



# Communication Barriers among Engineering Students: An Analysis of Linguistic, Psychological, and Academic Challenges

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## Abstract

### How to Cite this Article:

Arunmozhi, K. & Shanmuganathi, A. (2026). Communication Barriers among Engineering Students: An Analysis of Linguistic, Psychological, and Academic Challenges. International Journal of Creative and Open Research in Engineering and Management, 2(9), 1-9. <https://doi.org/10.55041/ijcope.v2i9.055>

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<https://doi.org/10.55041/ijcope.v2i9.055>

Effective communication is an essential graduate attribute for engineering students, as technical knowledge alone is insufficient for academic achievement, professional collaboration, and workplace success. Despite the increasing emphasis on communication skills in engineering education, many engineering students continue to experience difficulties in expressing ideas clearly, participating in discussions, delivering presentations, writing technical documents, and communicating confidently in English. These difficulties arise from a combination of linguistic, psychological, educational, technological, and sociocultural factors. This article examines the major drawbacks in communication among engineering students and analyses their implications for academic and professional development. Particular attention is given to limited vocabulary, grammatical difficulties, inadequate speaking practice, fear of making mistakes, lack of confidence, mother-tongue influence, ineffective listening, presentation anxiety, and insufficient opportunities for authentic communication. The article argues that communication problems should not be viewed merely as deficiencies in English proficiency but as multidimensional challenges requiring systematic pedagogical intervention. It further emphasizes the importance of learner-centred activities, collaborative learning, technical communication training, presentation practice, peer interaction, and technology-supported language learning. Developing communication competence alongside technical expertise can significantly improve engineering students' employability and their ability to function effectively

in multidisciplinary professional environments.

**Keywords:** engineering students, communication skills, English language, communication barriers, technical communication, employability, language learning

## Introduction

Engineering education traditionally places considerable emphasis on mathematics, science, technology, design, and problem-solving. However, contemporary engineering practice requires professionals to communicate their ideas effectively with colleagues, managers, clients, researchers, and members of the public. Engineers are expected not only to develop technically sound solutions but also to explain those solutions clearly through oral presentations, reports, discussions, meetings, emails, and other professional forms of communication. Communication competence has therefore become an important component of engineering education and professional development.

Engineering students frequently encounter communication difficulties despite possessing adequate technical knowledge. In many educational contexts, students may understand a technical concept but struggle to explain it in English. Others may hesitate to participate in classroom discussions because of limited vocabulary or fear of grammatical errors. Some students experience difficulty organizing their ideas logically when speaking or writing. These problems can affect classroom participation, academic performance, group projects, presentations, interviews, and eventually professional employment.



The problem is particularly significant in contexts where English functions as an important language of higher education and employment. Engineering students may have studied English for several years before entering university, yet their previous learning may have concentrated largely on examinations, grammar exercises, and textbook-based instruction rather than meaningful communication. As a result, students can possess knowledge about English without necessarily possessing the confidence and fluency required to use English effectively in real-life situations.

Communication difficulties among engineering students should therefore be examined as a broader educational issue. The present article discusses the principal drawbacks affecting engineering students' communication and considers the linguistic, psychological, pedagogical, and sociocultural factors contributing to these difficulties. It also proposes pedagogical approaches that can help institutions strengthen students' communication competence.

### **Communication and Engineering Education**

Communication is closely connected with the professional identity of an engineer. Engineering projects normally involve collaboration among individuals from different technical and professional backgrounds. Engineers have to exchange information, negotiate ideas, document procedures, interpret requirements, and communicate solutions. Consequently, communication is not an additional skill that can be separated completely from engineering practice; it is part of the engineering process itself.

The importance of communication has been recognized by engineering education researchers. Engineers frequently work in teams, and successful teamwork requires the ability to listen, explain, negotiate, and respond appropriately to other people. Engineering graduates must also communicate with non-specialists who may not possess the technical vocabulary of their discipline. Technical knowledge therefore becomes professionally valuable only when an engineer can communicate that knowledge effectively.

Nevertheless, communication training sometimes receives less attention than technical subjects within engineering curricula. Students may spend many hours studying engineering mathematics, programming, electronics, mechanics, or other specialized subjects while receiving comparatively limited opportunities for sustained speaking and writing practice. This imbalance can contribute to a gap between technical competence and communicative competence.

### **Major Drawbacks in Communication among Engineering Students**

#### **Limited Vocabulary**

One of the most common communication difficulties among engineering students is limited vocabulary. Students may possess a basic knowledge of English but lack sufficient vocabulary to express complex ideas precisely. This problem becomes particularly visible during presentations, seminars, interviews, and group discussions.

Technical communication requires both general and discipline-specific vocabulary. Students need to understand specialized terminology while also possessing the general English required to construct explanations, comparisons, arguments, and conclusions. When vocabulary is inadequate, students often depend on familiar words, repetition, or direct translation from their first language.

Limited vocabulary can also affect writing. Students may understand the content of a technical assignment but struggle to select appropriate academic expressions. Consequently, their writing may become repetitive, grammatically simple, or unclear.

#### **Grammatical Difficulties**

Grammatical errors constitute another major obstacle. Common problems include incorrect verb forms, inappropriate articles, subject-verb disagreement, preposition errors, incorrect word order, and problems with sentence construction. Grammar difficulties become especially noticeable in formal communication. An engineering student may understand a technical process but present it through poorly structured sentences. This can reduce the clarity of the message and sometimes create ambiguity.

However, grammar should not be considered the only measure of communication competence. Excessive emphasis on grammatical correctness may actually increase students' anxiety about speaking. A balanced approach should therefore encourage grammatical development while simultaneously providing opportunities for meaningful communication.

#### **Mother-Tongue Influence**

Students who learn English as a second or additional language frequently transfer linguistic patterns from their first language into English. Such transfer may affect pronunciation, sentence structure, vocabulary selection, and discourse organization.



Mother-tongue influence is particularly apparent when students translate expressions directly rather than constructing them according to English usage. Pronunciation differences can also make students hesitant to speak, particularly when they believe that their accent will be judged negatively.

Rather than treating students' linguistic backgrounds as deficiencies, language instruction should help learners recognize differences between their first language and English and develop strategies for communicating effectively across linguistic contexts.

### **Lack of Speaking Practice**

Communication skills cannot be developed effectively through theoretical instruction alone. Students need regular opportunities to speak, listen, interact, negotiate, and present ideas.

In many classrooms, however, students have limited opportunities to participate actively. Teacher-centred instruction can result in a situation in which the teacher speaks for most of the class period while students primarily listen and take notes. Such an environment provides insufficient practice in spontaneous communication.

Engineering students particularly benefit from activities that simulate professional situations: technical presentations, project meetings, group discussions, interviews, problem-solving tasks, and poster presentations. These activities allow students to connect language learning with their future professional responsibilities.

### **Fear of Making Mistakes**

Psychological factors have a significant influence on students' willingness to communicate. Many students avoid speaking because they fear making grammatical, pronunciation, or vocabulary mistakes in front of classmates.

This fear can create a negative cycle. Students who are afraid of making mistakes speak less frequently. Because they receive less speaking practice, their fluency develops slowly. Their lack of fluency then reinforces their anxiety.

A supportive classroom environment can help interrupt this cycle. Students should be encouraged to view errors as a natural part of language development rather than as evidence of failure. Constructive feedback can help students improve without discouraging participation.

### **Lack of Confidence**

Confidence is closely associated with communication performance. Students who lack confidence may possess adequate linguistic knowledge but still hesitate to speak. They may prepare extensively before a presentation but struggle to communicate spontaneously.

Confidence develops through repeated successful experiences. Small-group discussions, pair activities, short presentations, and peer interaction can provide students with manageable opportunities to communicate before they are required to perform in larger settings.

### **Presentation Anxiety**

Engineering students are frequently required to present projects, research findings, designs, and technical information. Yet many students experience significant anxiety when speaking before an audience.

Presentation difficulties may include reading directly from slides, avoiding eye contact, speaking too quickly, using excessive fillers, poor organization of ideas, and dependence on memorized sentences. Such problems can prevent technically strong students from communicating their work effectively.

Presentation training should therefore form an integral part of engineering education. Students should learn how to structure presentations, introduce and conclude ideas, use visual aids appropriately, manage questions, and adapt explanations to different audiences.

### **Weak Listening Skills**

Communication is not limited to speaking and writing. Effective communication also requires active listening. Engineering students need to understand lectures, instructions, questions, technical discussions, interviews, and workplace conversations.

Weak listening skills can result in misunderstanding instructions or failing to respond appropriately during group activities. Students may concentrate heavily on preparing their own responses rather than understanding what others are saying.

Listening activities involving lectures, interviews, discussions, technical videos, and authentic professional communication can help students develop this competence.



### **Impact on Academic Performance**

Communication difficulties can directly influence academic achievement. Students may understand course material but find it difficult to write reports, answer descriptive examination questions, participate in seminars, or explain project work.

Group projects can also become challenging when students cannot communicate their ideas effectively. Misunderstandings may affect task distribution, collaboration, and decision-making. Consequently, communication difficulties can influence not only individual achievement but also collective academic performance.

### **Impact on Employability**

The consequences of weak communication extend beyond university education. Employers increasingly expect graduates to combine technical expertise with interpersonal and communication skills. Engineering graduates may be required to participate in meetings, communicate with customers, write reports, deliver presentations, and collaborate with multidisciplinary teams.

A technically capable graduate who cannot communicate effectively may find it difficult to demonstrate his or her competence during interviews or professional interactions. Communication competence therefore contributes significantly to employability and career development.

### **Pedagogical Measures for Improving Communication**

Engineering institutions can address communication difficulties through an integrated approach rather than relying exclusively on conventional language classes.

First, communication activities should be embedded within engineering education. Students can practise English while discussing technical concepts, explaining designs, preparing project reports, and presenting research findings.

Second, collaborative learning can increase opportunities for meaningful interaction. Pair and group activities enable students to communicate in less threatening environments and gradually develop confidence.

Third, institutions should provide systematic training in technical writing. Students should learn how to write laboratory reports, abstracts, project reports, emails, proposals, and other professional documents.

Fourth, presentation practice should be continuous rather than restricted to occasional project assessments. Students can begin with short individual presentations and gradually progress to longer technical presentations.

Finally, technology can provide additional opportunities for communication practice. Students can use digital presentations, recorded speaking tasks, online discussions, collaborative documents, and multimedia resources to develop language skills beyond the classroom.

### **Conclusion**

Communication difficulties among engineering students are multidimensional and cannot be attributed solely to inadequate knowledge of English grammar. Limited vocabulary, grammatical difficulties, mother-tongue influence, insufficient speaking opportunities, fear of mistakes, lack of confidence, presentation anxiety, and weak listening skills can collectively affect students' academic and professional communication.

Engineering education should therefore treat communication competence as an essential component of professional preparation. Technical expertise and communication ability should not be considered separate areas of development. Engineers must be able to transform technical knowledge into language that can be understood by colleagues, clients, managers, and wider audiences.

A systematic programme involving technical communication, collaborative learning, speaking practice, presentation training, academic writing, listening activities, and constructive feedback can help students overcome communication barriers. Such an approach can contribute not only to improved academic performance but also to greater confidence, employability, teamwork, and professional effectiveness. Ultimately, developing effective communicators should be regarded as an integral objective of contemporary engineering education.

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