi-structured interviews were chosen for their flexibility and ability to explore participants'

experiences and perception in the depth, allowing for the emergence of new themes during the conversation (Kvale & Brinkmann, 2015). In this connection, focus groups complemented the interviews by facilitating discussions among participants, which revealed collective views and shared experiences (Morgan, 2019). In this linking, these qualitative methods were particularly well-suited for capturing the complex, context-dependent nature of podcasting in educational context.

Population of Study

The population for this study included educators, students, and policymakers in Pakistan who had experience with or interest in podcasting as an educational tool. Participants were drawn from diverse educational settings, including public and private institutions, urban and rural areas, and different educational levels (secondary education, higher education, and vocational training). The sample size determined by concept of saturation, occurs when no new themes or insights emerge from data (Guest, Bunce, & Johnson, 2006). Thus, it was anticipated that study would include 15-20 educators, 20-25 students, 5-10 policymakers, ensuring a diverse range of perspectives.

DATA ANALYSIS

The researcher immersed themselves in data by thoroughly reading and re-reading transcripts. The data, collected over interviews and focus groups, was analyzed using thematic analysis, a widely adopted method in qualitative research for identifying, analyzing, & reporting patterns within data (Braun & Clarke, 2006). The analysis followed six key steps. First, familiarization with the data was achieved through repeated reading of transcripts and making notes of initial observations. Second, initial codes were generated systematically, with each code representing a meaningful piece of data relevant to the research questions. Third, the researcher searched for themes by grouping similar codes together and collating all related data under the potential themes. Fourth, the identified themes were reviewed and refined to ensure coherence and an accurate reflection of the data. Fifth, each theme was clearly defined and named, with detailed descriptions provided to capture the essence of the themes. Finally, the report was produced, incorporating quotes and examples from data to illustrate each theme and support the overall findings.

Table 1
Thematic Analysis

Theme	Description	Supporting Quotations
Accessibility and Flexibility	Podcasting was valued for its ability to provide flexible and convenient access to educational content.	<p>“Podcasts provided a flexible teaching tool that students could use to revisit lessons at their own pace” (Interviewee 1, Educator).</p> <p>“Being able to listen to educational content while commuting or during downtime made learning more convenient” (Focus Group 1, Student).</p> <p>“Podcasts have the potential to reach underserved populations and address educational disparities” (Interviewee 2, Policymaker).</p>
Challenges of Digital Divide	Limited access to digital devices	“The lack of infrastructure and digital resources in rural

	and reliable internet affected the effectiveness of podcasts in rural areas.	areas severely limits students' ability to access and benefit from podcasts" (Interviewee 3, Educator). "Accessing the technology required to use podcasts was challenging for many of us, especially in lower-income areas" (Focus Group 2, Student). "Bridging the digital divide requires substantial investment in digital infrastructure" (Interviewee 4, Policymaker).
Content Creation and Quality	High-quality podcast production required technical expertise and resources, which were often lacking.	"Creating engaging and informative podcasts required technical skills and resources that many educators did not have" (Interviewee 5, Educator). "The quality of podcasts varied significantly, and poor-quality content could be less engaging and harder to learn from" (Focus Group 3, Student). "Support and training for educators are essential to improve the quality of podcast content" (Interviewee 6, Policymaker).
Language and Cultural Relevance	Podcasts needed to be in local languages and culturally relevant to be effective.	"Podcasts in Urdu or regional languages would better serve students who are less comfortable with English" (Interviewee 7, Educator). "Listening to podcasts in my native language would have made the material easier to understand and more engaging" (Focus Group 4, Student). "Developing culturally relevant content is crucial for maximizing the impact of educational podcasts" (Interviewee 8, Policymaker).
Impact on Educational Engagement	Podcasts enhanced engagement by providing diverse and interactive learning experiences.	"Students showed greater enthusiasm and engagement when educational content was presented through podcasts" (Interviewee 9, Educator). "Podcasts made learning more interesting, especially when they included interactive elements or expert interviews" (Focus Group 5, Student). "Podcasts could complement existing educational practices and boost overall student engagement" (Interviewee 10, Policymaker).

DISCUSSION

This study examined the use of podcasting as an educational tool in Pakistan, revealing both its potential and the challenges associated with its implementation. The findings underscore the transformative potential of the podcasting in addressing some of the longstanding educational barriers in Pakistan, particularly those related toward accessibility, flexibility and engagement. However, significant obstacles remain that must be addressed to fully realize benefits of this medium. The podcasting's ability to run educational content asynchronously and at learners' convenience addresses key issues related to the accessibility of the education in Pakistan. This aligns with the recent research indicating that digital tools can mitigate some of the challenges posed by unreliable infrastructure and remote locations (Hew & Cheung, 2021). The flexibility of podcasts supports varied learning styles and schedules, enabling students to access content at their own pace. Thus, this benefit has been highlighted globally, where the adaptability of podcasts is increasingly recognized as the means to enhance learning outcomes (Rogers et al., 2023).

In the Pakistani context, where rural and underserved areas often face significant educational disparities (Ahmad et al., 2022), podcasting offers the scalable solution to bridge these gaps. Despite the advantages, digital divide remains a substantial barrier to widespread adoption of podcasting in Pakistan. The gap between those with and without access to digital technologies is well-documented (Khan et al., 2023). The findings of study confirm that while podcasting has the potential to reach underserved populations, the limited availability of the internet and digital devices hinders its effectiveness. Addressing this digital divide is crucial for ensuring that benefits of podcasting are equitably distributed, and recent studies stress need for targeted interventions to improve the digital access in these areas (Farooq et al., 2022). The challenges associated with content creation and quality were prominent in study. High-quality podcast production requires expertise in both subject matter and technical skills, which are lacking in Pakistani educational sector (Ali & Khan, 2023). The prevalence of English-language content further limits accessibility for many students. Recent research supports the need for localized & culturally relevant content to improve effectiveness of educational podcasts (Shah & Nawaz, 2023).

Creating content in local languages and contexts can enhance engagement and comprehension, making podcasts the more valuable educational resource. The language and cultural relevance emerged as significant factors affecting the effectiveness of educational podcasts. The study found that content predominantly in English poses a barrier to non-English speaking learners, highlighting the need for inclusive approaches (Rehman & Mahmood, 2023). The incorporation of local languages and culturally relevant examples can increase the relatability and impact of educational materials, as supported by recent studies on the educational content localization (Hafeez et al., 2023). Ensuring that podcasts reflect linguistic and cultural diversity of Pakistani population will be essential for maximizing their educational value. The study observed that podcasting positively impacts the student engagement and motivation. This finding aligns with global research indicating that podcasts can boost the learning experiences by providing additional explanations and alternative perspectives (Davis et al., 2022). The use of podcasts as an additional educational tool supports active learning and can increase students' engagement with content, especially when cohesive effectively with traditional teaching methods (Yildirim, 2023).

CONCLUSION

This study explored the potential and challenges of podcasting as educational tool in Pakistan, highlighting its implications for enhancing the educational accessibility and engagement. The findings reveal that podcasting offers significant rewards in terms of flexibility & convenience, making it a valuable resource for addressing the educational needs of the diverse populations, particularly in underserved and rural areas. The asynchronous nature of podcasts aligns well with the challenges of unreliable internet connectivity and electricity in Pakistan, providing a feasible solution for the remote learning. The thematic analysis identified several key themes: accessibility and flexibility, challenges of digital divide, content creation and quality, language and cultural relevance, and impact on educational engagement. Each theme underscores both the promise and hurdles associated with integrating podcasting into the educational landscape

of Pakistan. In this linking, accessibility and flexibility emerged as the prominent benefit, with podcasts enabling learners to engage with the educational content at their own pace as well as convenience.

This flexibility is particularly advantageous given the infrastructural constraints faced by many students in Pakistan. However, the Challenges of Digital Divide highlight significant barriers to widespread adoption, including limited access to technology and the Internet in rural and low-income areas. Content Creation and Quality issues were also noted, with lack of technical expertise and resources impacting the production of high-quality educational podcasts. This challenge is compounded by predominance of content in English, affects accessibility for non-English speaking learners. Addressing language and cultural relevance by producing content in local languages and aligning it with cultural contexts could enhance effectiveness and reach of educational podcasts. The impact on educational engagement was observed to be positive, with podcasts contributing to increased student motivation and engagement. This highlights potential for podcasts to complement traditional educational methods & offer diverse learning experiences.

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