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From Classroom to Career: AI-Driven Communication Training for Engineering Students

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Abstract

Artificial Intelligence (AI) is now an integral part of the landscape in higher education, profoundly influencing the field of English Language Teaching (ELT) in technical and professional contexts. Engineering graduates are required in today's global job market not only to be competent in technical matters but also to possess the ability to communicate well in multicultural and professional settings as well. In the traditional classroom, however, with its focus on examinations and teacher-centered teaching, opportunities for individual speaking practice, interactive learning and communicative feedback are limited. The article delves into the role AI-driven tools like ELSA Speak, GrammarlyGO, Speechify, Duolingo Max, and AI-based tutoring systems play in enhancing communicative competence among engineering students. Based on the theories of communicative language teaching and the role of technology-in-assisted learning, the study examines the application of AI in the areas of pronunciation, fluency, listening skills, vocabulary development, professional writing, interview preparation and workplace communication. Additionally, the paper explores shifts in the English Teacher's role in AI classrooms, and asserts that optimal language learning comes from a blended pedagogical approach that provides technological assistance alongside human empathy, context, and critical direction. The paper highlights several concerns, including overreliance, ethical considerations, digital divide, and the drawbacks of automated feedback, as AI tools provide flexibility, personalization, and learner autonomy. The study concludes that AI-assisted ELT can fill the gap between classroom-based and professional communication demands if used critically and ethically, with pedagogical consideration.

Keywords: Artificial Intelligence (AI), English Language Teaching (ELT), Communicative Competence, Engineering Students, AI-Assisted Learning, Professional Communication, Employability, Blended Pedagogy.

Introduction

In the last few decades, English communication in engineering education has increased significantly. It is expected that engineering students will not only have technical skills but also be able to communicate their ideas effectively in a variety of formats, such as presentations, interviews, technical discussions, project documentation, teamwork, and workplace correspondence, in the workplace today. In a world where industries are operating in a global context and multicultural environments, communicative competence has become a must-have employability skill.

To address the narrow interpretation of the language learning as grammatical correctness, the concept of communicative competence was introduced by Dell Hymes. The ability to apply language appropriately in social and contextual situations, Hymes maintained, is the key to effective communication. Later writers, like Merrill Swain and Michael Canale, added grammatical competence, sociolinguistic competence, discourse competence, and strategic competence as required aspects of communication. The skills are directly related to engineering students' professional readiness, as they can be applied to effectively engage in the processes of interviewing, meetings, presentations and collaboration.

However, traditional English Language Teaching (ELT) approaches, which focus on textbook reading, written tests, and teachers' control, have been still prevalent in many engineering classrooms although communication skills are becoming increasingly vital. While these methods can help with grammatical learning, they do not necessarily allow for individual speaking practice, interactive communication and immediate corrective feedback. Therefore, students who are technically strong are often unable to communicate well in interviews, seminars, presentations and at work.

Artificial Intelligence (AI) is a cutting-edge technology that has become a revolutionary tool in the field of education technology in recent years, creating new opportunities for language learning and communication training. AI-based applications are capable of providing immediate feedback, adaptive exercises, pronunciation analysis, conversational simulations, and writing assistance tailored to individual learner needs. These tools provide students with the opportunity to practise in a low-risk, low-stakes environment, at their own speed, unlike traditional classroom settings.

In the context of professional language learning, new applications like ELSA Speak, GrammarlyGO, Speechify, Duolingo Max, and tutoring systems based on the ChatGPT are gaining importance. These platforms provide learners with the opportunity to develop the ability to improve their pronunciation, fluency, listening comprehension, vocabulary, writing accuracy and interactive communication skills. More important, they bring learning beyond classroom walls and foster autonomy of the learner.

This paper discusses the role of AI assisted applications to improve communicative competence of engineering students. It examines the selected AI tools adopted in ELT, their pedagogical value, problems faced by their implementation and discusses the changing role of teachers in the AI-supported classrooms. The paper proposes that AI should not take the place of teaching but rather serve in tandem with human educators in a blended learning approach that leverages technology's accuracy with greater human emotional, contextual and critical engagement.

Communicative Competence is an element of Engineering Education.

Communication has emerged as one of the most appreciated employability skills of today's engineering practice. Engineering students need communication skills to explain the procedures of an experiment in the laboratory, to present their projects, to deliver seminars, to explain in viva voce examination and to perform collaborative assignments in academic institutes. In the workplace, technical writing, meetings, discussion with clients, negotiating and team management are all heavily dependent on effective communication.

Hymes defines communicative competence as being more than just grammatical competence, it also involves using language in an appropriate manner based on context and purpose. Canale and Swain also broke it down into four interrelated sub-skills: namely grammatical competence, discourse competence, sociolinguistic competence and strategic competence. These are still very significant in engineering education.

By acquiring grammatical competence, students will be able to produce language that has structure. They can use discourse competence to structure their technical ideas effectively in reports, presentations and conversations. Learners are able to use language correctly in professional and multicultural interactions by developing their sociolinguistic competence, and

strategic competence helps them to deal with communication failures, understand messages and keep communication going.

But even after years of formal study in English many engineering students find it difficult to communicate in English. In some schools, English continues to be considered and taught as a test language, not as a language of communication. Students can grasp the rules of grammar and technical terms, but feel insecure about engaging in conversation and fluently conveying ideas. Communication anxiety can be due to fear of errors, limited exposure to spoken English, and lack of opportunities for practice.

The difference between what is known linguistically and what is performed linguistically suggests that the teacher is more influenced by the pragmatic and communicative needs of the learner, and thus more concerned with interaction and learner-centered pedagogical methods. AI assisted learning environments try to solve these problems by providing learning areas for continuous practice, individualized correction and contextual communication training.

The limitations of traditional ELT classrooms.

The traditional ELT classrooms have also played an important role in language education in the areas of grammar teaching, reading, vocabulary study, and writing. However, they can present challenges when used in the context of engineering students' communication requirements. One drawback is the lack of individual feedback. Teachers might not have time to work with the pronunciation, fluency, and communicative problems of every student in the classroom in cases of overcrowding. This leads to a passive participation for some learners who are shy and/or anxious.

Another difficulty is that there is a lack of authentic contexts of communication. Common classroom exercises remain focused on memorizing words, phrases and sentences, and performing textbook exercises, instead of on real-life communication tasks. Engineering students need practising opportunities to interview, to explain technical information, to discuss in the workplace, and to present professionally. Communication training is also impacted by time limitations. Communicative competence is a product of repetition and practice; it can be achieved in the classroom but the time spent in the classroom is typically short. There is a need for extra learning spaces in addition to formal learning.

Fear of judgment can also be fostered by tradition in classrooms. Pupils often do not wish to speak due to grammatical errors or to fear criticism from others. This anxiety inhibits communication and diminishes confidence. In this context, AI powered language learning platforms offer alternative avenues for practice, feedback, and self-directed learning. They complement classroom instruction by broadening the communicative situation outside of the classroom.

The application of Artificial Intelligence in English Language Teaching

Artificial Intelligence is the technology that involves computer systems that can perform tasks that would normally require human intelligence, such as speech recognition, language processing, adaptive learning and automated feedback generation. AI has found its way into ELT use as tools for speech analysis, intelligent tutoring systems, chatbots, grammar assistants, translation and conversational applications.

AI language learning is not the same as conventional language learning that goes by the same rule of "one size fits all". These systems can detect errors, adjust exercises based on the needs of the learners, and provide immediate feedback. This type of personalisation can be especially beneficial for engineering students who may have different communication abilities. One of the most notable benefits of using AI in ELT is its accessibility. Students can practice communication abilities via non-classroom time and in low stress situations. This flexibility promotes learner autonomy and affords opportunities for learners to engage in speaking, listening, reading, and writing multiple times. Moreover, AI tools simulate real-life communicative situations. Conversational AI systems enable learners to practice interviews, presentations, workplace conversations, and interactions. These simulations help diminish communication anxiety and build confidence. But AI can't be seen as a substitute for educators. There are emotional, cultural and contextual factors in language learning which only a human measure could attempt to address. Human teachers are always needed for interpretation, motivation, moral guidance and interpersonal communication.

ELSA Speak and Pronunciation Development

Pronunciation is still one of the most difficult areas which students, especially those from regional language backgrounds, may find challenging in engineering study. Confidence in speaking and presentation can be a problem due to unclear pronunciation, incorrect stress patterns and hesitation. ELSA Speak analyzes learner pronunciation with speech recognition technology and gives instant corrective feedback. The application detects errors in sounds, stress, rhythm and fluency and allows students to practise until an error is corrected.

AI pronunciation tools provide customized feedback on pronunciation, which are not provided in a classroom setting with a crowd of students. The more often you do it, the less anxious you will feel and the more confident. Students who are preparing for interviews, seminar and technical presentation improve the effectiveness of their professional communication by having a good pronunciation. Most significantly, these tools promote independent learning traits. Students realize that they are listening to themselves speak and that they are involved in self-correcting their speech, not just relying on the teacher to do the job.

GrammarlyGO and Professional Writing

Professional writing is a crucial element of engineering communication. Engineering graduates should be able to write clear and precise reports, resumes, e-mail messages, technical documents and project summaries. GrammarlyGO helps learners with grammar, clarity, word choice, sentence structure and tone suggestions. It also assists the students to recognise repetition of expressions and enhance the coherence in the professional writing tasks. Automated immediate feedback helps many students to become aware of their frequent grammatical mistakes. Engineering students may edit their assignments by themselves, enhance their written communication skills prior to formal submission.

But relying too heavily on the tools that generate content with AI can diminish originality and independent thought. Automated systems can generate grammatically correct text, but without necessarily grasping the nuances or discipline specificity of a text. Thus, teachers need to help students critically assess AI-provided suggestions instead of blindly taking. Therefore, teachers need to engage students in critically assessing AI-provided suggestions instead of taking them uncritically. The pedagogical benefit of GrammarlyGO is not that it enables students to write but that it helps them revise, edit and be aware of their language.

Speechify and Listening Development

Although listening is an important skill in language for work, it is often ignored in ELT classrooms. To communicate effectively, learners must not only have clear speech, but understand spoken language accurately as well. Speechify is a tool that converts any written content to speech so that students can listen to English to practice their listening skills. These technical texts include listening to technical passages, research texts, presentation texts, and professional texts for engineering students. This repetition helps to develop pronunciation awareness, word recognition, intonation and listening skills. Learners will gradually get used to the rhythm and flow of spoken English, thereby enhancing their receptive and productive communication skills. Listening-based applications are useful for learners who have problems with pronunciation and fluency, as they can give them linguistic input which can be complemented in the classroom.

Duolingo Max and Interactive Learning.

Duolingo Max features a combination of AI-powered tools and interactive activities, including explanations and role-based scenarios, to provide a conversational learning experience. It has a game-like format, which promotes regular students' engagement and eliminates the boredom of conventional language drills. This application builds up an environment of low stress for students to practice vocabulary, sentence formation, and conversational interaction without embarrassment from others. This is especially helpful for engineering students who are afraid of communication. While Duolingo Max doesn't cater to all of the needs of advanced professional communication, it can still be used to help with the basic development of language skills and learner engagement. It has the biggest pedagogical value in getting pupils to practise regularly and independently. Gamified AI tools can boost engagement and enhance the interactive and learner-centred nature of language learning, when used alongside classroom activities.

The use of ChatGPT-based tutors and professional simulation. The incorporation of Chat-GPT tutors and professional simulation. ChatGPT tutoring systems offer a conversational interaction, which can mimic real-world communication scenarios. These systems can be used by Engineering students for rehearsal of interviews, practice presentations, discussion questions, explanation of technical concepts, and even for role-playing in the workplace. For

instance, students who are going to take the campus placement test can practise some common interview questions and get tips to enhance their fluency and organisation. Students who are about to present in a seminar can practice their introduction, conclusion or question and answer section.

These simulations increase the ease of formal communication situations. Pupils get repeated practice in an environment free of social pressure, leading to confident and fluent practice over time.

Meanwhile, the responses created via AI need to be evaluated critically. Sometimes ChatGPT might give responses that are inaccurate, vague, or out of context. Thus, it is of great importance for teachers to educate the students to check information, modify language with different circumstances and keep the originality when communicating. The potential of conversational AI for education is not just about automation, but also about reflective and practical learning.

A teacher's role is changing because of blended pedagogy.

In the ELT classrooms, the use of AI does not reduce the role and importance of teachers; rather, it changes them. Rather, teachers are facilitators, mentors and critical guides that support students to make meaningful use of technology. While AI can offer feedback and repetitions, it lacks the capacity to truly grasp emotional hesitancy, cultural context, or interpersonal nuances. Human teachers are still vital in motivating students, providing empathy, interacting in the classroom, and teaching ethics.

The blended pedagogy is a pedagogical model that integrates AI-based practice learning and teacher-guided communicative instruction. For example, students can practice ELSA Speak outside of class and enhance their pronunciation during classroom time of teacher-led discussions and presentations. Likewise, GrammarlyGO could help students to revise written drafts, and teachers could explain audience awareness, tone and rhetorical effectiveness. In these classrooms, educators help students understand and analyze AI-generated suggestions instead of blindly relying on them. In these classrooms, the teacher assists students in the critical processing of AI feedback rather than blindly taking in AI suggestions. They also make communications relevant, meaningful and social. The teacher's role shifts from the

provider of knowledge to a facilitator of learning experiences that are collaborative and technologically supported.

There are several important advantages that AI-assisted ELT provides to engineering students. First of all, it offers customized feedback to learners according to their learning difficulties. Students are given correct feedback, in terms of pronunciation, grammar, fluency, and structure of writing, as soon as it is given. Secondly, AI promotes repetition. Communicative competence is a process of development and it can be developed by continuing interaction with language throughout the process of learning, which means that AI is used to provide learners with opportunities for interaction beyond class time. Thirdly, AI decreases correspondence anxiety. Few students are confident in public speaking because they are afraid they will make mistakes or be judged by their peers. AI environments provide dedicated areas for experimentation and self-correction, boosting learner confidence. Fourth, AI fosters student independence. Students find themselves involved in learning process and learn to be self-reliant. AI communication training meets employment needs. Engineering students are prepared for the workplace by engaging in simulated interviews, workplace communication tasks, presentation rehearsals, and professional writing activities.

Some challenges and ethical concerns

While the benefits of AI-supported learning systems are significant, there are also important pedagogical and ethical implications. Digital inequality is a problem. Some students don't have access to smartphones, reliable internet and/or subscription-based AI applications. Access that is unequal can help to create greater learning differences among students. One issue is relying too heavily on AI-generated support. Overuse of automated correction may make students less critical in thinking, creative and independent in expression. It can become a tendency for students to focus more on the finished product than on genuine communication. Additionally, privacy concerns are a significant concern, as numerous AI functions rely on data inputs such as user information, speech patterns, and written content. It is, therefore, essential for educational institutions to establish ethical principles for responsible usage of AI.

Moreover, AI systems can also overlook cultural subtleties, emotions, and linguistic nuances. While automated feedback is helpful, it can't substitute for the human context or interpretation.

The constraints highlight the need for AI to be a tool to enhance teaching and learning, not replace it. The potential future applications of AI in ELT. Possible future applications of AI in ELT. AI in ELT is deeply linked with the digital revolution in higher education. As with many emerging technologies, virtual reality classrooms, AI avatars, multilingual conversational systems, and immersive learning environments could take language learning experiences to the next level of personalization. Using AI, future systems can help educators keep an eye on student progress, detect communication challenges, and create customized learning trajectories. But the advancement in technology does not suffice for meaningful learning outcomes.

Therefore, teacher training, digital literacy, ethical awareness and accessibility, as well as technological integration, need to be priorities for educational institutions. AI should be used responsibly and students should be encouraged to be original and use interpersonal communication skills and analytical thinking. The aim of ELT in the future is to be not about replacing teachers with technology, but about establishing learning ecosystems where technology enables communication development through human participation.

Conclusion

The advent of Artificial Intelligence has generated a multitude of potential opportunities for the revolution of English Language Teaching (ELT), and professional disciplines like engineering education are not far behind. Communication skills are increasingly the key to employment and success in the workplace, and therefore, ELT classrooms should go beyond the passive, exam-centered approach and adopt more dynamic and active, learner-centered methods.

These AI tools offer helpful assistance in pronunciation, fluency, listening comprehension, writing skills, vocabulary, and professional communication. These AI solutions help improve pronunciation, fluency, listening ability, writing skills, vocabulary, and professional communication. These enable students to practice the language repeatedly, learn from their own mistakes, and develop learner autonomy, while linking learning in the classroom with learning in the workplace, and supporting students in communicating via workplace language.

This means that the use of AI in learning needs to be handled with care and responsibility. Empathy, cultural understanding, motivation, creativity and contextual interpretation are

aspects of the human dimension of teaching that technology simply cannot replace. The best didactical solution would thus be the use of blended learning models which enable AI to facilitate practice and feedback, and allow teachers to facilitate interpretation, interaction and reflective learning. The use of AI in ELT could help to close the divide between academic communication training and professional readiness for engineering students. With sensitive and thoughtful use, AI can make a positive impact in producing confident and competent communicators who are prepared for the global community.

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