PAPER

Use of Chat GPT in English for Engineering Classes: Are Students' and Teachers' Views on Its Opportunities and Challenges Similar?

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ABSTRACT

Mobile technologies have become increasingly important in the field of education, providing innovative ways to engage students and enrich their learning experiences. ChatGPT is an innovative tool that can be used in English for Specific Purposes (ESP) classes to engage students, enhance their knowledge and skills, and add variety and interest to the traditional process of learning engineering English, whether accessed through computers or mobile devices. In light of this, the study aims to investigate and compare the attitudes of technical university students and teachers towards using ChatGPT in English classes, as well as their perspectives on academic integrity issues and the strategies they employ when using ChatGPT. The study involved 22 teachers and 60 students from a Ukrainian university. Quantitative research, which involved collecting data through surveys, showed that students exhibited positive attitudes, while teachers took a more neutral approach. Both groups agree that ChatGPT plays a supplementary role in enhancing both hard and soft skills, as well as English language communication skills. However, they emphasized its impact on the development of research skills. The study highlights critical issues related to academic integrity, specifically the differing perceptions of possible violations between students and teachers. The authors present ideas on integrating ChatGPT into ESP classes, enabling teachers to leverage artificial intelligence (AI) tools for language learning and adapt to changing educational landscapes. The study emphasizes the importance of integrating ChatGPT effectively into engineering English classes to support students' learning. While emphasizing the importance of guidelines for academic integrity, it also advocates for the creative use of AI tools by teachers and students. Addressing the disparity in attitudes suggests providing teacher professional development to ensure proficient use of AI tools.

KEYWORDS

mobile technology, ChatGPT, engineering English, English language reading, writing and speaking skills, soft skills, tertiary education, artificial intelligence (AI) tools for language learning

1   INTRODUCTION

In the rapidly changing educational environment, it has become increasingly essential to integrate innovative technologies, particularly mobile technology, to meet the demands of modern learners. Among these technologies, ChatGPT, an advanced natural language processing model, has emerged as a powerful tool with the potential to revolutionize the English for Specific Purposes (ESP) classroom. Its ability to captivate students, improve their knowledge and skills, and introduce innovation into the traditional process of learning engineering English creates extensive opportunities for its integration into educational settings. This paper examines the attitudes of technical university students and teachers toward using ChatGPT in ESP classes, as well as their perspectives on academic integrity and the strategies they employ when utilizing ChatGPT, which is accessible through both computers and mobile devices.

While there is a growing body of literature on the use of artificial intelligence (AI) tools, such as ChatGPT, in different educational settings, there is still a significant research gap in their application in ESP instruction, particularly in the field of engineering. Existing studies have focused on broader applications or specific aspects of ChatGPT, such as its potential benefits and challenges in language learning, scholarly publishing, and general education. However, there are few studies on using ChatGPT in ESP instruction, especially in the field of engineering.

To fill this gap, this research aims to explore the specific context of engineering English classes and provide insights into the attitudes of both students and teachers toward ChatGPT. This study aims to explore participants' perspectives on academic integrity issues, which are crucial in the academic setting, as well as the approaches used to incorporate ChatGPT into their learning and teaching practices. By conducting this research, the aim is to explore the opportunities and challenges associated with using ChatGPT in ESP instruction, particularly in the context of engineering, where specialized language skills are crucial.

2   LITERATURE REVIEW

Recent publications have focused on the potential applications of ChatGPT in higher education. The research on the development of AI in education has increased exponentially over the last five years [1]. Researchers highlight the groundbreaking potential of AI tools while also expressing concerns and issues related to their use that require immediate attention and solutions. Systematic literature reviews explore various aspects of using ChatGPT for educational purposes. İpek, Gözüm, Papadakis, and Kallogiannakis [2] examined the possibilities and potential implications of using ChatGPT in education, with a specific focus on the potential negative impact of such an application. Their findings have significant prognostic value as they establish how ChatGPT and its derivatives will create a new paradigm in education. Vargas-Murillo, Asuncion Pari-Bedoya, and Guevara-Soto [3], based on their analysis of the current literature, conclude that ChatGPT has the potential to enhance academic-related processes. However, this potential needs to be considered, along with the risks and challenges of AI-assisted learning, to ensure the ethical and responsible use of this technology.

ChatGPT is utilized for designing courses, developing syllabi and content (including lecture slides and assignments), and assisting with grading. Students can use

ChatGPT to explain complex concepts, develop and debug code, and create sample exam questions [4]. The potential benefits of using natural language processing models such as ChatGPT are highlighted in providing customized learning plans, generating feedback and support, and offering resources to students whenever and wherever they need them.

Recent studies have found that students and educational practitioners generally view ChatGPT positively. They appreciate its time-saving, information-rich, and personalized tutoring capabilities, as well as its role in enhancing writing ideas [5], [6]. However, there are concerns regarding issues such as assessing the quality of sources, accurate citation, precise language use, loss of human interaction, bias, and ethical implications [5–7]. Among the potential solutions to address these concerns are verifying ChatGPT responses with reliable sources, using it as a reference tool, providing guidelines, and promoting academic integrity. The significance of using AI cautiously is emphasized, and leveraging human intelligence along with ChatGPT's potential is viewed as a means to expedite idea generation and improve the educational process [6].

Scholars [8], [9] emphasize the potential of using ChatGPT to generate answers based on user-entered keywords, which could have a transformative impact on education. However, it is important to note that this approach may not always yield positive results in developing students' learning abilities, especially in creative writing skills. In this context, Guo, Wang, and Chu [10] propose a chatbot-assisted approach designed to improve the teaching of argumentative writing by finding a balance between the convenience of AI-powered assistance and the cultivation of essential writing skills. Halaweh [11] suggests five strategies that should be implemented simultaneously when students use ChatGPT: following the policy for ChatGPT usage, creating reflection notes and reports, auditing the trail of queries, using AI detector tools, and swapping roles. He believes that the use of these strategies will promote transparency, credibility, and academic honesty, as well as authentic learning. Lin [12] also expresses a positive stance and argues that the continuous development and application of artificial intelligence technology greatly supports the educational process and even influences the learning styles of learners.

The use of ChatGPT for scholarly publishing is another area of study in the current literature. Karakose, Demirkol, Aslan, Köse, and Yirci [13] argue that ChatGPT is a promising tool that can support scientific research in collaboration with intelligence. They emphasize the need for creating newer versions of this AI tool that could be ethically and safely integrated into different stages of scientific work. Lund et al. [9] discuss ChatGPT as a potential model for the automated preparation of essays and other scholarly manuscripts. They point out that ethical issues related to the use of GPT in academia and its impact on research productivity have not been fully addressed. Dergaa, Chamari, Zmijewski, and Saad [14] also point out that the adoption of ChatGPT and similar NLP technologies raises concerns about their impact on the authenticity and credibility of academic output. Consequently, there is a critical need for thorough discussions about their potential applications, associated risks, and limitations, with a strong emphasis on maintaining ethical and academic standards.

Several studies have been dedicated to exploring the use of ChatGPT in language learning. Baskara and Mukarto [15] explore the integration of ChatGPT into language courses and programs in higher education, as well as the potential benefits and challenges associated with this integration. The study suggests that ChatGPT could offer personalized language instruction or create authentic language materials for learners to interact with. However, the authors note that utilizing ChatGPT in language

learning may also raise concerns about the potential replacement of human language teachers and the ethical implications of employing a machine learning system to produce text.

Jeon, Lee, and Choe [16] conducted a systematic review of speech-recognition chatbots for language learning. They proposed a conceptual framework that includes three critical components of a chatbot system: goal orientation, embodiment, and multimodality. Using this framework, they identified and defined eight chatbot types. Kohnke, Moorhouse, and Zou [17] examine the potential applications of ChatGPT in language teaching and learning. They also discuss the limitations of ChatGPT and provide recommendations for the digital skills that language teachers and learners need to use this chatbot ethically and efficiently.

The advantages and challenges of using large language models in education have been examined by Kasneci et al. [18], who have explored the perspectives of both students and educators. The article provides an overview of the applications of these models and emphasizes their potential to improve student engagement and personalize learning experiences. Addressing the challenges, the authors argue that the use of large language models in education necessitates the development of competencies among teachers and learners, including understanding the technology and its limitations.

The study conducted by Kostka and Toncelli [19] explores the applications of ChatGPT in English language teaching and its potential to enhance teachers' roles. The authors have found that ChatGPT is especially valuable for producing unique, human-like responses to questions and engaging with users in a natural conversational manner. This provides diverse opportunities for learners to practice and enhance their skills. However, they also raise concerns about ChatGPT's impact on academic integrity and scholarly publishing.

Nikolaeva, Chernysh, Boiko, and Galynska [20] demonstrate how ChatGPT can be utilized as a tool for developing diverse business simulation games. These games aid ESP students in gaining a deeper understanding of conflict and non-conflict situations, analyzing decision-making algorithms in such scenarios, and enhancing their communication competence. Athanassopoulos, Manoli, Gouvi, Lavidas, and Komis [21] have demonstrated promising results suggesting that ChatGPT can serve as a feedback tool for enhancing foreign language writing, particularly in terms of vocabulary and grammar. This is especially beneficial for socially vulnerable populations, such as refugees and migrants, who encounter additional language challenges.

Some studies have focused on using ChatGPT for teaching ESP. Thus, Kovačević [22] offers a comprehensive analysis of the use of ChatGPT in ESP instruction and finds it to be compelling and time-saving for various aspects of preparing and implementing teaching units, as well as evaluating students' written assignments.

Sarah Mohammed Alsanousi Alssayah Ahmed et al. [23] found that ChatGPT can simplify the process of learning ESP by providing examples of conversations that have already occurred between customers and engineers. This can enhance students' grammar and pronunciation skills. This also highlights another essential function of ChatGPT: serving as an engaging and personalized conversation companion that can be accessed through both computers and mobile devices. It assists students in developing their technical English language abilities. This accessibility is particularly important because students often use mobile phones for educational purposes.

However, there is limited research on using ChatGPT in ESP instruction. To fill this gap in the literature, the present study aims to answer the following research questions:

1. What are the technical university students' attitudes toward the use of ChatGPT in engineering English classes, and how do these attitudes differ from those of teachers?
2. What is the perception of technical university students and teachers regarding the impact of ChatGPT on academic integrity issues, and what are the key differences in their viewpoints?
3. What strategies do technical university students use when utilizing ChatGPT for their engineering English learning, and how do these strategies compare to those used by teachers in their instruction?

3 METHOD

To achieve the study's objectives, the quantitative research method was utilized, involving data collection through an online survey. The received data was compared and interpreted.

3.1 Research design

This study utilized a quantitative research approach to achieve its objectives, which included collecting data through online surveys and then analyzing the data.

3.2 Participants

The study involved 22 ESP teachers and 60 undergraduate students from the National Technical University of Ukraine, "Igor Sikorsky Kyiv Polytechnic Institute." All the participants were informed about the anonymity and confidentiality of data collection, and they willingly consented to participate in the survey.

3.3 Data collection instrument

The survey was conducted in June 2023, after ChatGPT became available in Ukraine and began to be utilized in ESP teaching and learning practices. In this context, two separate, anonymous questionnaires were developed—one for university students and the other for ESP teachers. The questionnaires included multiple-choice questions and Likert scale statements, offering response options ranging from "strongly disagree" to "strongly agree." The Google Forms application was used to collect responses.

3.4 Questionnaire structure

Both questionnaires were organized into three main categories:

- Attitudes toward using ChatGPT in teaching and learning ESP
- Using ChatGPT within the context of academic integrity
- Strategies for integrating ChatGPT into teaching and learning ESP

The questionnaire designed for the students consisted of 16 closed-ended questions, which could be completed in approximately 8–10 minutes. The questionnaire for ESP teachers comprised 20 closed-ended questions, with an estimated completion time of 10–12 minutes.

3.5   Data analysis

The collected data was analyzed using Microsoft Excel statistics software. Descriptive statistics were used to comprehensively summarize and interpret the obtained data. This approach enabled us to gain meaningful insights and effectively address the research questions.

4   RESULTS

This research aimed to investigate and compare students' and teachers' perceptions and attitudes towards using ChatGPT in ESP teaching.

4.1   Attitudes toward using ChatGPT in teaching and learning ESP

According to the results obtained from the questionnaire for the students (refer to Table 1), the majority of them (51.6%) believed that the integration of ChatGPT in learning offers more advantages than disadvantages (Md = 4, IQR = 1). At the same time, more than 1/3 of the students (36.7%) neither agreed nor disagreed. More than half of the students (55%) considered the likelihood of becoming addicted to Chat GPT to be unlikely (Md = 2, IQR = 1). At the same time, more than a quarter of the respondents (28.3%) were unable to provide a definitive answer (refer to Table 1).

Table 1. Students' attitudes toward using ChatGPT: applicability of Chat GPT and probability of addiction to it

Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Median	IQR
The emergence of Chat GPT in educational process has more advantages than disadvantages.	2 (3.3%)	5 (8.3%)	22 (36.7%)	17 (28.3%)	14 (23.3%)	4	1
I may become addicted to the use of Chat GPT.	11 (18.3%)	22 (36.7%)	17 (28.3%)	8 (13.3%)	2 (3.3%)	2	1

As shown in Table 2, over three-quarters (78.4%) of the respondents found ChatGPT to be helpful for learning ESP. Even though ChatGPT has recently emerged in Ukraine, it has been used regularly by almost two-thirds (65%) of the students learning ESP. The majority of the respondents (36.7%) believed that there would not be a significant impact on students' English language communication skills, while a quarter of them (25%) expected an improvement in their communication skills. Approximately the same number (26.7%) thought that such usage could lead to unpredictable outcomes in their communication skills. Each twelfth student (11.7%) expected a decline in their communication skills.

ChatGPT has been found to be helpful for developing both hard and soft skills, particularly research skills, as reported by the majority of respondents (73.3%). The survey on the use of ChatGPT across various tasks revealed that students most

frequently used it to find the meanings of words (40%), write texts (35%), and search for synonyms or opposites (36.7%). In addition to the options provided in the question, the students also mentioned searching for various types of information, checking grammar, composing texts for discussion, planning, generating ideas, creating dialogues, essays, and presentations, translating, finding reference sources, and searching for ideas.

Table 2. Students' attitudes toward using ChatGPT in teaching and learning ESP

Chat GPT is _____ for learning ESP.	
extremely useful	7 (11.7%)
rather useful	40 (66.7%)
not very useful	12 (20%)
not useful at all	1 (1.7%)
How often do you use Chat GPT in learning ESP?	
Always	2 (3.3%)
Often	5 (8.3%)
From time to time	32 (53.3%)
Never	21 (35%)
Using Chat GPT can lead to _____.	
boosting of students' English language communication skills	15 (25%)
no significant impact on students' English language communication skills	22 (36.7%)
unpredictable outcomes in students' English language communication skills	16 (26.7%)
degradation of students' English language communication skills	7 (11.7%)
Using Chat GPT can promote the development of _____.	
critical thinking skills	21 (35%)
research skills	44 (73.3%)
creative skills	33 (55%)
professional skills	16 (26.7%)
collaborative skills	19 (31.7%)
What kinds of tasks have you tried to do with the help of Chat GPT in ESP learning? You may choose several answers.	
	24 (40%)
Searching for the meaning of the words	16 (26.7%)
Matching the words with definitions	21 (35%)
Writing texts (essays, reports, letters, summaries, etc.)	13 (21.7%)
Making up reports and presentations	13 (21.7%)
Defining if the statements are true or false	17 (28.3%)
Finding the odd word	9 (15%)
Doing multiple-choice tests on grammar and vocabulary	16 (26.7%)
Paraphrasing sentences	22 (36.7%)
Searching for synonyms/opposites	
Others (specify which ones)	

According to the results obtained from the survey of ESP teachers (refer to Table 3), more than half of them (54.5%) were unable to determine whether the introduction of ChatGPT in teaching and learning has more advantages than disadvantages (Md = 3, IQR = 1). 45.4% of the remaining respondents found it to be more advantageous than disadvantageous. Slightly more than 2/3 of them (68.2%) considered ChatGPT innovative for teaching ESP. Regarding the possibility of teachers becoming addicted to this tool, the respondents tended to have no clear opinion; they neither agreed nor disagreed (median = 3, IQR). However, more people admitted the possibility than rejected it (36.3% vs. 27.3%).

Table 3. Teachers' attitudes toward using ChatGPT: applicability of Chat GPT and probability of addiction to it

Questions	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Median	IQR
The emergence of Chat GPT in education has more advantages than disadvantages.	0 (0%)	0 (0%)	12 (54.5%)	9 (40.9%)	1 (4.5%)	3	1
Chat GPT can be considered an innovative tool for teaching ESP.	1 (4.5%)	0 (0%)	6 (27.3%)	15 (68.2%)	0 (0%)	4	1
A teacher may become addicted to using Chat GPT.	2 (9.1%)	4 (18.2%)	8 (36.4%)	7 (31.8%)	1 (4.5%)	3	1.75

Table 4 presents the various potential advantages of utilizing ChatGPT in education and learning. Among the suggestions made by Cribben and Zeinali [4], the most commonly selected ones were enhancing research skills (63.6%) and improving accessibility (59.1%). The least frequently selected benefit was personalized learning (27.3%). In addition to the list provided in [4], the ESP teachers included easy and quick information retrieval, eliminating communication barriers for students, and searching for diverse ideas for classroom activities.

As indicated by the teachers' responses, the majority (63.6%) used ChatGPT occasionally. Over 3/4 (77.3%) of the ESP teachers believed that Chat GPT might not have a significant impact or acknowledged the possibility of an unpredictable effect on students' English language communication skills. Approximately 1/3 (31.8%–36.4%) of the teachers recognized the benefits of ChatGPT for enhancing students' hard and soft skills. They found it particularly useful for developing research skills, with a reported agreement rate of 77.3%. The use of ChatGPT for developing teachers' hard skills received approximately the same level of support as its use for improving students' hard skills (31.8% vs. 27.3%).

More than half of the ESP teachers (54.5%) believed that students could utilize ChatGPT for various purposes, including finding the meaning of words, matching words with definitions, writing texts (such as essays, reports, letters, and summaries), creating presentations, determining true or false statements, identifying odd words, taking grammar and vocabulary multiple-choice tests, paraphrasing, and providing synonyms and antonyms. The teachers assumed that their students used ChatGPT quite extensively. Specifically, 45.5% of teachers indicated that students used it occasionally, while 40.9% reported using it often.

Table 4. Teachers' attitudes toward using ChatGPT in teaching and learning ESP

Cribben and Zeinali [4] singled out several benefits of ChatGPT. Put ticks where you agree with them, and add your ideas.	
Personalized learning experiences (can analyze a student's learning patterns and preferences and recommend specific learning resources that are tailored to their needs)	6 (27.3%)
Improving language skills (can simulate real-life conversations and provide students with instant feedback on their grammar, pronunciation, and vocabulary)	10 (45.5%)
Automated grading (can grade essays)	10 (45.5%)
Enhancing research skills (can provide answers to the questions, suggest relevant resources, and summarize complex topics)	14 (63.6%)
Encouraging critical thinking (can generate prompts and questions for classroom discussions)	11 (50%)
Improving accessibility (can help students with disabilities or those who speak different languages)	13 (59.1%)
Others (specify which ones)	
I use ChatGPT in teaching ESP.	
Always	0 (0%)
Often	5 (22.7%)
From time to time	14 (63.6%)
Never	3 (13.6%)

(Continued)

Table 4. Teachers' attitudes toward using ChatGPT in teaching and learning ESP *(Continued)*

Using ChatGPT may lead to _____	
boosting students' English language communication skills	5 (22.7%)
has no significant impact on students' English language communication skills	9 (40.9%)
unpredictable effect on students' English language communication skills	8 (36.4%)
degradation of students' English language communication skills	0 (0%)
Using ChatGPT can enhance students' _____. You may select several answers.	
critical thinking skills	8 (36.4%)
research skills	17 (77.3%)
creative skills	8 (36.4%)
professional skills	7 (31.8%)
collaborative skills	7 (31.8%)
Using ChatGPT may lead to _____.	
degradation of teachers' professional skills	0 (0%)
boosting of teachers' professional skills	6 (27.3%)
no significant impact on teachers' professional skills	10 (45.5%)
unpredictable impact on teachers' professional skills	4 (18.2%)
none of the above	2 (9.1%)
Which of the following can the students do with the help of ChatGPT? You may choose several answers.	
Searching for the meaning of words	9 (40.9%)
Matching words with definitions	5 (22.7%)
Writing texts (essays, reports, letters, summaries, etc.)	9 (40.9%)
Making presentations	8 (36.4%)
Defining true or false statements	1 (4.5%)
Finding the odd word	2 (9.1%)
Doing grammar and vocabulary multiple-choice tests	3 (13.6%)
Paraphrasing	6 (27.3%)
Giving synonyms/opposites	8 (36.4%)
All of the above	12 (54.5%)
How often do your students use ChatGPT in learning ESP?	
Always	1 (4.5%)
Often	9 (40.9%)
From time to time	10 (45.5%)
Never	2 (9.1%)

4.2 Utilizing ChatGPT within the context of academic integrity

As indicated in Table 5, the students had difficulty deciding whether they agreed or disagreed with six out of seven statements related to academic integrity issues while using ChatGPT (Median = 3). In particular, there was a tendency to have an indecisive stance on whether completing home assignments (such as writing reports, essays, etc.) with the assistance of Chat GPT violates academic integrity rules or not (Median = 3; IQR = 1). At the same time, more than 1/3 of students (38.3%) agreed or strongly agreed that it does. The students also tended to be indecisive about whether to write an essay, dissertation, or thesis or to prepare a presentation in collaboration with AI (Median = 3; IQR = 2). The respondents demonstrated a similar tendency to neither agree nor disagree when answering the question about their readiness to share their marks or grades with AI (Median = 3; IQR = 2).

Another statement that was difficult for the students to agree or disagree with was their willingness to use AI to complete assignments, even if they were confident

that their work would be scrutinized by AI plagiarism checkers (Median = 3; IQR = 1). At the same time, nearly half of the respondents (48.4%) were unwilling to do so. The students were also uncertain about using AI plagiarism checkers to identify ChatGPT-generated content by ESP teachers (Median = 3; IQR = 1). However, more people agreed than disagreed with this statement (46.7% vs. 20%). The concept of using ChatGPT to evaluate students' written work (such as essays and reports) was favored by 40% of the respondents. Overall, the students were uncertain about how to respond (Median = 3; IQR = 2). The only question that received a definite answer from the students was regarding the necessity of university policies or guidelines on the use of AI models. It received a positive response from 55% of respondents (Median = 4; IQR = 1).

Table 5. Students' perspectives on using ChatGPT in the context of academic integrity

Questions	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Median	IQR
Doing home assignments (writing reports, essays, etc.) with the help of Chat GPT is a violation of the academic integrity rules.	3 (5%)	5 (8.3%)	29 (36.7%)	18 (30%)	5 (8.3%)	3	1
I would agree to write an essay, dissertation, or thesis or prepare a presentation in co-authorship with AI.	7 (11.7%)	11 (18.3%)	25 (41.7%)	15 (25%)	2 (3.3%)	3	2
If doing a task in co-authorship with AI, I am ready to share the mark or grade with AI.	5 (8.3%)	10 (16.7%)	26 (43.3%)	17 (28.3%)	2 (3.3%)	3	1.25
I will use AI (if necessary) to do my assignments even if I am sure the work will be checked by AI Plagiarism checkers to detect ChatGPT-generated content.	10 (16.7%)	19 (31.7%)	19 (31.7%)	11 (18.3%)	1 (1.7%)	3	1
ESP teachers should use AI Plagiarism checkers to detect ChatGPT-generated content.	6 (10%)	6 (10%)	20 (33.3%)	19 (31.7%)	9 (15%)	3	1
I would like my written work (essays, reports, etc.) to be analyzed or assessed by Chat GPT.	7 (11.7%)	9 (15%)	24 (40%)	16 (26.7%)	4 (6.7%)	3	2
In our university, we need a policy or guidelines on using AI models, including GPT models, in academic work.	3 (5%)	6 (10%)	18 (30%)	22 (36.7%)	11 (18.3%)	4	1

The responses to the question regarding the appropriateness of evaluating students' written work using ChatGPT revealed that the students had limited trust in ChatGPT's expertise, as 70% of them could only partially agree with the grades assigned by the AI (refer to Table 6).

Table 6. Students' attitudes on evaluating students' written work using ChatGPT

I can _____ with the grade/mark of Chat GPT or critics of Chat GPT on my written work.	
agree	6 (10%)
partly agree	42 (70%)
disagree	12 (20%)

Regarding the teachers' perspectives on academic integrity issues (as depicted in Table 7), it is clear that they diverge from the students' viewpoints. Almost 2/3 of the teachers (63.6%) believed students using ChatGPT to complete homework assignments was a violation of academic integrity rules. The ESP teachers

tended to believe (Md = 4, IQR = 0) that they should inform students about the restrictions of using Chat GPT as a tool for preparing their home assignments. They also tended to disagree with the idea of students writing essays, dissertations, theses, and preparing presentations in co-authorship with AI (Md = 2, IQR = 2). There was a strong consensus among the ESP teachers (77.2%, Md = 4, IQR = 0) that they should use AI plagiarism checkers to verify students' written texts and identify content generated by ChatGPT. There was a consensus (95.5%, Md = 4, IQR = 0.75) about the need for university policies or guidelines for the use of AI models, including GPT models.

Table 7. Teachers' perspectives on using ChatGPT by students in the context of academic integrity

Questions	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Median	IQR
Doing home assignments (writing reports, essays, etc.) with the help of Chat GPT is a violation of academic integrity rules by students.	1 (4.5%)	0 (0%)	5 (22.7%)	14 (63.6%)	2 (9.1%)	4	0.75
A teacher should inform students about the restrictions of using Chat GPT as a tool for preparing their home assignments.	1 (4.5%)	0 (0%)	1 (4.5%)	15 (68.2%)	5 (22.7%)	4	0
A student can write an essay, dissertation, thesis, prepare a presentation, etc., in co-authorship with AI.	7 (31.8%)	7 (31.8%)	5 (22.7%)	3 (13.6%)	0 (0%)	2	2
A teacher should always check students' written texts with AI Plagiarism checkers to detect ChatGPT-generated content.	0 (0%)	0 (0%)	5 (22.7%)	14 (63.6%)	3 (13.6%)	4	0
In our university, we need a policy or guidelines on using AI models, including GPT models.	0 (0%)	0 (0%)	1 (4.5%)	15 (68.2%)	6 (27.3%)	4	0.75

According to the results presented in Table 8, the majority of ESP teachers (81.9%) were unable to determine whether a student's homework was completed by the student or by ChatGPT. 90.9% of the ESP teachers surveyed reported using or expressing interest in using ChatGPT as an assessment tool. However, only 18.2% of the participants were fully prepared to fully agree with the grade, mark, or criticism provided by ChatGPT on the students' written work.

Table 8. Teachers' perspectives on using ChatGPT as an assessment tool

Can you be sure that a student's home assignment was done by the student himself or by Chat GPT?	
Yes	4 (18.2%)
No	10 (45.5%)
I do not know	8 (36.4%)
Do you use/Would you like to use Chat GPT as an assessment tool?	
Always	0 (0%)
Sometimes	9 (40.9%)
From time to time	11 (50%)
Never	2 (9.1%)
I can _____ with the grade/mark/critics of Chat GPT on the student's written work.	
Agree	4 (18.2%)
Partly agree	16 (72.7%)
Disagree	2 (9.1%)

4.3 Strategies for employing ChatGPT in teaching and learning ESP

As shown in Table 9, students utilize various strategies for using ChatGPT. The most frequently mentioned activities are analyzing stylistic features of texts created by themselves and using ChatGPT (63.3%) and searching for grammar rules with examples (58.3%).

Table 9. Students' strategies for using ChatGPT

I use/would like to use AI in ESP classes to: _____. You may select several answers.	
analyze examples of texts, dialogues, and communicative situations created by AI	32 (53.3%)
Search for grammar rules with examples	35 (58.3%)
compare the synonyms/opposites of words given by myself and Chat GPT	19 (31.7%)
compare the summaries created by myself and Chat GPT	17 (28.3%)
analyze the stylistic features of the text created by myself and Chat GPT	38 (63.3%)
compare the questions generated by myself and Chat GPT	21 (35%)

The results in Table 10 display various strategies for teachers to utilize ChatGPT. The most preferred tasks are generating learning problems (77.3%) and creating topics for student reports (63.6%). Among the various tasks assigned to students by teachers, the most popular ones were comparing the summaries created by the students and ChatGPT (45.5%), analyzing examples of texts, dialogues, and communicative situations created by AI (36.4%), comparing the questions generated by students and ChatGPT (36.4%), searching for grammar rules with examples (31.8%), and comparing synonyms and antonyms to the words provided by the students and ChatGPT (31.8%).

Table 10. Teachers' strategies for using ChatGPT

Teachers can use Chat GPT for _____. You may choose several answers.	
generating learning tasks/problems for ESP classes	17 (77.3%)
analyzing students' solutions to tasks/problems created by Chat GPT	9 (40.9%)
generating topics for students' reports	14 (63.6%)
adapting authentic texts	13 (59.1%)
assessing students' assignments	6 (27.3%)
A teacher can give students a task to _____. You may choose several answers.	
analyze examples of texts, dialogues, and communicative situations created by AI	8 (36.4%)
Search for grammar rules with examples	7 (31.8%)
compare synonyms/opposites to words given by the students and Chat GPT	7 (31.8%)
compare summaries created by the students and Chat GPT	10 (45.5%)
analyze stylistic features of texts created by the students and Chat GPT	4 (18.2%)
compare questions generated by the students and Chat GPT	8 (36.4%)
all the above	6 (27.3%)

5 DISCUSSION

In this study, the attitudes and experiences of students and teachers using ChatGPT in engineering English classes have been analyzed and compared. For this purpose, a quantitative research method was used to survey ESP teachers and students.

5.1   Attitudes towards ChatGPT use

The results obtained showed that the majority of students and teachers used ChatGPT with varying levels of frequency and for diverse academic purposes. The vast majority of the students expressed a positive attitude toward this innovative tool and believed it offered more advantages than disadvantages in education. This finding is consistent with Ajlouni et al. [24], whose results also show a high level of positive attitudes toward using ChatGPT as a learning tool. At the same time, the ESP teachers tended to express a more neutral attitude and were unable to decide on the answer. This difference in attitudes can be explained by the fact that students, due to their young age, may be more open and motivated to use new technologies than teachers. Students' motivation to use innovative tools is crucial as "an internal driving force that stimulates behavior to meet needs and achieve goals in the process of learning ESP" [25, p. 171]. The teachers' attitudes can be explained by their limited knowledge of this tool, stemming from a lack of practical experience and research on using ChatGPT in ESP classes. At the same time, the teachers reached a consensus that ChatGPT can be regarded as an innovative tool for teaching English for specific purposes.

Regarding skills development, teachers expressed the predominant opinion that ChatGPT would likely have no significant impact or an unpredictable effect on students' English language communication skills, which are considered essential skills to be developed in Engineering English courses. The same opinion was prevalent among the students. The agreement between the teachers and the students on this issue may be attributed to their limited experience in teaching and learning these skills using ChatGPT, as well as the absence of such experiences being shared in scientific literature. Similarly, approximately one-third of the teachers and students believed that ChatGPT could be utilized as a tool for fostering both soft and hard skills, including critical thinking, research, creativity, professionalism, and collaboration. Both the teachers and the students prioritized research skills.

5.2   Academic integrity concerns

The section of the questionnaire concerning academic integrity issues revealed a significant difference between the responses of the students and the teachers. The ESP teachers reached a consensus that students using ChatGPT to complete homework assignments such as writing reports and essays would violate academic integrity rules. However, the percentage of supporters of this point of view among the students was almost half as much, and the students tended to have no clear opinion about this issue. This indicates that academic integrity in the context of ChatGPT use is still a significant problem that requires solutions.

Since only one in five teachers reported being able to differentiate between an assignment completed by a student and one generated by ChatGPT, there was unanimous agreement among the teachers that AI plagiarism checkers should be used to identify ChatGPT-generated content in students' written work. This opinion, however, did not receive equal support among the students. Overall, they could not decide whether AI plagiarism checkers should be used. In our opinion, this indecision is another indication of students' lack of awareness of academic integrity issues when it comes to using ChatGPT.

A discrepancy was also noted between the students' and the teachers' perspectives on students' writing in collaboration with AI. The students were uncertain about whether they were prepared to have ChatGPT as a co-author of their written work.

At the same time, the teachers tended to disagree with the idea, evidently due to the difficulty in defining the contribution of each party—the student and ChatGPT—and the lack of understanding in assessing such assignments. In this context, there may be a need to develop and integrate various testing techniques that can be used in the new conditions and realities created by AI in education [26].

However, both teachers and students agreed on the necessity of a university policy regarding the use of AI models. Although the number of teachers supporting this idea was almost twice as significant as the number of students, the central tendency was the same in both groups—both agreed that this issue should be regulated at the university level. The variance in the number of teachers and students who recognized this necessity may be attributed to the students' greater caution regarding potential restrictions on AI usage. This concern was also addressed by Fuchs [7, p. 3], who emphasized the need for institutions to establish guidelines and ethical frameworks for the use of AI models while also ensuring the protection of student privacy and the minimization of bias.

The responses to the question about grading students' assignments by ChatGPT did not reveal any disagreement between the students and the teachers. Almost 3/4 of teachers and students could not agree with ChatGPT's grading of students' written work. This indicates that both groups recognize the limitations of AI and understand that it cannot completely replace teachers.

5.3   Strategies for using ChatGPT

When it comes to using ChatGPT strategies, the students focused on analyzing examples of texts, dialogues, and communicative situations created by AI, as well as searching for grammar rules with accompanying examples. The teachers' most preferred strategies were generating topics for students' reports and adapting authentic texts. The differences can be attributed to the varying learning and professional needs of respondents in these groups.

Integrating suitable pedagogical strategies is crucial for addressing potential misconceptions and challenges that may arise during the implementation of innovative learning technologies [27]. When using ChatGPT in ESP classes, teachers can employ the 5-Wh strategies: What? What kind of question is that? Where? When? Who? The first strategy, "What," refers to the purpose of using ChatGPT. It can serve multiple purposes, such as developing reading, vocabulary, and research skills. The second strategy, "What kind of?" implies a specific reading, writing, or speaking activity. The activities can integrate various skills, such as writing and speaking, reading and writing, and so on. The "Where?" strategy means that the task with ChatGPT can be performed both in and out of class. The "When?" approach relates to the frequency of ChatGPT use. It should not be used frequently. The student should take on the primary role in the creative work, not ChatGPT. The ESP teacher should not only intuitively sense the boundary between the student's capabilities and the abilities of ChatGPT but also recognize that ChatGPT is merely a scaffolding tool. The supplementary role of ChatGPT was also emphasized by Fuchs [7]. The "Who?" strategy involves differentiating tasks based on the level of foreign language proficiency and/or learning style using ChatGPT.

5.4   Limitations

The study has some limitations, one of which is related to the participant sample. The study involved a relatively small sample of 22 teachers and 60 students from

a single Ukrainian university. The small sample size may not accurately represent the wider population of technical university students and teachers, which limits the ability to generalize the findings to other institutions or countries. Attitudes and experiences related to the use of ChatGPT in English for engineering classes may vary across different countries and educational settings. Another limitation pertains to the survey method used in the study. Surveys may not offer comprehensive insights into participants' perspectives and experiences. They may not fully capture the complexity of attitudes and behaviors related to using ChatGPT in engineering classes. Participants might have given socially desirable responses, especially when discussing sensitive topics related to academic integrity. This could affect the accuracy of the data, as individuals may be hesitant to admit certain behaviors or opinions. To overcome these limitations, future research could include more extensive and diverse samples and employ mixed-method approaches to gain a deeper understanding of AI technology in education.

6 CONCLUSIONS

In this study, we investigated the integration of ChatGPT, an innovative language model accessible on both computers and mobile devices, into engineering English classes at the university level. This accessibility is particularly significant, as students primarily use mobile phones for educational purposes. Our research aimed to comprehend the attitudes of students and teachers toward using this tool, their deliberations on academic integrity issues, and the strategies they employed when using ChatGPT.

The results indicate a generally positive attitude among students toward using ChatGPT in their engineering English classes. Students perceive ChatGPT as a valuable tool for enriching their learning, enhancing access to information, and fostering engagement in the learning process. However, there was a difference between students' attitudes and the more cautious perspective provided by teachers. While the students found ChatGPT to be a valuable teaching method, the teachers expressed concerns about its impact on academic integrity and the development of essential language communication skills. The divergence of opinions emphasizes the necessity of providing training and support for teachers to successfully incorporate AI tools into their teaching methods and better meet the expectations of students. This study also highlights important policy considerations and the need for educational institutions to establish clear guidelines regarding the use of AI tools to uphold academic integrity and ethical standards.

Therefore, integrating ChatGPT into engineering English classes presents both opportunities and challenges. It can potentially engage students, provide quick access to information, and support various aspects of learning. However, to access these benefits, careful planning, training, and policy development are necessary. This research contributes to the ongoing debate about the role of AI in education. It provides practical insights for educators seeking effective and ethical ways to use AI tools in for engineering classrooms.

6.1 Implications and suggestions

The study suggests that ChatGPT can be effectively integrated into engineering English classes to support students' learning. Teachers should explore ways to

integrate this tool into their teaching practices in order to enhance the learning process. It is essential to establish guidelines and policies to uphold academic integrity. However, teachers and students should be allowed to creatively and flexibly use AI tools such as ChatGPT. Given the disparity in attitudes between students and teachers, it is important to offer teachers opportunities for professional development. This can enhance their proficiency in utilizing ChatGPT and other AI tools.

Further studies could be conducted to observe changes in attitudes and experiences over time as students and teachers become more familiar with ChatGPT. Investigating the impact of ChatGPT on students' academic performance could help determine whether its use leads to improved or diminished outcomes.

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