



OVERCOMING OBSTACLES BY ENHANCING COMMUNICATION SKILLS FOR ENGINEERING STUDENTS IN ACADEMIC AND PROFESSIONAL SETTINGS

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ABSTRACT

Successful academic and professional outcomes for engineering students depend on their ability to communicate effectively, especially in public speaking. However, they face a number of obstacles that make it difficult for them to acquire and hone these talents. To demonstrate and quantify the issues with communication that engineering students have, the researcher employed an experimental methodology. The study's sample will participate in an interview that the researcher developed. Each student will have an interview of this type to determine the source of their communication issues. Some students had trouble speaking out in class because they were afraid of making a mistake, were too timid, anxious, or lacked self-confidence, as evidenced by the findings. Engineering education can better prepare students for the problems of the professional world if the factors that impede the development of speaking skills are identified and removed.

Keywords: Speaking, Grammar, Pronunciation, Difficulties, Skills

I. INTRODUCTION

Effective communication is a cornerstone of success in any profession, and engineering is no exception. Engineering students, equipped with advanced technical knowledge and innovative problem-solving abilities, are poised to become the architects of our future world. However, to fulfill their potential, they must master not only the intricacies of science and technology but also the art of effective communication. The ability to articulate ideas clearly and confidently is paramount for engineers to convey their designs, persuade stakeholders, and collaborate in multidisciplinary teams. Despite this significance, speaking skills are often overlooked in engineering curricula, leaving students ill-prepared to communicate their expertise to a broader audience.

One of the primary reasons why speaking skills hold such significance for engineering students lies in the nature of their profession. Engineering is no longer confined to isolated workspaces; instead, it thrives on effective collaboration and interdisciplinary exchange of ideas. Modern engineering projects are complex, demanding the integration of expertise from various domains, necessitating effective communication among team members. Engineers must often present their proposals, findings, and progress updates to diverse audiences, including clients, project managers, government officials, and the general public. A lack of



proficient speaking skills can hinder the ability to convey technical information coherently, leading to misunderstandings, delays, and, ultimately, project failures.

Furthermore, engineers must frequently engage in public speaking engagements, seminars, and conferences where they share research findings, technological breakthroughs, and insights into cutting-edge innovations. Here, speaking skills play a pivotal role in persuading potential investors, garnering support for research endeavors, and networking with industry leaders. Without these abilities, brilliant engineering ideas may remain unacknowledged, buried in a sea of technical jargon, unable to influence the world for the better.

Despite the evident importance of speaking skills in the engineering profession, numerous challenges hinder engineering students from honing their oral communication prowess. Primarily, engineering education tends to emphasize technical aspects, focusing on mathematical derivations, problem-solving, and theoretical concepts, often relegating soft skills, including communication, to secondary roles. The curriculum's heavy workload and demanding schedules may leave little room for dedicated training in public speaking or presentation skills. Consequently, many students graduate without the confidence or proficiency to express themselves effectively in real-world scenarios.

Additionally, engineering students, often characterized as introverted or reserved, may feel uncomfortable stepping into the spotlight to deliver speeches or presentations. The fear of judgment, the dread of public humiliation, or the anxiety of misspeaking can lead to the phenomenon known as glossophobia, or the fear of public speaking. This fear may further be exacerbated by limited exposure to public speaking opportunities during their academic journey.

Another challenge lies in the technical jargon and complex terminologies that are prevalent in the engineering field. While this specialized language is crucial for precise communication among professionals, it can be a barrier when engineers attempt to communicate with a lay audience or stakeholders from other domains. Translating technical jargon into accessible language without oversimplification is a skill that engineering students must cultivate to bridge the gap between their expertise and the public's understanding.

To address these challenges and empower engineering students with exceptional speaking skills, several strategies can be implemented within the educational framework. Firstly, integrating communication-focused courses into the engineering curriculum is essential. Such courses could encompass public speaking, technical writing, and interpersonal communication, providing students with a well-rounded skill set that complements their technical prowess. By dedicating specific class time to these skills, students will recognize their importance and be more motivated to develop them.

Additionally, interactive workshops and seminars can be organized to allow engineering



students to practice their speaking abilities in a supportive environment. These sessions could include mock presentations, impromptu speeches, and constructive feedback from peers and instructors. As students gain confidence through regular practice and constructive criticism, their fear of public speaking is likely to diminish.

Another approach is to include group projects and collaborative activities within the curriculum. This not only promotes teamwork and leadership skills but also encourages students to articulate their ideas and contributions to the group. Engineering students should be encouraged to discuss and debate technical concepts, ask questions, and engage in open dialogues with their peers and instructors. This creates a dynamic learning environment that nurtures effective communication and the exchange of diverse perspectives.

Moreover, incorporating real-world case studies and practical projects into the curriculum can enhance students' communication skills. By presenting engineering challenges that require interdisciplinary collaboration, students can learn to communicate with colleagues from different backgrounds effectively. These projects can simulate real-world scenarios where technical concepts need to be communicated to non-technical stakeholders, preparing students for the challenges they may face in their future careers.

Beyond the formal education system, engineering students can take the initiative to improve their speaking skills independently. Joining public speaking clubs, such as Toastmasters, provides a platform for consistent practice, skill-building, and confidence-building in a supportive community of fellow learners. Additionally, attending conferences, workshops, and industry events can expose students to diverse communication styles and offer networking opportunities to refine their speaking abilities.

II. DIFFICULTIES FACED IN ENHANCING SPEAKING SKILLS

Engineering students often encounter several difficulties in enhancing their speaking skills, which can impede their academic and professional progress. The following are some common challenges faced by engineering students when it comes to improving their speaking abilities:

Technical Jargon and Complex Concepts

Engineering students deal with highly technical and specialized subject matter. Communicating complex concepts in a way that is easily understandable to non-technical audiences can be challenging. The use of technical jargon and the assumption that others have the same level of knowledge can hinder effective communication.

Lack of Practice Opportunities



Engineering curricula may focus heavily on technical coursework, leaving limited room for communication-focused training. Without regular practice in speaking, students may not develop the necessary fluency and confidence to express themselves effectively.

Fear of Public Speaking

Public speaking is a common fear shared by many individuals, including engineering students. The prospect of presenting in front of a group, whether in class or during professional presentations, can lead to anxiety and nervousness, affecting the overall quality of their communication.

Limited Soft Skills Training

Engineering education often prioritizes technical skills over soft skills like communication. As a result, students may not receive adequate training and guidance in honing their speaking abilities, leading to underdeveloped communication skills.

Cultural and Language Barriers

In an increasingly diverse academic and professional environment, engineering students from different cultural backgrounds may face language barriers that affect their spoken communication. Accents, unfamiliar phrases, or language fluency issues may hinder effective interaction with peers and colleagues.

Time Constraints

Engineering students typically have demanding schedules due to rigorous coursework and project deadlines. Finding time to engage in extracurricular activities or communication workshops to improve speaking skills can be challenging.

Lack of Feedback and Evaluation

Constructive feedback is essential for improving speaking skills. However, engineering students might not receive enough opportunities for feedback and evaluation on their communication performances, making it difficult to identify areas for improvement.

Difficulty in Adapting Communication Style

Effective communication often requires adaptability based on the audience and context. Engineering students may find it challenging to adjust their communication style to suit different situations, such as presenting to peers, professors, clients, or industry professionals.

Overemphasis on Technical Content



In some cases, engineering students might focus too much on the technical content of their presentations or discussions, neglecting the importance of clear delivery, organization, and engaging delivery techniques.

Lack of Confidence

Insecurities about their speaking abilities can lead engineering students to avoid communication-intensive opportunities, hindering their progress in becoming effective speakers.

III. REVIEW OF LITERATURE

Kakepoto, Inayatullah et al., (2022) In today's internet and mobile phone-based society, English plays a crucial role. The rise of digital tools has made it easier to study a foreign language. In today's era of cutting-edge technology, this research set out to determine the extent to which first-year engineering students face difficulties communicating in English. Since the lead investigator also instructed the participants in Functional English, a convenience sampling technique was adopted. There were 80 engineering students polled. Document analysis and classroom observation were used as research tools. The study's findings were derived from an interpretation of the data. The results showed that engineering students had difficulties communicating in English when studying in an English-speaking environment. There were several issues with the English language that came to light, including a lack of vocabulary, spelling mistakes, grammatical errors, writing issues, reading comprehension issues, and taking dictation from the teacher. Shyness, lack of self-confidence, nerves, fear of peer criticism, and stage fright were also identified as psychological issues.

MusrifatunAngimah (2022). In order to contribute to the globalization strategy of the Ministry of Education, which is reflected in the university's regulation, Engineering students are expected to master the art of public speaking in English. However, speaking in public in English has grown increasingly stressful for second language students. The purpose of this study is to investigate the nature and root causes of English public speaking anxiety among Engineering students. The sequential explanation format is used. An online poll of 197 first-year college students and semi-structured interviews with 8 of the most apprehensive individuals were used to get these conclusions. Quantitative and qualitative data were triangulated for analysis. Students' responses show that their fear of public speaking ranges from moderate to low. Anxiety about delivering a speech in front of an audience can stem from any number of sources, including linguistic difficulties, inhibition, a lack of speaking practice, the difficulty of constructing sentences from the native language into the target language, fear of peer criticism and assessment, the uncomfortableness of speaking on unfamiliar topics, and delivery-focused thoughts. In addition, the appointment system used to



choose public speakers adds to the difficulties already felt by educators. These results are particularly relevant for the development of English language instruction for students who are not majoring in English.

Ratnasari, Aisha (2020) The importance of fluency in spoken English is growing as a result of English's status as a global language (Nazara, 2011). The research approach utilized in this study was a case study, and its purpose was to answer concerns about the difficulties students have when acquiring or improving their speaking abilities. Olaf and Elsa from the Mechanical Engineering Department, as well as Anna, an English instructor at the Mechanical Engineering Department, took part in this study. The information was gathered through conducting interviews and assessing the quality of classroom presentations given by pupils. The findings highlighted four obstacles, including a limited lexicon, anxiety, a hostile atmosphere, and a lack of grammatical understanding. In addition, there were five methods, including code swapping, statue thinking, Google Translate, a personal approach to the English teacher, and self-encouragement.

Dandu, Ganesh & Charyulu, Gomatam (2019) In contrast to their native tongue (L1), students in the Indian educational system are required to study English as a second language (L2). Successfully learning a second language and communicating in another language requires an intellectual, physical, and emotional investment. Since learning English as a second language (L2) presents significant difficulties, students from rural areas often resort to using their L1 (Telugu) to communicate at certain engineering institutions. This research aims to better understand the challenges experienced by students from rural areas who travel to Visakhapatnam, AP to enroll in engineering programs at VIIT (A) College. The researcher has collected data from 40 students, including 32 male and 8 female students from rural areas, using a questionnaire and semi-structured interviews. Statisticians and graphematicians examined the information gathered. The causes for failure were found in the data analysis, including not enough time to study English in class and a lack of support from instructors, family, and friends. It was also discovered that prior academics laid a weak basis for English-medium courses and used a bilingual approach to teaching the language. This paper is helpful for scholars who want to learn more about the difficulties rural engineering students have with their communication abilities. The research also provided some tips and suggestions to help language instructors and their students get through this obstacle.

IffatSuchona & Sadia Shorna (2019) Since Communicative Language Teaching (CLT) was first implemented in Bangladesh's private university sector, it has undergone a number of changes. Students in higher education settings should be able to learn a language with little effect from emotional elements, and the communicative method is thought to help create an environment conducive to this goal. The purpose of this research is to investigate why students' personal histories and emotions matter so much in shaping their ability to communicate effectively at the undergraduate level, and to provide strategies for overcoming



these obstacles from the students' own vantage points. Researchers utilized a questionnaire to identify the most pressing issues encountered by college-level ESL students and the solutions they found most helpful. According to the results of the poll, many people have trouble speaking out because of nerves, shyness, or performance pressure, but this difficulty may be alleviated if the speaker is in a safe environment where they can talk freely and receive honest feedback on their performance. Finally, the researchers have analyzed the findings and shared some practical strategies they have found to help adult students overcome these emotional states.

Banu, Rasheedha (2017) In the current educational system in India, learning English as a second language is not optional. Successfully transmitting and comprehending linguistic communications requires a physical, intellectual, and emotional investment in learning a second language. This article examines the reasons why students have trouble communicating in English and offers strategies for doing so. This article, which is descriptive in nature, serves as a sociological perspective on the challenges that college students experience while attempting to communicate in English. Students' usage of English was shown to be much higher in the classroom than in other settings. While students are given a little amount of time each week to study English, they are not given enough motivation to use English outside of class. The second biggest source of the difficulties in learning English was the environment. Rural pupils reported experiencing more difficulties than their urban counterparts. Many students of English struggle because they don't make reading and listening to music regular habits.

Heriansyah, Hendra (2012) This article explores the challenges that English majors at SyiahKuala University have while attempting to improve their speaking skills, as well as the strategies they employ to overcome such challenges. The results of this study, based on interviews and classroom observations show that all pupils had trouble communicating in English at some point. Lack of vocabulary was the most common issue students reported, while fear of making errors was the primary factor preventing them from speaking out. Despite their best efforts, the pupils' initiatives to date have not been sufficient or fruitful in resolving the difficulties they have encountered while attempting to learn to speak.

IV. RESEARCH METHODOLOGY

In this study, the researcher used an analytical descriptive approach. The participants were engineering students. 40 students were surveyed to learn more about their struggles with public speaking. In an interview, the researcher will question the student about a predetermined topic and then examine the student's responses linguistically. Data was gathered through interviews and direct observation in this study. The purpose of the observation was to identify grammatical and pronunciation mistakes, as well as the students' level of fluency in the speaking skill practice. The purpose of the interview was to get insight



into the problems (such as grammar, pronunciation, and fluency) that prevent students from actively participating in the speaking skill practice. The interview was completed and evaluated by the researcher with the help of (SPSS). The percentages were utilized by the researcher.

V. DATA ANALYSIS AND INTERPRETATION

Most Difficult Type Encountered By Engineering Students in Speaking Skills

Table 1: Means, standard deviation and ranks for the sample of the study scores on each domain and total degree of speaking skills test

Skills	Mean	Standard deviation	Relative weight	Rank
Fluency	7.28	1.79	72.48	1
Grammar	7.21	0.93	71.82	2
Pronunciation	7.05	1.04	70.06	3
Total degree	21.39	3.23	71.46	

According to Table 1, the participants in the study sample placed a moderate amount of importance on the ability to speak fluently (72.48), a medium amount of importance on the ability to speak grammatically (71.82), and a low amount of importance on the ability to speak clearly (70.06). The total relative weight was a moderate amount of importance (71.46), indicating that the proficiency level of Engineering students in speaking is moderate, and the skill which has got the first rank was the ability to speak clearly. This indicates that the category of "pronunciation" is the most challenging, with a percentage of 71.46%, followed by the category of "grammar" with a proportion of 71.82%, and finally the category of "fluency" with a percentage of 72.48%.

Levels of Errors Occurred Among Engineering Students in Speaking Skills

Table 2: Means, standard deviation, relative weight and ranks for the sample of the study errors occur on each domain and total degree of speaking skills test

Skills	Mean	Standard deviation	Relative weight	Rank
Fluency	2.72	1.80	27.49	3



Grammar	2.79	0.96	28.25	2
Pronunciation	3.06	1.00	30.08	1
Total degree	8.54	3.18	28.62	

The research sample's faults in pronunciation were given the greatest relative weight (30.08) in Table 2, followed by their errors in grammar (28.25) and their fluency (27.49). According to the data, students at engineering schools have a medium degree of inaccuracy when it comes to their command of the English language, with the most common problems being found in pronunciation and grammar.

VI. CONCLUSION

Throughout the study, it became evident that while engineering students possess exceptional technical knowledge, they often encounter barriers when attempting to express their ideas and concepts verbally. It is imperative to recognize that effective communication is not just a valuable skill; it is a transformative tool that empowers engineers to translate their technical expertise into real-world impact. As the engineering profession continues to evolve in a rapidly changing world, fostering strong speaking skills among engineering students is essential for sustaining innovation, driving progress, and addressing the complex challenges that lie ahead. By prioritizing and investing in the development of speaking skills, engineering educators, institutions, and professionals can collectively contribute to creating a generation of confident, articulate, and influential engineers who will shape a brighter future for society through their technical prowess and exceptional communication abilities.

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