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Integrating modern technology in English language instruction: A comparative analysis of undergraduate arts and engineering colleges' perspectives, challenges, and best practices

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Abstract
This comparative study investigates the integration of modern technology in English language instruction in undergraduate arts and engineering colleges. The research explores the perspectives, challenges, and best practices of faculty members and students in both disciplines. A mixed-methods approach was employed, combining surveys, interviews, and classroom observations. The findings reveal that while both colleges recognize the importance of technology-enhanced language learning, they differ in their approaches, priorities, and challenges. Arts colleges focus on leveraging technology for literature and language appreciation, whereas engineering colleges emphasize technical communication and practical language skills. The study identifies common challenges, such as limited teacher training and technical issues, as well as discipline-specific best practices. The results provide insights for educators, administrators, and policymakers seeking to optimize technology integration in English language instruction and enhance student learning outcomes in diverse academic contexts.

Keywords: Comparative study, modern technology, undergraduate colleges, mixed methods, importance of technology, prospective and challenges

Introduction
The integration of modern technology in English language instruction has transformed the way students learn and teachers teach. As technology continues to evolve, it is essential to explore its impact on language learning in diverse academic contexts. This study focuses on the integration of modern technology in English language instruction in undergraduate arts and engineering colleges, two disciplines with distinct approaches to language learning.

The importance of English language skills cannot be overstated, as they are crucial for academic success and professional communication. However, the traditional methods of language instruction often fall short in engaging students and developing their language skills effectively. Modern technology offers a range of tools and resources that can enhance language learning, including multimedia materials, online collaboration platforms, and language learning apps. Despite the potential benefits, the integration of modern technology in English language instruction poses challenges, particularly in terms of teacher training, technical support, and curriculum design. Moreover, the effectiveness of technology integration can vary depending on the academic discipline, student needs, and institutional context.

This comparative study aims to investigate the perspectives, challenges, and best practices of undergraduate arts and engineering colleges in integrating modern technology in English language instruction. By exploring the similarities and differences between these two disciplines, this research seeks to provide insights for educators, administrators, and policymakers to optimize technology integration and enhance student learning outcomes.

Research Background
The interface between language teaching and technology represents a dynamic intersection where educators leverage technological tools and resources to enhance language learning experiences. This interface encompasses various aspects, including instructional strategies,

digital resources, communication platforms, and assessment methods. Integrating face-to-face instruction with online resources and activities allows for a flexible and personalized learning experience. Inverting the traditional classroom model by assigning instructional content (e.g., videos, readings) for independent study outside class, while in-class time is dedicated to active learning activities and practice. Technology is used to tailor instructions to individual learners' needs, abilities, and learning styles through adaptive learning platforms, interactive tutorials, and personalized feedback (Morve *et al*., The integration of modern technology in English language instruction has become a pressing concern in higher education, particularly in undergraduate arts and engineering colleges. The increasing demand for digital literacy and communication skills in the workplace necessitates a re-examination of traditional language teaching methods.

Objectives

1. To investigate the perspectives of undergraduate arts and engineering colleges on integrating modern technology in English language instruction.
2. To identify the challenges faced by faculty members and students in adopting technology-enhanced language learning.
3. To explore best practices in technology integration in English language instruction in both disciplines.

Problem Statement

Despite the growing integration of technology in learning and teaching environments, there remains a need to critically evaluate its effectiveness, impact, and implications for educational practices and outcomes (Joshi *et al*.). While technology offers the promise of enhanced engagement, personalized instruction, and improved learning outcomes, its implementation presents various challenges and complexities that warrant investigation. Hence, this particular research seeks to address several research questions.

Research Questions

1. What are the perspectives of undergraduate arts and engineering colleges on the role of modern technology in English language instruction?
2. What challenges do faculty members and students face in adopting technology-enhanced language learning?
3. What are the best practices in technology integration in English language instruction in undergraduate arts and engineering colleges?

Significance of the Study

The study is significant to the teachers in understanding the various modern tools in English language teaching, which can be used in the English classroom. This study presents practical and theoretical contributions on the potential of technology in teaching and learning to revolutionize education and address challenges. It identifies strategies to improve teacher engagement, motivation, comprehension, and retention of knowledge. Proficiency in technology skills is essential for success in education, career, and everyday life. This study contributes to the understanding of technology integration in English language instruction, providing insights for educators, administrators, and policymakers to optimize language teaching and learning.

2. Literature Review

This review of literature is an essential part of any research and it provides a complete review of the existing literature that is related to the area of research. The literature highlights the benefits and challenges of technology integration in language learning, including improved engagement, personalized learning, and technical issues. The section would review books, articles, academic journals, etc. to provide insights from secondary literature that is publicly accessible. The section would have the following sub-headings.

Journal 1: Journal of Education & Practice
Title: 'Use of Technology in Educational Teaching'
Author: Prof Rabije Murati

Information and communication technology can be observed in day to day lives of the children. As children are starting to use digital technologies at a very young age, it is important for the schools to adapt to students' requirements. Currently, no profession can function without a piece of information technology. In today's world to raise the caliber of our job, there are several options and resources at our disposal and all thanks to the computer and the Internet. Computer expertise and supplementary tools are required in education to give faculty wonderful chances and pique students' attention and the faculty should embrace change rather than fight it, but they should adopt new and advanced technologies to improve instruction and spice it up and which also will be helpful in improving performance of the student in the learning process.

Title: 'How Technology Enhances Teaching & Learning'
Author: Ellen M Granberg

Technology not only adds advantages, but they also pose difficulties as well. The use of technology in the classroom can give rise to the number of difficulties. In that, finding the time necessary to integrate new technologies into lessons is the first of these. In addition to using technology one should expect their students to generate multimedia projects throughout the semester. Everyone must be accessible to the students if one is going to ask them to complete a project this difficult. One must have assistance. There must be some downtime for technological education. Although one doesn't need to be an expert in every aspect of technology, one does need to comprehend it well enough to be able to imagine what your pupils will need to know in order to use it.

Title: 'Impact of modern technology in education'
Author: R Raja & Nagasubramani

One of the greatest gifts of God is technology. It is possibly the greatest gift that God has given us after life & surrounding environment. Technology is the source of all cultures, as well as the arts and sciences which can be seen & experienced as well. The world seems to be so different and unique because of advanced technology. It has changed & redefined many aspects of life and what it means to live. Technology unquestionably has a significant impact on human beings around the globe. Technology allows for the automation of numerous manual chores and a lot of difficult and important activities can also be completed more easily and effectively with the help of technology. Living has changed, because of the result of the application of technology for the betterment of human beings. Likewise education also has undergone a transformation which was

the impact of advanced technology. Hence it is impossible to overstate the value of technology in education, learning and teaching. Moreover, the introduction of computers into the classrooms of the students has made tremendous changes and it is simpler for both professors to convey knowledge and the student to learn it. However it has been also observed that the usage of technology is also increasing the fun factor in teaching and learning.

Title: 'Exploring the Challenges of Technology in Language Teaching in the Aftermath of the Pandemic'
Author: Glenn Stock well &Yijen Wang
Before the pandemic, mobile learning research was thriving, and during the epidemic teaching frequently involved employing videoconferencing facilities to simulate face-to-face instruction, albeit constrained by the capabilities and limits of the technologies. And when the prolonged lockdown happened they were employed primarily as a fallback in case other technologies had technical issues. This study, made by the author, is more about exploring both the frequently claimed good impacts of digital use in language acquisition during the pandemic period and the possibilities of negative impact over the learners, faculty, and administrators have learned to utilize and regard technology. In this "aftermath" of the epidemic, suggestions for a possible course of action are explored along with some recommendations for making the most of what the study has discovered so far about leveraging technology for language learning in the future as well.

Title: 'The Evolution and Impact of Technology in Language Education'
Author: Cheryl John
Due to the rapid advancement of technology and sporadic changes in language teaching methodologies the computer technology has been used for many years in the field of foreign language education & as a second language as well. The attempts to incorporate it have occasionally confronted educators with a number of difficulties. The study examine the history and development of the technologies and pedagogical strategies that have influenced computer-assisted language learning (CALL) over the years before moving on to a discussion of more recent advancements, such as MALL (mobile-assisted language learning) and RALL (robot-assisted language learning). The advantages and disadvantages of using technology in language teaching also have been discussed in the further study, and an illustration of how to use a particular technology also given. Comments on the future of technology use in language instruction will round out the chapter.

Title: 'Analyzing the Opportunities and Challenges to use of Information and Communication Technology Tools in Teaching-learning Process'
Author: Negin Bharat Dastjerdi
The study demonstrated a significant association between ICT equipment in schools and college students' literacy and informational skills (their e-readiness), and faculty' attitudes toward utilization of ICT in the teaching-learning process. ICT tool challenges are also depicted in the article and have been broken down into five categories, including organizational (lack of organizational motivational stimulant, difficulty and complexity of work, and faculty' lack of cooperation with one another over ICT) management. Lack of management oversight on ICT implementation plans, inapplicable and irrelevant instructional content, and management and control issues when employing ICT in the classroom) finance and equipment (Lack of computer and internet equipment, insufficient instructor motivation for ICT application, busy work obligations while using ICT) Education (little teacher experience and expertise, lack of practical in-service courses, insufficient time for ICT-based instruction), Attitudes (Faculty' mistrust and anxiety about using ICT, Faculty are worry about they will replace infront of ICT, Negative attitudes of Internet users owing to ethical concerns). Lastly, studies suggest that the Faculty should work together more closely and actively to share knowledge and experiences in the area of using ICT technologies so that both technology and knowledge will go hand in hand.

Literature Gap
The existing literature has covered a noteworthy crevice in our understanding of the application of the modern technologies. The researchers have done research and written articles on English language teaching with technology, challenges and opportunities of learning and teaching with technology, impact of technology in education and teaching and learning. There is a lack of comparative studies exploring technology integration in English language instruction in undergraduate arts and engineering colleges. The recent research majorly focuses on language teachers and learners perceptions by utilizing technology and Arts and Engineering college teachers and compares their attitudes and perceptions in English language teaching and learning with technology. The need for research emphasizing the strategic use of technology to develop socio-cultural competence in language teachers is highlighted by the identified gap. And also to compare the perceptions of Arts and Engineering college teachers based on their teaching and learning experiences.

Research Hypothesis
Here are two potential hypotheses for the study:
- **Hypothesis 1:** "There will be a significant difference in the perspectives and attitudes towards technology integration in English language instruction between undergraduate arts and engineering colleges, with engineering colleges showing a more positive attitude towards technology-enhanced language learning."
- **Hypothesis 2:** "The challenges faced by faculty members in integrating modern technology in English language instruction will differ significantly between undergraduate arts and engineering colleges, with arts colleges citing pedagogical concerns and engineering colleges citing technical issues as major challenges."

These hypotheses can be tested through the data collected from surveys, interviews, and classroom observations, and can help to identify the similarities and differences in technology integration in English language instruction between undergraduate arts and engineering colleges.

Research Scope
This research study examines strategies and best practices for integrating technology into language teaching practices effectively. The current research also compares the role of technology and teachers in Arts and Engineering colleges.

This study focuses on undergraduate arts and engineering colleges, exploring faculty members' and students' perspectives, challenges, and best practices in technology-enhanced language learning.

Limitations of the research

Research on technology in teaching faces limitations due to limited access, inadequate infrastructure, and digital divide. Unequal access to devices, internet connectivity, and digital resources can limit the scope and generalizability of findings. The digital divide can exacerbate educational inequalities and limit inclusivity. Research may also be subject to biases, such as publication bias, confirmation bias, and researcher bias. Rapid advancements in technology present challenges, necessitating methodological rigor, interdisciplinary collaboration, and ongoing dialogue among researchers, educators, policymakers, and technology developers.

1. Limited generalizability due to the focus on specific disciplines and institutions.
2. Potential biases in self-reported data from surveys and interviews.

3. Research Methodology

This section provides information on how different research instruments will be utilized in order to achieve the objectives of the research. The selection of a research approach is also based on the type of research problem considered in the study (Teherani *et al*. 2015). By looking at the research approach, the researcher can have a perspective on the research topic and present information in a successive way.The section would put forth justifications for the adoption of a mixed research approach. Mixed-methods approach: surveys, interviews, and classroom observations. Sampling: purposive sampling of faculty members from undergraduate arts and engineering colleges.

Data Collection Method

The section would provide the significance of data collection and different methods utilized by the researchers. The data collection instrument selected for this research is survey technique and only primary data is collected for the study. For this study, the researcher has prepared 15 questionnaires. For the survey technique, a likert five-point scale has been used, which provides five options to the participants in relation to the given statement, that is "strongly disagree, disagree, neutral, agree and strongly agree."

Population and Sampling

This section will define the target population, sampling design, and sample size. The population for the present study would be selected undergraduate teaching faculty in selected arts and engineering colleges in Rangareddy District which is part of Hyderabad. The sample of the study would include 50 faculty members (25 Engineering faculties and 25 Arts college faculty).It includes male and female. As per this sampling technique, the researcher uses his expertise to select a sample that is best suited to the research purpose. In this case, the researcher believes that the faculty members must be chosen according to their knowledge, expertise and level of experience.

Data Analysis and Interpretation

This section would provide insights into the different methods and tools adopted for analyzing the data collected from the participants. The section would provide justification for the adoption of Statistical Methods. IBM SPSSand Microsoft Excel would be utilized for the analysis of quantitative data.

Analysis of Faculty Data

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I believe that modern technology enhances English language instruction	50	4	5	4.59	.494
Technology integration is essential for effective language learning.	50	4	5	4.55	.500
I am comfortable using technology in my English language classes.	50	4	5	4.51	.502
I face technical difficulties when using technology in my classes.	50	4	5	4.62	.488
I lack sufficient training in using technology for language instruction.	50	3	5	4.64	.503
I am concerned about the distraction of technology on student learning.	50	4	5	4.61	.491
I use multimedia resources to engage students in language learning	50	3	5	4.64	.503
I encourage students to use online resources for language practice.	50	4	5	4.64	.481
I incorporate technology-based assessments in my classes.	50	4	5	4.65	.478
I believe that technology integration is more relevant to engineering students than arts students.	50	4	5	4.72	.451
I tailor my technology integration approach to the needs of my students' discipline.	50	4	5	4.74	.442
My institution provides adequate support for technology integration in language instruction.	50	3	5	4.73	.467
I have access to sufficient technology resources for language teaching.	50	4	5	4.76	.431
Technology integration increases student engagement in language learning	50	4	5	4.72	.451
Technology integration motivates students to practice language skills outside of class	50	3	5	4.73	.467

The faculty's perceptions of technology integration in English language teaching indicate consistently high mean scores in various dimensions.

Faculties generally demonstrate a strong belief in their ability to incorporate new technologies into their teaching, as evidenced by their high levels of confidence. They also indicate that they have had ample opportunities for learning to develop skills in utilizing technology for teaching purposes and perceive the available technology tools as sufficient to support their teaching goals.

Moreover, faculties believe that technology enhances teaching effectiveness and makes it easier for students to grasp complex concepts. They also recognize the significance of collaboration among colleagues in maximizing the effectiveness of technology for teaching.

In addition, instructors view technology-based teaching techniques as successful in catering to various learning styles and improving student involvement and engagement. Furthermore, they are of the opinion that technology improves their capacity to offer timely and valuable feedback to students.

Overall, the statistical data indicates a favorable outlook by faculty towards the integration of technology in English language instruction, underscoring its ability to improve teaching efficacy, student participation, and overall learning experiences.

4. Results and Discussions

In this chapter, the result of the data analysis would be discussed and compared with the existing literature.

Discussion of Data Analysis and Findings

Discussion of results in this section the responses to the survey are presented and analyzed first. This is followed by the analysis of the responses to the questionnaire. Then, the data gathered through online and offline interview questions are presented and analyzed.

Responses to the survey research

The survey was administered online and offline to English Faculty from the selected Arts and Engineering collegesin Rangareddy District who use the Internet for their professional development. The responses to the survey were analyzed both quantitatively and qualitatively.

Sample data

This section will define the target population, sampling design, and sample size. The population for the present study would be selected undergraduate teaching faculty in selected arts and engineering colleges in Rangareddy District. The sample of the study would include 50 faculty members (25 Engineering faculties and 25 Arts college faculty). In this case, the researcher believes that the faculty members would be chosen according to their knowledge, expertise and level of experience. The survey received 50 responses; 30 of the responses were from male English faculty whereas 20 were from female English faculty.

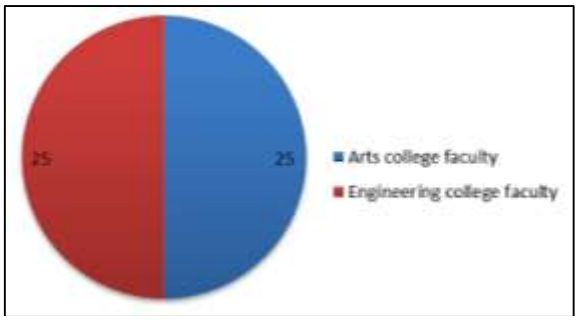

Fig 1: Arts and Engineering faculty

The survey received 50 responses; 30 of the responses were from male English faculty whereas 20 were from female English faculty. The details of the gender of the faculty were given in below pie chart.

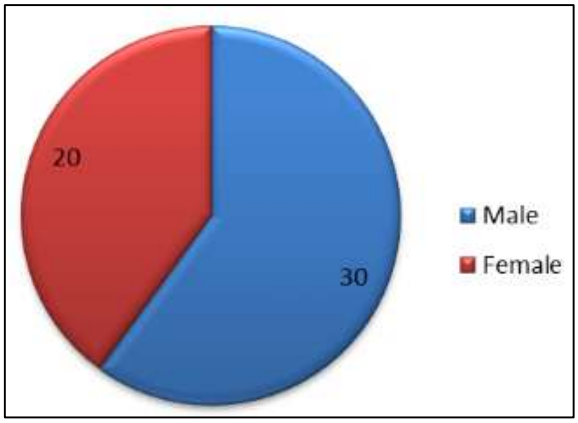

Fig 2: Gender

Among the 50 faculty who participated in the survey, 20 were between 21- 30 years of age. 15 were between 31-40 years of age. 15 were between 41-50 years of age. It is also insightful to note that age did not appear to be a barrier in using the Internet for continuing professional development. The faculty of English of all ages was open to the idea of professional development and was found using a powerful information technology tool such as the Internet to this end. The details of the age group of the faculty were given in below pie chart.

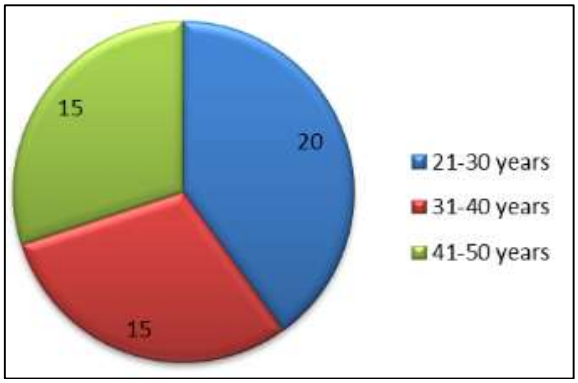

Fig 3: Age group

Among the 50 faculty who participated in the survey, 20 were between 1-10 Years of teaching experience, 15 were between 10-20 years of experience. 15 were between 20-30 years teaching experience. The details of the teaching experience of the faculty were given in below pie chart.

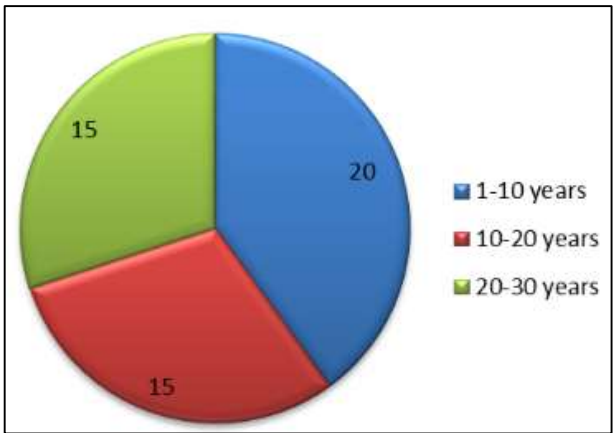

Fig 4: Years of teaching experience

Among the 50 faculty who have sufficient Educational qualifications in the survey, 15 faculty with M.A. English, 5 were M.A. English with M.Phil, 20 were M.A. English with PhD, 10 were M.A. English with Diploma and The details of the educational qualifications of the faculty were given in below pie chart.

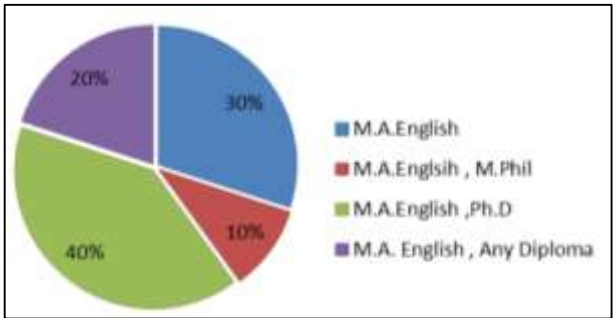

Fig 5: Faculty educational qualification

Through the next question, the level at which the participating faculty were teaching was sought. More number of faculties were found to be from 5 Private colleges, 5 Autonomous colleges and 10Government colleges. The details of the colleges were given in below pie chart.

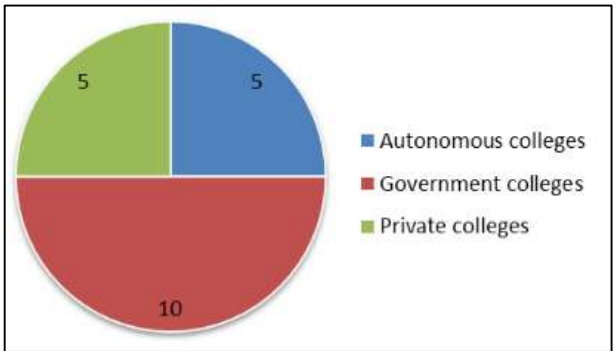

Fig 6: Types of colleges

English language faculty may have been teaching at multiple levels, so they were allowed to indicate all the levels they were teaching at during the survey. Some faculty chose to do so, which is why the total exceeds 50. Based on the data, it seems that English language faculty in higher education across various Arts and Engineering colleges utilized the Internet more for professional development compared to faculty at other levels, whether at home, face to face, or online. In general, the statistical analysis indicates a positive outlook among faculty members regarding the integration of technology into English language teaching, emphasizing its potential to improve teaching efficiency, student involvement, and overall learning experiences.

5. Results and Discussion

The study, based on survey, questionnaire, and semi-structured interviews, found that English language faculty use various online platforms for teaching and learning. They are aware of existing and new platforms but tend to choose a platform that suits their teaching and professional development goals over all others.The survey showed that English language faculty are willing to use online platforms like, Google meet, WebEx, Zoom meeting, blogs, Face book, Twitter, webinars, and YouTube for various purposes, including staying updated on ELT developments.

The results which were collected Based on the survey technique and questionnaire is shown that, almost all the Engineering colleges were well established with novel technology. The institution encouraged the faculty members in all spheres to improve the quality education and adapt modern technology. The teaching community were also encouraged attend and participate in the seminars, conferences workshops and FDPs and to know the latest trends and updates in English Language Teaching and learning and professional development throughout the world Though the arts colleges were accessed with the new technology but, the usage of technology was limited, especially on certain occasions like conducting seminars and conferences. With the advancement of new technology the faculties were encouraged to adapt technology in their teaching and learning. Initially they were faced technical and operating problems but they were able to overcome these technological barriers with the help of the experts' suggestions. Nowadays, the faculty who are working in the Under-Graduate Arts colleges, also shown interest in teaching and learning with technology. Overall, the faculty who are working in the arts and engineering colleges shown interest and ready to adapt new technology in teaching and learning process.

Discussions

- The study highlights the need for discipline-specific English language teaching approaches.
- Arts colleges can benefit from incorporating more technology-enhanced language learning activities, while engineering colleges can benefit from incorporating more literature and language appreciation.
- Teacher training and support are crucial for effective technology integration in English language teaching.

Comparison

- Both arts and engineering colleges recognize the importance of English language skills for their students.
- Both colleges face challenges in implementing technology-integrated English language teaching, including technical issues and limited teacher training.

- Arts colleges tend to focus more on literature and language appreciation, while engineering colleges focus on technical communication and practical language skills.

Findings

Perspectives on Technology Integration

- Both arts and engineering colleges recognize the importance of technology integration in English language instruction.
- Engineering colleges show a stronger belief in the effectiveness of technology-enhanced language learning compared to arts colleges.

Challenges in Technology Integration

- Technical difficulties are a significant challenge for both arts and engineering colleges.
- Arts colleges report higher levels of concern about the distraction of technology on student learning compared to engineering colleges.

Best Practices in Technology Integration

- Both colleges use multimedia resources to engage students in language learning.
- Engineering colleges are more likely to incorporate technology

Recommendations

Practical research must be encouraged on developing teachers' capability and skill to engage, so they can implement specific technological innovations, supervise their execution and review their efficiency.

Master in using Modern technology: It is important for language teachers who are working in the Arts and Engineering colleges to be aware of the availability, capabilities, and limitations of modern technologies that can be utilized for language teaching and learning.

Awareness of risks and ethics: The Arts and Engineering college Language teachers must be able to evaluate the potential risks of using modern technologies effectively, prioritize the well-being of both English language teachers and learners, adopt sustainable technological approaches, and ensure that technology is used in an ethical and responsible manner.

Pedagogical suitability for English language teaching: Language Teachers should be capable of integrating modern technologies into their teaching methods while taking into account situational factors in order to improve or modernize their English language teaching, student's language learning, and evaluations.

Arts colleges

- Incorporate more technology-enhanced language learning activities.
- Focus on developing practical language skills.

Engineering colleges

- Incorporate more literature and language appreciation.
- Focus on developing technical communication skills.

Both colleges

- Provide teacher training and support for technology integration.
- Address technical issues and infrastructure constraints.

6. Conclusion

This comparative study highlights the similarities and differences in English language teaching approaches between undergraduate arts and engineering colleges. While both colleges face similar challenges, they have different focuses and needs. By addressing these differences and providing targeted support, we can improve English language teaching and learning outcomes for students in both disciplines. The study's recommendations aim to enhance the effectiveness of technology-integrated English language teaching and learning, ultimately preparing students for success in their academic and professional careers.

Future research directions

- Investigate the impact of technology integration on students learning outcomes.
- Explore the role of faculty training and support in technology integration.
- Develop a framework of technology integration in English language instruction across the disciplines.

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