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Mother Tongue Influence Among Engineering Students: Challenges and Pedagogical Strategies

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Abstract The impact of mother tongue influence (MTI) on English language acquisition remains a significant challenge for engineering students, particularly in regions where English is learned as a second or foreign language. This paper examines the effects of MTI on pronunciation, grammar, and fluency, highlighting the barriers it creates in academic and professional communication. It further explores practical teaching strategies that can help mitigate these issues, enhancing students' English proficiency. The study underscores the importance of interactive and technology-driven learning environments in fostering improved language skills.

Keywords: Mother Tongue Influence, Engineering Students, English Proficiency, Pedagogical Strategies, Communication Skills

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1. Introduction English proficiency plays a crucial role in engineering education, as it facilitates access to global academic resources and supports professional communication. However, many students face difficulties in acquiring English fluency due to the interference of their mother tongue. This linguistic influence often results in pronunciation inconsistencies, grammatical errors, and hesitation while speaking, which can hinder their ability to communicate effectively.

Mother Tongue Influence (MTI) arises when the structural elements of a learner's first language impact their English usage. This phenomenon is common among students from non-English-speaking backgrounds, where exposure to English is often limited to formal education. Without targeted interventions, students may develop persistent language errors, which impede their learning progress.

Given the importance of communication skills in the engineering field—where

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collaboration, presentations, and technical discussions are essential—addressing MTI is necessary. Students facing language barriers may struggle to articulate their ideas clearly, engage in teamwork, or perform well in interviews. This study aims to analyze the effects of MTI on engineering students and propose effective teaching strategies to help them improve their English proficiency. By understanding the underlying causes of linguistic interference and implementing structured solutions, educators can support students in building confidence and enhancing their language skills for academic and professional success.

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2. Theoretical Background MTI occurs due to the transfer of linguistic structures from a learner's first language (L1) to the second language (L2). Contrastive analysis suggests that phonetic, syntactic, and semantic differences between L1 and L2 lead to recurring errors in English usage. Engineering students, in particular, face communication difficulties due to such linguistic interference, which can affect their performance in academic discussions, interviews, and collaborative projects.

Linguistic Interference Theory explains how first-language features can influence second-language speech patterns, resulting in common pronunciation and grammatical mistakes. Krashen's Input Hypothesis emphasizes the necessity of meaningful and structured language exposure for successful second-language acquisition. Additionally, Kachru's Three Circles of English model sheds light on the role of localized English varieties and their influence on learners' proficiency and perceptions of English usage.

Students often develop fossilized errors—persistent linguistic mistakes reinforced over time due to incorrect exposure. Selinker's Interlanguage Theory suggests that learners construct a unique linguistic system influenced by both L1 and L2, which evolves through continuous interaction and feedback. Recognizing these theoretical perspectives allows educators to design better language training methods to reduce MTI and improve students' English skills.

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3. Effects of Mother Tongue Influence on Engineering Students

3.1 **Pronunciation Challenges**
Phonetic variations between native languages and English often lead to pronunciation errors. For example, speakers of Odia or Hindi may struggle to differentiate between sounds such as /v/ and /w/ or /s/ and /ʃ/ (sh sound). These errors can cause misunderstandings in technical discussions and professional interactions.

3.2 **Grammatical Interference**
MTI also affects sentence structure and syntax. Many students translate phrases directly from their native language, leading to errors in verb tense, prepositions, and word order. For instance, an Odia-speaking student might say, "He is going to market yesterday," instead of "He went to the market yesterday."

3.3 **Fluency and Confidence Issues**
Reliance on native language structures often results in hesitation while speaking

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English. This affects fluency, making students less confident during academic discussions, presentations, and interviews, thereby limiting their professional growth.

4. Pedagogical Strategies to Overcome MTI

4.1 Phonetic Training and Pronunciation Drills

Integrating phonetic exercises and pronunciation drills into language training helps students recognize and rectify common pronunciation errors. Tools such as the International Phonetic Alphabet (IPA) and speech analysis software can improve phonemic awareness.

4.2 Immersive English-speaking Environment

Encouraging students to engage in English-speaking environments through peer discussions, group projects, and language labs fosters language practice. Exposure to English media, including audio books, podcasts, and films, also helps in reducing MTI.

4.3 Grammar and Syntax Awareness Programs

Explicit grammar instruction that contrasts native language structures with English helps students recognize and correct errors. Structured exercises, such as sentence reconstruction and guided writing tasks, enhance grammatical accuracy.

4.4 Use of AI-based Language Tools

AI-driven learning platforms, including speech recognition tools and interactive applications, provide students with real-time feedback on pronunciation and grammar. These digital tools enable personalized language learning and self-improvement.

4.5 Encouraging Spontaneous Speaking Activities

Interactive activities such as debates, extempore speaking, and role-plays promote fluency and confidence in English communication. Informal discussions, storytelling, and technical conversations further encourage spontaneous speech. Organizing mock interviews and public speaking events allows students to practice structured yet natural communication. Games such as impromptu speeches, tongue twisters, and interactive dialogues create an engaging and enjoyable language-learning environment. Additionally, students should be encouraged to think in English rather than mentally translating from their mother tongue, which can enhance fluency and natural expression.

5. Conclusion

Mother tongue influence creates significant barriers in English language learning for engineering students, affecting pronunciation, grammar, and fluency. These linguistic challenges can limit their academic and professional communication skills. However, with the implementation of targeted teaching strategies—such as phonetic training, immersive learning environments, structured grammar instruction, and AI-based language tools—students can overcome these obstacles. By fostering an interactive and supportive learning atmosphere, educators can help students develop confidence and proficiency in English communication. Strengthening students' language skills will not only improve their academic performance but

also enhance their employability and career prospects in the global workforce.the influence of mother tongue among engineering students presents both challenges and opportunities in the learning process. While the use of a native language can foster better understanding in the early stages of education, it can also create barriers when students transition to an environment that primarily uses a global language, such as English. Challenges like language proficiency issues, limited technical vocabulary, and communication difficulties can hinder academic performance and professional development.

However, with appropriate pedagogical strategies, these challenges can be overcome. Encouraging the development of bilingual or multilingual communication skills, using code-switching effectively, and integrating the mother tongue in teaching where relevant can enhance learning outcomes. Moreover, incorporating collaborative learning techniques, language support programs, and technological tools can help students bridge the gap between their native language and the language of instruction.

Ultimately, fostering an inclusive and adaptive learning environment where both linguistic diversity and technical skills are valued will empower engineering students to excel in their education and future careers. By recognizing the role of the mother tongue and adopting strategies to mitigate its potential drawbacks, educational institutions can better prepare students to navigate global challenges in the engineering field.

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