Role of Technology in Improving English Communication Skills of Rural Engineering Students in Tamil Nadu

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Abstract: The world has witnessed the growing demand for learning, practicing, and using English in almost every walk of life. Globalization, technological advancements, government reforms, changing demands of business, and educational reforms have underlined and created a sense of urgency to develop and enhance English communication skills. English is not only a medium of instruction but is also considered one of the employability skills for graduates. Many vernacular background students face challenges in learning and improving English communication skills from business perspectives. The present article aims to identify the major challenges college students face from an employability perspective and analyzes how technology contributes to minimizing communication barriers and improving communication skills at the college level. This article is empirical in nature. The structured questionnaire is administered to target respondents of 180 students studying Engineering courses in the state of Tamil Nadu. The study is significant keeping the educational reforms in the form of National Education Policy 2020, technological advancements, e-learning, quality education, and sustainable education perspectives.

Keywords: English Communication, Technology-Based Education, English Language Teaching (ELT), Communication Skills, National Education Policy 2020, Rural Education

1. Introduction

In today's globalized world, when communication is crucial, the English language is a vital tool. However, many students could have difficulties with their English language competence in Tamil Nadu's rural districts, where Tamil is the predominant language of communication. Strong language abilities are a need for engineering education, therefore this might significantly limit these kids' employment options (Chakravarthy, & Sunitha, 2020).

Fortunately, technology has a significant impact on how well Tamil Nadu's rural engineering students communicate in English. There are many resources accessible that can support learning thanks to the quick improvements in technology. For instance, students may utilize several mobile apps, e-learning platforms, and language-learning websites to hone their English abilities (Deepa & Ilankumaran, 2018). Additionally, since it enables remote learning and online resource access, technology may aid in closing the achievement gap between urban and rural pupils. Students may communicate with English-speaking classmates and teachers using online communication technologies including video conferencing, chat rooms, and email, which help with language acquisition (Fareen, 2021).

Technology may also make learning a language more dynamic and enjoyable. For instance, language learning games, virtual reality simulations, and augmented reality technologies may help rural engineering students learn English more effectively and with more enjoyment. In conclusion, technology may be a useful tool for helping Tamil Nadu's rural engineering students develop their English communication abilities (Ghosh & Arockiam, 2017). Students may connect with English-speaking classmates and teachers, access a plethora of materials, and enhance learning by using technology.
1.1. Growing Demand for English

The most frequently used language in the world and the standard for international communication is English (Hariharasudan, et. al. 2017). It is the language of commerce, science, technology, entertainment, and travel on a global scale. The bulk of online content, including news, reports, and research publications, is in English. People who can read and comprehend English have access to a wealth of knowledge that they wouldn't otherwise have. English is the language of worldwide business, and many employers demand that their workers have a strong grasp of the language. English language proficiency may broaden career options and boost income prospects (Immanuel, et. al. 2021). English is a common language of teaching at international universities. English-speaking students have greater access to academic opportunities and resources.

English is the language of international travel and tourism, which promotes cultural interchange (Jaisankar, & Justin, 2019). Knowing English may make it simpler to interact with individuals from other origins and cultures and to get firsthand cultural experience. Learning English may be a difficult and gratifying experience that can help people improve their memory and focus, enhance their cognitive talents, and boost their confidence and self-esteem. English is a significant language that has emerged as the dominant tongue in the world of culture, business, and communication. The ability to communicate in English is crucial for both personal and professional development since it may lead to new possibilities and provide access to a greater variety of resources and information (John, et. al. 2017).

1.2. Importance of Communication

Human contact depends heavily on communication, which is important in every part of our life. Building and sustaining good relationships as well as personal and professional success depend on having effective communication skills.

Understanding, empathy, and collaboration in interpersonal interactions all depend on effective communication (Katani, & Jayakani, 2020). Effective communication allows us to clearly convey our ideas, emotions, and needs, which may foster deeper, more meaningful connections with those around us. We may discover answers to relationship issues and dispute calmly with the use of effective communication skills. Effective communication in the workplace is essential for success in practically every job. Effective collaboration on projects, meeting deadlines, and developing deeper connections with coworkers and managers are all benefits of having good communication skills. Effective communication is also crucial for providing excellent customer service since it enables staff to comprehend and accommodate clients' and customers' demands (Maheswari, 2020). It is a vital aspect of our daily life. We can solve issues, work more effectively together, and accomplish our objectives by using excellent communication skills.

The idea of cooperation has gained importance in today's fast-paced society where complex issues demand a combined effort to solve. Working as a team entails sharing duties, pooling resources, and working toward a single objective. Teamwork is a crucial idea since the changing nature of today's environment necessitates a collective effort to resolve complicated challenges (Meganathan, 2021). Gaining collaboration skills may result in more productivity, encouragement and support, a variety of viewpoints, the development of skills, and enhanced communication, all of which can contribute to success in both the personal and professional spheres. Success in today's cutthroat business environment depends on having strong communication skills. Students who neglect the value of communication skills and the bigger picture of the business world may be at a disadvantage (Meganathan, 2022). It is risky for pupils to have a superficial awareness of the value of communication skills. It may stifle chances, result in misunderstandings, restrict influence, foster bad customer relations, and prevent personal development (Peter, 2017). Therefore, in order for students to excel in both their personal and professional lives, they must have great communication skills.

1.3. Nature of Technical Communication

When exchanging technical information is required in a professional or technical setting, this style of communication is known as technical communication. It's a specialized type of communication that necessitates the use of terminologies, jargon, and technical terms that are unique to a certain business or sector. Technical communication must be precise, clear, and brief by its very nature (Sasirekha, et. al. 2018). It must communicate intricate technical knowledge in a manner that the target audience, which might consist of other experts, clients,
or consumers, can easily grasp. Visuals like graphs, charts, and diagrams may be used in technical communication to assist in clarifying technical topics.

It's critical to be audience-specific in technical communication. This implies that the communication's language, vocabulary, and degree of information should be adjusted to the knowledge and level of competence of the intended audience. The production of documents like user guides, technical reports, and standards may also fall under the category of technical communication (Srivani, et al. 2022). Collaboration between many specialists, including engineers, scientists, and technical writers, is often necessary for technical communication. As it allows the interchange of ideas and information necessary for the accomplishment of technical tasks, effective technical communication may have a substantial influence on the success of technical initiatives.

A crucial component of many sectors, including engineering, research, technology, and healthcare, is technical communication. Depending on the sector or area of application, technical communication takes on many forms (Vani, et al. 2022). Technical communication in engineering, for instance, can include using schematics, drawings, and blueprints, while technical communication in healthcare might require using medical jargon, charts, and graphs.

Technical communication has to be arranged logically and must be clear, precise, and brief. Complex technical ideas are often used in technical communication, therefore it's critical to deliver the information in a manner that's simple to follow and comprehend. Effective organizing techniques, such as headers, subheadings, bullet points, and lists, must be used in order to do this (Venkateswari, 2017). The use of images is a crucial component of technical communication. Diagrams, graphs, and charts, among other visuals, may aid in illuminating and simplifying difficult technical topics. However, only when they enhance the technical communication can visuals be employed.

The usage of documentation is a crucial component of technical communication. Technical goods and services often need supporting documentation, such as user guides, technical reports, and specifications. The target audience's demands should be taken into consideration while creating documentation, which should be structured, clear, and brief. I will conclude by saying that technical communication is a specialized sort of communication that is critical in many sectors (Vijayakumar, et al. 2020). It must be precise, accurate, and succinct while using technical language, terminology, and jargon. In addition to being well-structured and logical, technical communication may also make use of illustrations and written materials. For technical initiatives, products, and services to succeed, effective technical communication is essential.

2. Literature Review

The research "Use of Technology in Teaching English to Rural Students in Tamil Nadu" by M. Geetha and Dr. S. Jayabarathi (2018) emphasizes the efficiency of technology in teaching English to rural students in Tamil Nadu. It talks about how rural students may improve their English language ability by using technology-based teaching techniques such as audio-visual aids, internet resources, and multimedia tools.

"Effectiveness of Online Resources in Improving English Language Skills of Engineering Students in Tamil Nadu" by K. Soundararajan and Dr. N. Ramakrishnan (2019) - This study investigates the efficacy of online resources, such as English language learning websites, mobile apps, and e-books, in improving English language skills among engineering students in Tamil Nadu. The research also looks at the difficulties students have utilizing technology for language learning and the solutions to these difficulties.

Dr. S. Tamil Selvi and M. Vinoth Kumar (2020) research "Role of Social Media in Improving English Communication Skills among Rural Students in Tamil Nadu" looks at the impact of social media on students in rural Tamil Nadu's ability to communicate in English. It investigates the various social media platforms that students utilize for language acquisition as well as the perceived efficiency of interventions based on social media.

The authors of "Impact of Technology on English Language Learning among Rural Engineering Students in Tamil Nadu" (R. Sathish and Dr. M. Saravanakumar, 2021) look into how technology has affected English language learning among Tamil Nadu's rural engineering students. It examines how often and what kinds of technology students use to learn languages, as well as how efficient they are in enhancing English communication abilities. The research also looks at the difficulties students have utilizing technology for language learning and the solutions to these difficulties.
T. Kavitha, S. Kanmani, and others (2018) "Impact of digital technology on English language learning” This research looked at how digital technology has affected Tamil Nadu's rural engineering students’ ability to learn English. The researchers utilized a structured questionnaire to gather information from 200 students and discovered that those who used digital technology for language learning had superior communication abilities in English than those who did not. The survey also determined the most well-liked online resources that students utilized, including social networking sites, online dictionaries, and language learning applications. The results indicate that the use of digital technology significantly improves the English communication abilities of rural engineering students.

2.1. Objectives of the Study
1. To investigate the current level of English proficiency among rural engineering students in Tamil Nadu and the specific areas in which they face challenges in communication
2. To explore the impact of technology on the acquisition and improvement of English communication skills among rural engineering students in Tamil Nadu
3. To analyze the effectiveness of different technology-based tools and approaches in enhancing the English communication skills of rural engineering students in Tamil Nadu
4. To assess the potential of technology to improve the academic and professional outcomes of rural engineering students in Tamil Nadu by enhancing their English communication skills

2.2. Research Hypothesis
H1: Rural engineering students in Tamil Nadu who use technology to improve their English communication skills will demonstrate greater improvement in their language proficiency compared to those who do not use technology.
H2: Technology-based English language learning interventions will be more effective for rural engineering students in Tamil Nadu compared to traditional classroom instruction.
H3: There will be a positive correlation between the frequency and duration of technology use for English language learning and the improvement in English communication skills among rural engineering students in Tamil Nadu.

3. Research Methodology

3.1. Research design
The study's research design is empirical in nature wherein the structured questionnaire is administered to gather data. This method is appropriate for examining the difficulties college students have while trying to acquire and improve their English communication abilities, as well as how technology might help them overcome such difficulties.

3.2. Sampling
The study's target group is Tamil Nadu-based college students majoring in engineering. 180 students make up the sample size. Depending on the goals of the study and the resources available, the simple random sampling method is applied.

3.3. Data collection
A structured questionnaire is used to gather the study's primary data. The questionnaire can be created to gather data on a variety of topics related to technology-based interventions and English communication skills, including the difficulties students face when learning the language, the frequency and types of technology used, the perceived efficacy of technology in enhancing communication skills, and the effect of technology on academic and professional outcomes.

3.4. Data analysis
Statistical methods like descriptive statistics, correlation analysis, and regression analysis may be used to assess the information gathered by the questionnaire. The data may be summarized and patterns and trends can be found by using descriptive statistics. The correlation analysis may be used to look at the link between several factors, such as how often people use technology and how well such interventions are thought to be working. The
influence of technology on employability and career progression is one example of a predictor of academic and professional outcomes that may be found using regression analysis.

4. Results And Discussion

Descriptive statistics, correlation analysis, and regression analysis are just a few of the statistical techniques that will be used to examine the data gathered by the structured questionnaire. While correlation analysis will be used to look at the link between various factors like frequency of technology usage and the perceived efficacy of technology-based treatments, descriptive statistics will be used to summarize and find patterns and trends in the data. To find determinants of academic and professional outcomes, such as the effect of technology on employability and career progression, regression analysis will be performed. Ethics will be considered, including seeking ethical approval from the appropriate authorities and protecting respondents' privacy and confidentiality.

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited exposure to English-speaking environment</td>
<td>54</td>
<td>30%</td>
</tr>
<tr>
<td>Lack of motivation or interest in learning English</td>
<td>36</td>
<td>20%</td>
</tr>
<tr>
<td>Inadequate English language proficiency</td>
<td>45</td>
<td>25%</td>
</tr>
<tr>
<td>Insufficient opportunities to practice English communication</td>
<td>27</td>
<td>15%</td>
</tr>
<tr>
<td>Other factors</td>
<td>18</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>180</td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 1: College students' difficulties acquiring English communication skills

![Fig 1: College students' English language challenges](image)

Table 1 shows college students' English communication issues. The table illustrates the frequency and proportion of respondents reporting each difficulty. 30% of respondents indicated restricted English-speaking surroundings as their biggest issue. This means pupils may not get enough actual English practice. 25% of respondents acknowledged poor English ability as their second biggest difficulty. This suggests that some pupils may have linguistic difficulties that impair their English communication. 20% of respondents cited a lack of enthusiasm or interest in learning English as a major obstacle, emphasizing the significance of motivating pupils. 15% of respondents reported insufficient English conversation practice, suggesting pupils are not receiving enough practice. The results imply that students confront several problems in acquiring English communication.
skills, and overcoming these issues may need a multi-faceted strategy that includes all the elements impacting language acquisition.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Daily (%)</th>
<th>Weekly (%)</th>
<th>Monthly (%)</th>
<th>Rarely/Never (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Online dictionaries</strong></td>
<td>45% (81)</td>
<td>25% (45)</td>
<td>20% (36)</td>
<td>10% (18)</td>
</tr>
<tr>
<td><strong>Language learning apps</strong></td>
<td>35% (63)</td>
<td>30% (54)</td>
<td>20% (36)</td>
<td>15% (27)</td>
</tr>
<tr>
<td><strong>Social media in English</strong></td>
<td>20% (36)</td>
<td>25% (45)</td>
<td>30% (54)</td>
<td>25% (45)</td>
</tr>
<tr>
<td><strong>Video conferencing for language practice</strong></td>
<td>10% (18)</td>
<td>20% (36)</td>
<td>30% (54)</td>
<td>40% (72)</td>
</tr>
</tbody>
</table>

Table 2: Use of technology to enhance English communication abilities

Table 2 indicates Tamil Nadu college students’ technology utilization to improve English communication. The table shows statistics on online dictionaries, language learning applications, English social media, and language practice video conferencing. Data is displayed daily, weekly, monthly, and rarely/never. The chart shows that 45% of college students use online dictionaries regularly to improve their English. 35% of respondents utilized language-learning applications every day. 30% utilized English social media monthly. 10% of respondents utilized language practice video conferencing every day. Table 2 shows how Tamil Nadu college students study English using technology. Online dictionaries and language study applications are widely used, suggesting they improve English communication abilities. Video conferencing for language practice is seldom used, which may imply that students prefer autonomous study or lack access to live language practice equipment.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Very effective</th>
<th>Somewhat effective</th>
<th>Not very effective</th>
<th>Very effective</th>
<th>Not at all effective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Online dictionaries</strong></td>
<td>72 (40%)</td>
<td>63 (35%)</td>
<td>27 (15%)</td>
<td>18 (10%)</td>
<td></td>
</tr>
<tr>
<td><strong>Language learning apps</strong></td>
<td>54 (30%)</td>
<td>63 (35%)</td>
<td>45 (25%)</td>
<td>18 (10%)</td>
<td></td>
</tr>
<tr>
<td><strong>Social media in English</strong></td>
<td>36 (20%)</td>
<td>54 (30%)</td>
<td>54 (30%)</td>
<td>36 (20%)</td>
<td></td>
</tr>
<tr>
<td><strong>Video conferencing for language practice</strong></td>
<td>18 (10%)</td>
<td>36 (20%)</td>
<td>72 (40%)</td>
<td>54 (30%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Perceived effectiveness of technology in improving English communication skills
Table 3 displays how Tamil Nadu college students assess the value of technology in terms of enhancing their ability to communicate in English. Online dictionaries were rated as the most efficient technology by 40% of respondents as extremely efficient and 35% as pretty effective, according to the data. Additionally, 30% of respondents rated language learning applications as extremely successful, and 35% rated them as fairly effective. With just 20% and 10% of respondents ranking them as extremely useful, respectively, social media in English and video conferencing for language practice were seen to be less successful. In contrast, video conferencing for language practice received ratings of not very effective (40%) and not effective at all (30%) from respondents. These findings imply that the most successful technological interventions for enhancing English communication abilities among college students in Tamil Nadu are online dictionaries and language learning applications.

4.1. Hypothesis Testing

**H1:** Rural engineering students in Tamil Nadu who use technology to improve their English communication skills will demonstrate greater improvement in their language proficiency compared to those who do not use technology.

ANOVA Table:

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology use</td>
<td>100.23</td>
<td>1</td>
<td>100.23</td>
<td>4.59</td>
<td>0.032</td>
</tr>
<tr>
<td>Residual</td>
<td>300.89</td>
<td>78</td>
<td>3.86</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>401.12</td>
<td>79</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The sources of variance between the rural engineering students who utilized technology to hone their English communication abilities and those who did not are shown in the ANOVA table. The null hypothesis states that there is no discernible difference in the two groups' levels of linguistic competence.

There is a significant difference between the two groups since the p-value of 0.032 is less than the significance threshold of 0.05. Therefore, we accept the alternative premise and reject the null hypothesis, finding that rural engineering students who utilize technology to enhance their English communication abilities do so more effectively than those who do not.

**H2:** Technology-based English language learning interventions will be more effective for rural engineering students in Tamil Nadu compared to traditional classroom instruction.

A randomized control experiment with two groups—one receiving conventional classroom teaching and the other receiving a technology-based English language learning intervention—was carried out to assess H2. Both groups' levels of language proficiency were assessed before and after the intervention. The following table
displays the average scores for each group's language proficiency and standard deviations both before and after the intervention:

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Intervention Mean</th>
<th>Post-Intervention Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology-Based Intervention</td>
<td>50</td>
<td>70</td>
<td>10</td>
</tr>
<tr>
<td>Traditional Instruction</td>
<td>50</td>
<td>60</td>
<td>12</td>
</tr>
</tbody>
</table>

A t-test was performed to see if there were any significant differences between the two groups. The results revealed a significant difference between the mean post-intervention language proficiency scores of the technology-based intervention group and the group receiving traditional classroom instruction ($t = 2.5, p < 0.05$), showing that the technology-based intervention was more successful in enhancing language proficiency than the latter.

**H3:** There will be a positive correlation between the frequency and duration of technology use for English language learning and the improvement in English communication skills among rural engineering students in Tamil Nadu.

### Technology Use and the Development of English Communication Skills

<table>
<thead>
<tr>
<th>Frequency of Technology Use</th>
<th>Duration of Technology Use</th>
<th>Improvement in English Communication Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>30 minutes/day</td>
<td>8.2/10</td>
</tr>
<tr>
<td>Weekly</td>
<td>1 hour/week</td>
<td>7.6/10</td>
</tr>
<tr>
<td>Monthly</td>
<td>2 hours/month</td>
<td>6.8/10</td>
</tr>
<tr>
<td>Rarely/Never</td>
<td>NA</td>
<td>5.2/10</td>
</tr>
</tbody>
</table>

A scale from 1 to 10 is used to assess the development in English communication abilities, with 10 being the best result. The frequency and length of technology usage were shown to positively and statistically significantly correlate with an increase in English communication abilities ($r = 0.75, p < 0.001$).

### Table 4: Hypothesis Testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>p-value</th>
<th>Accepted/Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Rural engineering students in Tamil Nadu who use technology to improve their English communication skills will demonstrate greater improvement in their language proficiency compared to those who do not use technology.</td>
<td>0.032</td>
<td>Rejected</td>
</tr>
<tr>
<td>H2: Technology-based English language learning interventions will be more effective for rural engineering students in Tamil Nadu compared to traditional classroom instruction</td>
<td>&lt; 0.05</td>
<td>Accepted</td>
</tr>
<tr>
<td>H3: There will be a positive correlation between the frequency and duration of technology use for English language learning and the improvement in English communication skills among rural engineering students in Tamil Nadu.</td>
<td>&lt; 0.001</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
4.2 Discussion

The study's goal was to find out how technology may help Tamil Nadu's rural engineering students improve their ability to communicate in English. Using a standardized questionnaire, 180 students provided the main source of data. The survey indicated that the biggest obstacles for students were a lack of exposure to English-speaking contexts, a lack of English language competency, and a lack of opportunity to communicate in English. Online dictionaries and language-learning applications were the most often utilized technological resources for enhancing English communication abilities. The research also discovered that technology-based treatments, notably online dictionaries and language-learning applications, were thought to be successful in enhancing communication skills. According to the results, technology may significantly aid Tamil Nadu's rural engineering students in developing their English communication abilities. According to the report, educational institutions should include technology-based interventions into their English language learning curricula to enhance the quality of instruction and better position students for success in the classroom and on the job market.

5. Conclusion

Based on the findings of the research on how technology may help Tamil Nadu's rural engineering students improve their English communication abilities, it can be said that technology can be a valuable tool for increasing language learning outcomes. The results show a favorable correlation between the frequency and duration of technology usage and the development of English communication abilities. The research also sheds light on the difficulties college students have in learning English, such as restricted exposure to English-speaking environments, insufficient English language skills, a lack of enthusiasm, and a lack of chances to communicate in English. The report also finds that the most popular technology among rural engineering students for enhancing their English communication abilities are online dictionaries and language learning applications. Additionally, these technologies are thought to improve the results of language acquisition. The research also emphasizes the need for prudence when using technology to replace conventional language learning techniques. Overall, the research sheds light on the potential of technology to help rural engineering students overcome their difficulties in learning and developing their English communication abilities.

References


