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The Trends in Need Analysis of ESP for Engineering Students: Systematic Literature Review

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Abstract

This comprehensive review examines 26 articles spanning 2018 to 2023, concentrating on need analysis in English for Specific Purposes (ESP) within the engineering field. The study explores trends in research distribution, geographical and thematic focuses, subject areas within engineering, methodological dimensions, participant demographics, and language skills emphasis. During the study's analytical phase, quantitative data analysis procedures were implemented. Primarily, descriptive statistics such as frequency and percentage were utilized. The data reveals fluctuations in ESP-based research over the specified years, with a notable emphasis on the Engineering department. Most articles originate from countries with an English as a Foreign Language (EFL) context, particularly Indonesia, indicating a strong focus on the need for engineering material in ESP in these regions. The distribution across engineering disciplines highlights the field's multidisciplinary nature, while participant preferences lean towards university settings for research. Speaking skills emerge as the most emphasized, with significant implications for curriculum development. Identified deficiencies in language skills suggest a need for targeted interventions, and recommendations for future research encompass comparative studies across diverse language policies, exploration of workplace needs, balanced language skills emphasis, and the incorporation of authentic content in ESP teaching materials. Overall, the findings provide valuable insights into the evolving landscape of ESP research in engineering and offer directions for further exploration and improvements in educational practices.
Keywords: *English for Specific Purposes, Need Analysis of ESP,* ESP for *Engineering*

Introduction

English is becoming increasingly crucial in the workplace due to a number of factors, including the increasing globalization of the world and its status as the universal language of trade, banking, and diplomacy. For instance, global communications has become the language of choice for international and corporate communication. Herbert (2023) in his article estimated that over 1.5 billion people speak English to some degree, making it a common language for professionals of all backgrounds. Proficient in English enables effective communication and collaboration with colleagues, clients and partners around the world. In term of Professional Networking: English proficiency opens up opportunities to network with professionals across borders. Conferences, seminars and business events are often conducted in English, and being able to participate and be involved in these settings can enhance career prospects and forge valuable relationships (Hajar, I. & Triastuti, A, 2021).

Furthermore, access to knowledge and resources: English is the primary language for most scientific research, academic publications, and technological advances. Proficiency in English benafits professionals to access a wide variety of information, research papers and resources in a wide range of fields, enabling continuous learning and staying abreast of the latest industry trends. Business Expansion: Many multinational companies operate in English-

speaking countries or use English as their working language. For professionals who aspire to work in such organizations or expand their business internationally, fluency in English is often a prerequisite. English proficiency facilitates seamless communication with colleagues, clients and stakeholders in various regions. Career Advancement: English skills are highly valued by employers in a variety of industries. According to International Labour Organization (2016) In a competitive job market, candidates with strong English proficiency have an advantage as they can communicate, negotiate and present ideas effectively. This opens up opportunities for career advancement, promotions and assignments involving international responsibilities.

Improvement of Soft Skills: Learning English not only improves language skills but also improves other soft skills, such as critical thinking, problem solving and cultural sensitivity. These skills are highly valued in the workplace and contribute to overall professional growth. GÜRLER (2015) argued that Proficiency in English increases confidence in communication, both written and spoken. This confidence helps professionals express their ideas clearly, engage in discussions, and actively contribute to team projects. Effective communication in English can also help reduce misunderstandings and improve workplace relations. Lastly, Syaputri, Wuri & Theresia, Fenny & Yuniarti, Fatma. (2021) point out that English is not only a language but also a medium to understand different cultures. Learning English exposes professionals to diverse perspectives, traditions and customs, fostering cultural understanding and empathy. This cultural awareness is especially important in today's global workplace, where teams often consist of individuals from different countries and backgrounds.

Overall, English is very important in the workplace because of its role in global communication, networking, accessing knowledge, career advancement, developing soft skills, building confidence, and encouraging cultural understanding. Investing in English proficiency can provide professionals with significant benefits in their careers and contribute to their personal and professional growth. English proficiency can help people enter new markets, form new partnerships, and expand the business. Therefore, studying English is an important asset for vocational education students to answer various challenges in their professional world (Hajar, I. & Triastuti, A. (2021).

English for Specific Purposes (ESP) is a subfield of English language teaching that prepares students to use English in professional settings. Observing from a Career Advancement , English proficiency is a basic criterion for advancement in many fields. Employers frequently seek applicants who can speak and write in English fluently, as this indicates the ability to work with people from varied backgrounds and effectively interact with clients and colleagues across borders. Therefore it is important for ESP course developers to be aware of the needs of learners (Basturkmen, 2006, 2010; Brown, 1995; Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987; Rahman, Ming, Aziz, & Razak, 2008).

When considering English for Specific Purposes (ESP), several important elements come into play. Here are some key aspects: Needs Analysis: Conducting a thorough needs analysis is very important in ESP. This involves assessing the language requirements, goals, and specific context of the learner (Basturkmen, 2006). Understanding their professional or academic field, job duties, and communication needs allows instructors to adapt course content accordingly. Specific Content: ESP focuses on providing language instruction that is directly relevant to the learner's specific field or discipline. This involves teaching vocabulary, grammar, and communication skills specific to the target domain. Content should be practical, authentic, and related to real-world situations students are likely to encounter (Aziz, & Razak, 2008).

Basturkmen (2006, 2010) claims conducting a needs analysis can help curriculum developers design effective ESP courses or programmes. Many recent ESP scholars (e.g. Tatzl, 2013) have supported Long's (2005) argument that a course without needs analysis does not

have the detailed or selective goals that are necessay to provide the focus needed for successful outcomes. He suggested that ESP courses built without the aid of a needs analysis often contain too much or too little instruction to meet the learners needs. Poejiastuti and Oliver (2017) elaborate that investigating the data of learner needs teacher will have reflaction about the gap between the current taught material and material of careers necessitiy.

There are many researches have been conducted relatade to need analysis in ESP. However, the previous studies in need analysis of ESP material domain mostly concentrated on empirical studies and less on systematic literature analysis, particularly in need analysis on ESP for engineering. The present systematic review aims to summarize different methods, frameworks, settings, and research samples used the selected inclusion articles to provide valuable insights into the trends and focus areas within ESP for engineering students, offering several avenues for further research and improvements in educational practices. Therefore, the research questions of this study formulated as follow:

RQ1: What are the trends in need analysis on ESP material for engineering in recent years?
RQ2. What are the trends in the findings from recent research on need analysis on ESP material for engineering students?

Method

Data Collection

The systematic literature review (SLR) conducted in this study adhered to the modified version of the PRISMA coding scheme guidelines, which is an adapted form of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). The selection of articles for the review was guided by these PRISMA guidelines, recognized globally as a validated set of rules for conducting systematic reviews (Shadiev & Yang, 2020). The research ensured the study's validity, transparency, and adaptability by relying on PRISMA guidelines, as indicated by its foundational role in the study.

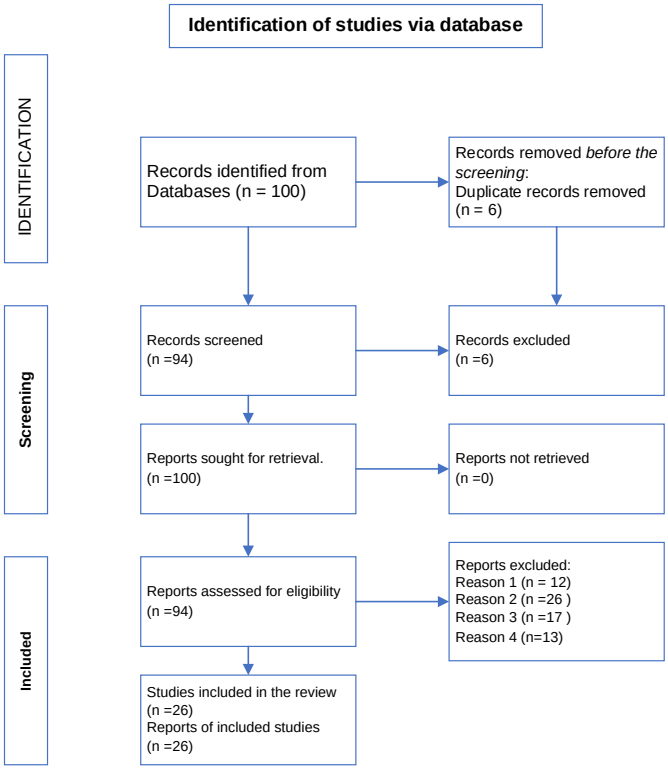

Figure 1 . PRISMA in article selection

Searched Databases

The systematic literature review underwent a three-phase process for searching and selecting articles. Initially, the identification phase involved searching for articles on Google Scholar due to its comprehensive coverage, user-friendly interface, and free and open access. Google Scholar indexes a wide range of academic sources, making it an efficient search engine for academic literature. A combination of keywords such as "need analysis in ESP," "ESP for engineering," and "need analysis for engineering students" was employed to yield relevant results. In the first phase, a total of 100 papers were initially identified, with six papers removed due to duplication and similarity issues. Subsequently, the screening phase involved the examination of 94 papers, which were deemed downloadable and savable. Following screening, the selected papers underwent an eligibility process based on pre-formulated inclusion and exclusion criteria. These criteria were established to determine the papers' relevance to the review. To be included in the current study, the papers had to meet specific inclusion criteria while adhering to the established exclusion criteria. Screen for Inclusion and exclusion criteria. The inclusion and exclusion criteria for the document search were also developed, as

Inclusion Criteria

1. Articles published in the English or understandable by the reviewers (English and Indonesia) only.
2. Studies were conducted in both local and international settings.
3. Articles reported only on empirical evidence to achieve rich data.
4. Articles focused on need analysis on esp material for engineering students
5. The research was published within a period of six years, from 2018 to 2023.

Exclusion Criteria

1. Research studies conducted before 2018
2. Articles discuss need analysis on esp material not for engineering students For example, business, pharmacy, tourism and other subjects.
3. Articles that cannot be accessed as full text.
4. Book chapters, dissertations, thesis; this review focused only on research articles.

Screening procedures were carried out with a focus on maintaining quality, involving the participation of two reviewers. Independently, the two reviewers evaluated the abstracts of the studies, strictly adhering to the predefined inclusion and exclusion criteria. Wanden-Berghe and Sanz-Valero (2012) suggested that nonexpert reviewers may offer more objective and diverse perspectives. In cases of disagreement between the two reviewers, a discussion was initiated to reevaluate and decide whether to include the article in the final list. The data extraction process was also conducted independently by two reviewers. In instances where a suspicion arose regarding salami publications or duplications, the two reviewers engaged in discussion to make a joint determination. Although there are no definitive tools for identifying salami publications, common features include those mentioned above. Following the screening and quality assessment of the retrieved documents, a total of 26 documents were ultimately included.

Authors and titles of inclusion documents

No	Authors	Title
1	Nimasari, E	An ESP Needs Analysis: Addressing The Needs Of English For Informatics Engineering Analisis Kebutuhan ESP: Mengatasikebutuhan Bahasa Inggrisuntuk Teknik Informatika
2	Le, Lan Phuong, Kettle, Margaret, & Pillay, Hitendra	Using Corpus Analysis In A Needs Analysis Of Key English Vocabulary For Petroleum Engineers In Vietnam

3	Nilforoush, Mahdokht	English Needs Analysis In The Workplace: The Case Of Engineers In Esfahan Steel Company (International Journal Of Foreign Language Teaching & Research
4	Haryono, Endah P Taju, Donny R J Tombokan, Franky F Lonan, Trio P	Needs Analysis Dalam Konteks ESP (English For Specific Purpose): Analisis Kebutuhan Pembelajaran Bahasa Inggris Mahasiswa Teknik Sipil
5	Ronaldo, Okri ., Zaim, M	Need Analyses of English Learning Material for Students' Diploma Degree of Mechanical Engineering at Institute Technology of Padang (ITP) Proceedings of The Ninth International Conference on Language And Arts (ICLA 2020)
6	Nurhayati, Fifit	Need Analysis To Identify English Materials For Aeronautical Engineering Students Eminar Nasional Pendidikan, Fkip Unma 2019"Literasi Pendidikan Karakter Berwawasan Kearifan Lokal Pada Era Revolusi Industri 4.0".
7	Dewanti Ratna Pertiwi1 , Maria Asumpta Deny Kusumaningrum2	Need Analysis Of English For Mechanical Engineering
8	Li, Xuwei., Fu, Huijun	Needs Analysis On ESP Course For Business And Engineering Students In A Chinese Local University
9	Muhammad, Iftikhar Halim Abdul Raof, Abdul	Assessing the ESP Needs of Saudi Engineering Undergraduates: A Diagnostic View
10	Thepseenu, Benjaporn	Needs Analysis For ESP Course Development: Thai Civil Engineering Students' Perspectives
11	Mahraj, Mohsine	ESP Needs Analysis In Moroccan Higher Education The Case Of Computer Engineering Students (Marocco)
12	Gu, Haiyun., Bo, Hua .,Ren, Lei	Developing ESP Teaching Materials Based On The Analysis Of Information Engineering Majors' Needs
13	Furka, Ildikó	English Needs Assessment Survey For International Students Of Technology At The Budapest University Of Technology And Economics In Hungary
14	Piyatida Changpuenga , Fasawang Pattanapichetb,	A Needs Analysis Of English For Meeting Lessons For Thai Undergraduate Engineering Students
15	Reski Ramadhani1*, Hilmi Aulawi2, Ridwan Setiawan3, Sri Rahayu4	The Speaking English Material Needs Of Engineering Students For The English Club Program: An ESP Analysis
16	Ahmad, Khalid	ESP Needs Analysis of Productive Skills: A Case Study of Engineering Students
17	Sarwanti, S Sotlikova, R, Novianto, D Indriani, L	Needs Analysis of English Skills amongst Electrical Engineering Students in ESP Context
18	Wijayanti, Farida Indri Nugroho, Arif	ENGLISH MATERIAL NEEDS OF AUTOMOTIVE TECHNOLOGY STUDENTS: AN ESP APPROACH
19	Kluensuwan, Parichart Chaisiri, Tawatchai Poomarin, Wanpen Rungruangsuparat, Benjawan	Needs Analysis of English for Engineering Staff in the Electronics Industry in Phra Nakhon Si Ayutthaya and Pathum Thani, Thailand
20	Sari, Yohana Ika Harnita Wienanda, Wahyu Kartika Nugraheni, Nur Endah	Needs analysis to develop teaching materials at Vocational College UGM

21	Damio, Siti Maftuhah Shahril, Farhanah Iman Masni Yau, Shafique Adrian	English for Specific Purposes Need Analysis among Final Year Chemical Engineering Students in a Malaysian Public University
22	ULUM, Ömer Gökhan	ESP needs analysis of Turkish learners of English in architecture
23	Rahayu, Intan Sinta Dewi Sudarsono, Sudarsono M. I. Nurlaelawati, Iyen	Needs Analysis for ESP Course Development for Undergraduate Engineering Students - A Cross-Sectional Survey for Engineering Students in One of Universities in Bandung
24	Wu, Jianrong., Lou, Yougen	Needs Analysis of Chinese Chemical Engineering and Technology Undergraduate Students in Yangtze University in English for Specific Purposes
25	Luna-Ríos, Fausto E	Engineering students' needs in the design of an English for Specific Purposes reading course
26	Farah, Rafika Rabba	Exploring the English Needs of Mechanical Engineering Students in ESP Class: Indonesian University Context

Figure 2. Lists the authors and titles of the obtained document

As this present investigation aims to examine, portray, and quantify the qualitative content present in the articles, it aligns with the classification of descriptive content analysis. During the analytical phase of the study, procedures for quantitative data analysis were implemented. Primarily, descriptive statistics such as frequency and percentage were utilized. Consistent with Weber's assertion (1990: 10) that "The best content-analytic studies use both qualitative and quantitative operations on texts," the relevant findings are deliberated upon in conjunction with the tables and figures presented in the subsequent section.

Results

RQ1: What are the trends in need analysis on ESP material for engineering?

Research contextual dimension

a. Article distribution by year

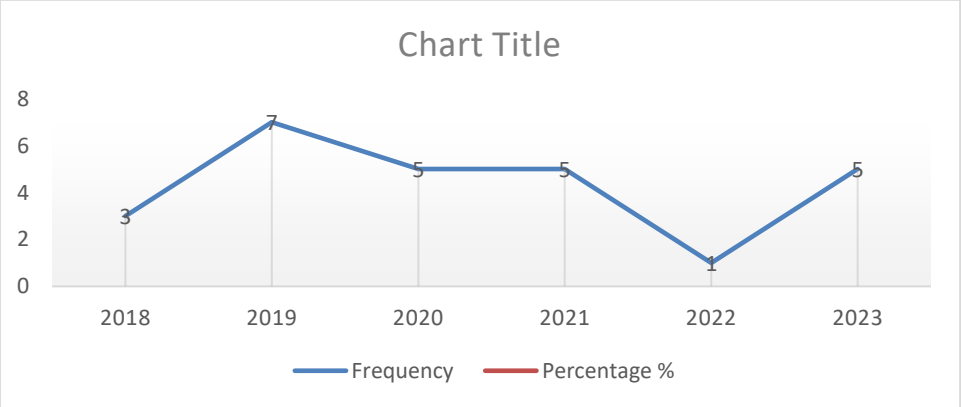

Figure 3. article distribution by year

The provided data presents the distribution of articles focused on ESP (English for Specific Purposes) studies related to need analysis for engineering students across the years 2018 to 2023. The distribution is represented in a bar chart, indicating the frequency of articles published each year. In 2019, there was a significant peak with 27% (N=7) of the articles, followed by a decrease in 2020 and 2021 to 19% (N=5) each. The year 2022 saw a substantial drop with only 4% (N=1) of the articles, but there was a resurgence in 2023, with 19% (N=5) of

the articles being published. This data reveals fluctuations in the frequency of ESP-based studies on need analysis for engineering students over the specified years.

b. Article distribution by country

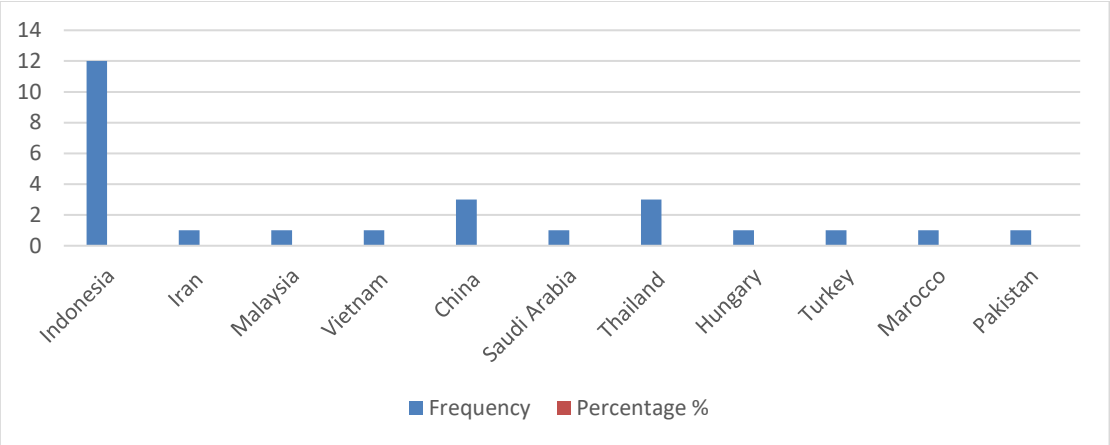

Figure 4. article distribution by country

The document presents findings related to the distribution of research articles on the "research context dimension," specifically focusing on the analysis of the need for engineering material in English for Specific Purposes (ESP) in English as a Foreign Language (EFL) contexts. The results are depicted in Table 3, with a breakdown of the number of selected articles from different countries. The research includes a total of 26 articles from various countries, with the highest concentration of published articles in Indonesia (n=12), followed by China, Thailand, and several other countries contributing one article each. Furthermore, the text highlights that the majority of these studies were published in countries with an EFL context, indicating a strong focus on the need analysis material of engineering in ESP in these regions.

c. Article distribution by subject area in Engineering

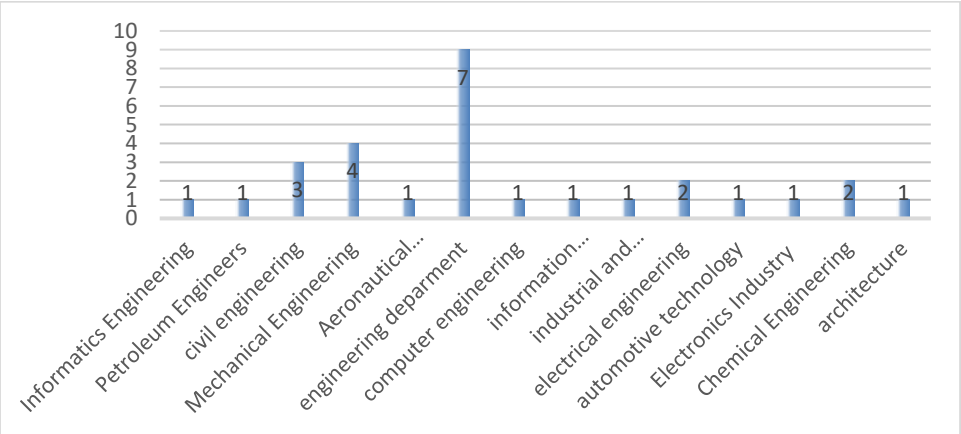

Figure 5. article distribution by subject area in Engineering

The chart displays the distribution of research studies across various subject areas within the field of engineering. The bar graph illustrating the percentage contribution of different subject areas to the total number of articles. Engineering department emerged as the primary subject area with the highest contribution, accounting for 26 % (n7) of the total articles. This was followed by mechanical engineering at 14% (N4) and civil engineering at 10% (n3). Additionally, electrical engineering and chemical engineering each contributed 7% (N2) to the total number of articles. Various other fields such as informatics engineering, petroleum engineering, aeronautical engineering, computer engineering, information engineering,

industrial and mechanical engineering, automotive technology, electronics industry, and architecture collectively contributed 4% (N1) of the articles. This analysis provides valuable insights into the distribution and emphasis of research within the various disciplines of engineering.

d. Article distribution by methodological dimension

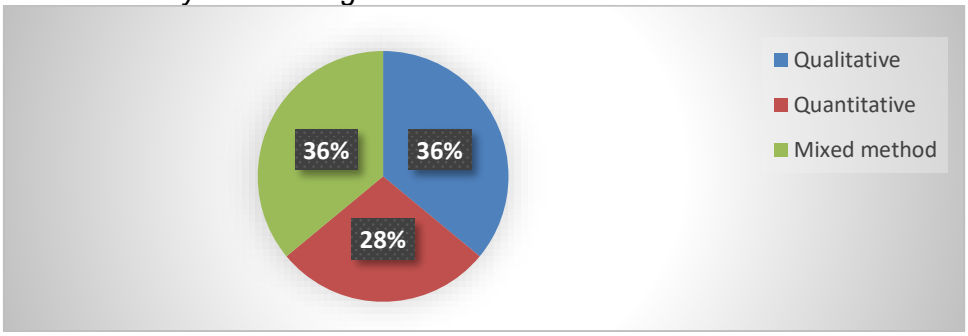

Figure 6. article distribution by methodological dimensio

The chart categorizes the research methods into three main dimensions: qualitative, quantitative, and mixed method. The accompanying data in Figure 6 indicates that descriptive qualitative and mixed method were the most prevalent research methods, each accounting for 36% (n=9) of the articles, followed by quantitative at 28% (n=7). The study further reveals that various research instruments were employed for data collection, including questionnaires and interviews for survey and case study. It also highlights the popularity of survey usage in quantitative studies, while case studies were more common in mixed method research, and descriptive qualitative methods were prevalent in qualitative research methodologies. This information offers valuable insights into the prevalent research methodologies and data collection techniques utilized in the articles analyzed.

e. Article distribution by participant

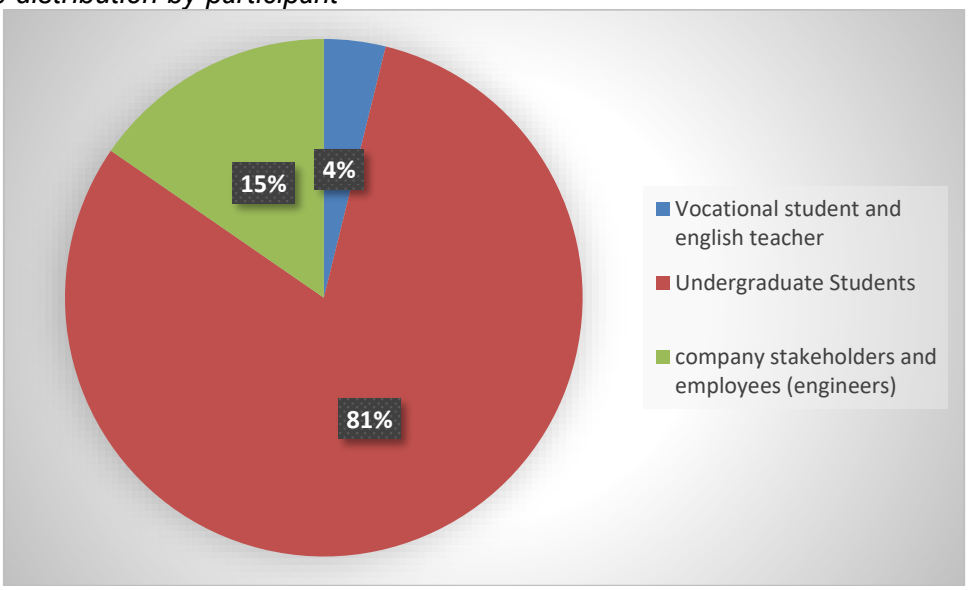

Figure 7. article distribution by *participant*

The data outlines the distribution of article participants and the frequency of research conducted in different settings. The breakdown of participants includes vocational students and English teachers, undergraduate students, present students, lecturers, and employees, company stakeholders and employees (engineers), and students and faculty members. The analysis in Figure 2 reveals that the majority of journal researchers (81%) preferred universities for their ESP-based research, while only 4% conducted their research at high schools.

Additionally, 15% of the research was conducted in workplace settings. Ultimately, the data suggests that a significant portion of the journal articles were conducted in educational settings rather than workplaces, indicating a clear preference for educational environments in conducting ESP-based research.

RQ2: What are the focus findings drawn from the analysis of existing literature?

a. The findings concerning the most significant language skills and language components

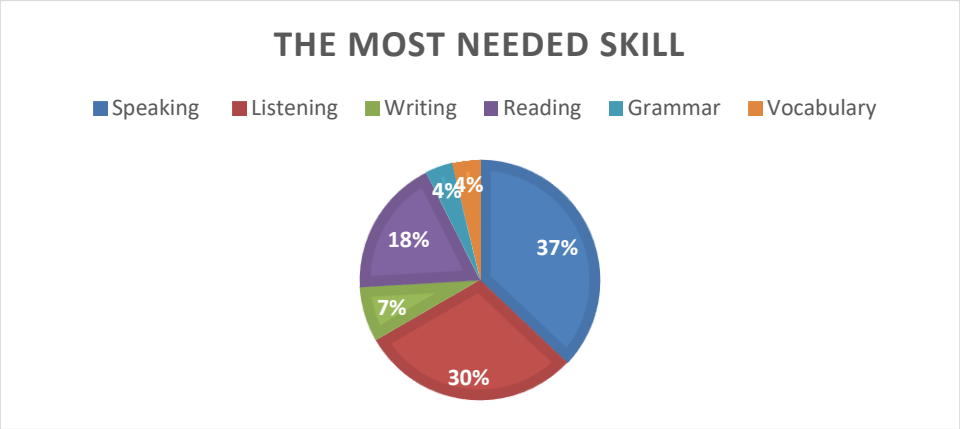

Figure 8. significant language skills

The pie chart presents the distribution of emphasis on various language skills for English for Specific Purposes (ESP) students, particularly in the Engineering department. The chart indicates that speaking skills were deemed the most critical, with 37% of articles (n=10) highlighting its importance. Listening skills followed closely behind, with 30% (n=8) of articles emphasizing their significance. Reading skills ranked third at 18% (n=5), while writing was identified as the least emphasized skill. Additionally, grammar and vocabulary were mentioned in 4% (n=1) of each article, underscoring their importance as fundamental language components to be mastered.

b. The finding concerning the lack skill.

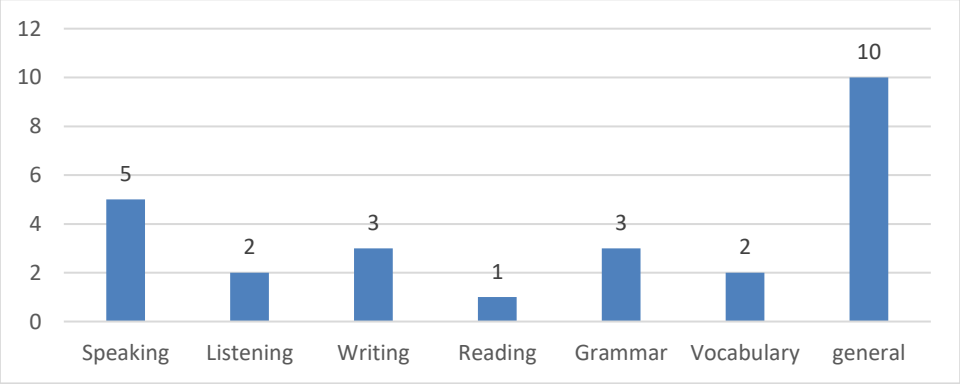

Figure 9. the lack skills

The provided document appears to be a data chart that represents the analysis of 26 journals regarding the lack of English language skills among subjects. The chart is organized into two columns, with the first column showing numerical values ranging from 12 to 0, and the second column listing language components such as speaking, listening, writing, reading, grammar, and vocabulary. The chart indicates that 10 articles highlighted the lack of ability to master English without specifying the skill, while 5 articles specifically mentioned a lack of speaking skill. Additionally, 3 articles each addressed the lack of writing and grammar skills, and 2 articles each discussed the lack of listening and vocabulary skills, with the least focus being on reading. The findings of this analysis shed light on the diverse language challenges faced by

the subjects, with implications for the development of targeted interventions to address these deficiencies.

Discussion

This article reviewed 26 articles related to need analysis in ESP for engineering. This review placed much attention to trend in need analysis from the year 2018 to 2023 due to the lack of systematic literature review on this topic.

The trends in need analysis on ESP material for engineering field

The article distribution by year illustrates in the changing landscape of scholarly work in ESP-based studies focused on need analysis for engineering students. The fluctuations in article distribution across the years provide valuable insights into the evolving research priorities and interests within this niche area of study. These findings could inform future research directions and highlight the need for continued exploration and study in the field of ESP for engineering students.

The document emphasizes that nearly all the obtained studies were published in countries with an EFL context, particularly noting that the research on the need analysis material of engineering in ESP in the EFL context accounted for the vast majority. The highest number of papers were produced in Indonesia, constituting 46% of the total, which is attributed to the education policy emphasizing the inclusion of English language as a fundamental subject in every college department. This insight provides a significant understanding of the context in which these articles were produced, shedding light on the prevalence of research related to the need for engineering material in ESP within EFL environments, particularly in Indonesia and other countries with similar educational policies. Rahayu et al., (2018) elaborated in their study that all participants agreed that having a strong command of the English language is essential for engineering students to succeed in the global workforce. This is especially true now that Indonesia is a member of the ASEAN Economic Community (AEC), which has increased the difficulty of finding work abroad, especially for Indonesian engineering graduates.

In Indonesia, English has been tought as ESP subject in mostly all fields of engineering, therefore, it is not surprised that need analysis of ESP for engineering students still becomes the populare topic to be discussed. In this reviewed, the document provides a breakdown of research article distribution across different subject areas within the field of engineering. As mention in the result, the research of need analysis in ESP was predominantly conducted in the Engineering department, accounting for 27% of the total articles ((Rahayu et al., 2018) ,Muhammad & Halim Abdul Raof, 2019, Nilforoush, 2019, Luna-Ríos, n.d, 2021, Changpueng, n.d., (2023), Ramadhani, R., Aulawi, H., Setiawan, R., & Rahayu, S. (2023), (Furka, 2023) Sari, Y. I. H., Wienanda, W. K., & Nugraheni, N. E. (2020), followed by mechanical engineering at 14% (Ratna Pertiwi et al., 2019) (Ronaldo & Zaim, 2021) (Farah, 2021) and civil engineering at 10%((Haryono et al., 2020), . Additionally, electrical engineering ((Sarwanti et al., 2023) and chemical engineering ((Wu & Lou, 2018) and (Damio et al., 2022) each contributed 7% to the total number of articles. The study also highlighted the diverse range of research subjects within engineering, including informatics engineering (Nimasari, 2018), petroleum engineering(Le et al., n.d. (2019) , aeronautical engineering (Nurhayati, n.d. 2019), computer engineering (Mahraj, 2019), information engineering (Gu, H., Bo, H., & Ren, L. (2019)., industrial and mechanical engineering Ahmad, K. (2023), automotive technology (Wijayanti & Nugroho,(2021), electronics industry (Kluensuwan, P., Chaisiri, T., Poomarin, W., & Rungruangsuparat, B. 2019), and architecture (ULUM, 2020)., collectively contributing 4% of the articles. This analysis provides

valuable insights into the distribution and emphasis of research within the various disciplines of engineering, showcasing the multidisciplinary nature of the field.

The data in the document describes the distribution of article participants and the frequency of ESP-based research conducted in various settings, which is related to the research participants that are reviewed. It shows that just 4% of journal researchers chose to conduct their study at high schools (Nurhayati, n.d. 2019), while the majority of them (81%) preferred to do so at universities. Furthermore, 15% of the study was carried out in professional environments (Nilforoush, 2019, Le et al., n.d. 2019, Kluensuwan, P., Chaisiri, T., Poomarin, W., & Rungruangsuparat, B. 2019). The data presents a clear distribution of article participants and the settings in which ESP-based research was conducted. The majority of researchers favored universities for their research, with a smaller percentage conducting research in high schools and workplace settings. This underscores a prevailing trend towards conducting ESP-based research in educational environments rather than workplace settings. The findings shed light on the preferences and tendencies of journal researchers, providing valuable insight into the landscape of ESP-based research and the settings in which it is primarily conducted. Based on the data, it is abundantly evident that researchers in the future who are willing to study the same subject can do additional analysis in the workplace to gather richer data about the kinds of materials that students actually require to support them in the workplace. In another words, this finding from the review indicates a clear preference for educational environments in conducting ESP-based research.

The focus finding of the reviewed journals

There are two catagories discussed about the finding of the 26 articles that have been reviewed.

The majority of articles focused on the importance of speaking skills for ESP students, particularly in the Engineering department. The statistics from the pie chart reveal that speaking, listening, and reading were the most emphasized skills, while writing received less attention. For instance, Haryono et al., (2020) reveals that what is very interesting in his finding is that speaking skills are considered very important (4) by more than 50% of all types of respondents, namely 100% of English teachers, followed by 85.7% by stakeholders, 70.9 % students and 55.5% lecturers majoring in civil engineering. Furthermore, the significance of speaking skill has also been considered as the best career enhancer (Polack-Wahl, cited in Seetha, 2012). In other ways, writing was identified as the least emphasized skill. On the other hand, Rahayu et al.,(2018) claim that none of the participants believed that writing abilities were not generally necessary because they were employed less frequently in the workplace aside from producing reports. However, based on the data, Damio et al., (2022) points out that the respondents stated that the most significant skill for the engineering field during their internship experience was writing and reading skills. This is supported by Abrahim (2008) that the engineering graduates should not only focus on speaking but also writing.

Grammar and vocabulary were highlighted as crucial language components to be mastered, albeit to a lesser extent compared to the other skills. Overall, the findings underscore the significance of speaking and listening skills for ESP students, particularly those in the Engineering department. The distribution of emphasis on language skills, as depicted in the pie chart, provides valuable insights into the priorities within ESP classes. This data can inform curriculum development and instructional strategies to ensure that students receive adequate support in honing their language abilities, with a particular emphasis on speaking and listening skills.

When it comes to the lacking skill master by subjects, the finding indicates that 10 articles highlighted the lack of ability to master English without specifying the skill, while 5

articles specifically mentioned a lack of speaking skill. Additionally, 3 articles each addressed the lack of writing and grammar skills, and 2 articles each discussed the lack of listening and vocabulary skills, with the least focus being on reading.

Discussing the lacking skill, with a thorough review, students should have no trouble with English proficiency because they have studied it extensively and it is not a novel subject. Kluensuwan et al. (2019) argue that The vast majority of participants (94%) stated that they began studying English in elementary or kindergarten. The findings of this analysis shed light on the diverse language challenges faced by the subjects, with implications for the development of targeted interventions to address these deficiencies. According to Thepseenu (2020), the participants' negative experiences with teachers' methods of instruction and the lack of progress in instructional strategies were contributing factors in their aversion of learning English. After ESP class, students provided feedback, and a poll revealed that 53.33% of respondents preferred an interactive teaching approach (Gu et al., 2019).

Regarding media utilization, Rahayu et al. (2018) note that 50% of the students said they were highly capable to utilize the internet for English language learning. Regarding educational activities, the majority of students (56.67%) believe that conducting problem-solving activities (51.11%), participating in a simulation pertaining to an engineering environment, and giving oral presentations (48.89%) are appropriate. More authentic sources, like IT news, work emails and papers, professional software, product descriptions, research reports, technology speeches, job advertisements, and so forth, should be included in ESP teaching materials (Gu et al., 2019). In addition, Changpueng (2023) found as for the activities, all of the stakeholders agreed that practicing meetings through simulation and authentic situations was suitable. More listening practices with various accents were also suggested (Changpueng, (2023).

According to the results of the interview procedure, the majority of students like participating in role-playing, games, projects, discussions, and student presentations (Ramadhani et al., 2023). Furthermore, because it helps them unwind, the majority of students chose outdoor activities for the assignment. Furthermore, when it comes to the roles that tutors and students play in the learning process, the majority of students say that the tutor should guide and assist them in the classroom rather than taking charge of every activity. It suggests that student-centered learning is an activity that the tutor should implement and that it is a substitute for the conventional method (Ramadhani et al., 2023). Participants favored receiving the educational materials not just in-person but also online and through multimedia presentations with audio (Ahmad, 2023). Involving interactive teaching combines with technology for current students (Ratna Pertiwi et al., 2019).

Conclusion

This article provides a comprehensive review of 26 articles related to need analysis in English for Specific Purposes (ESP) within the field of engineering. The review focuses on trends in need analysis from 2018 to 2023. The findings reveal that the majority of studies were conducted in countries with an EFL context, with Indonesia contributing the highest number of papers (46%). The importance of English proficiency for engineering students is emphasized, especially in light of global challenges such as the ASEAN Economic Community.

The distribution of research articles across different engineering disciplines is explored, with a predominant focus on the Engineering department (27%), followed by mechanical engineering (14%), and civil engineering (10%). The analysis highlights the multidisciplinary nature of ESP for engineering students. The study also examines the settings in which ESP-based research was conducted, revealing a preference for universities (81%) over high schools

(4%) and professional environments (15%). This preference suggests a trend towards conducting ESP-based research in educational settings.

The focus of the reviewed journals is divided into two categories. The majority of articles emphasize the importance of speaking skills for ESP students, particularly in the Engineering department. Speaking, listening, and reading are highlighted as the most emphasized skills, with writing receiving less attention. Grammar and vocabulary are considered crucial but to a lesser extent. Regarding lacking skills, the analysis identifies a range of deficiencies, with speaking skills being the most frequently mentioned. The findings also touch on students' preferences for learning activities, media usage, and instructional materials. Interactive teaching styles, outdoor activities, and the integration of technology are preferred by students. The article emphasizes the need for targeted interventions based on the identified language challenges to enhance ESP education for engineering students.

It is important to highlight that all the journals included in the study were those officially archived in the Google Scholar databases and were open access. Consequently, the researcher conducted a review exclusively on the journals accessible through the specified keywords. The use of specific keywords in the database search could potentially lead to the exclusion of studies with a similar focus. To maintain standardization and credibility, the researcher opted for widely used keywords that encompassed the overarching themes relevant to the topic of interest.

Based on the information provided in the article, several suggestions and implications for future research or educational practices emerge. The focus on Indonesia and its educational policies indicates the potential for conducting similar studies in countries with different language policies to draw valuable comparisons. Researchers could investigate the impact of national language policies on the implementation and effectiveness of English for Specific Purposes (ESP). Additionally, while most studies were conducted in universities, a smaller percentage focused on professional environments. Future research could explore the specific needs of engineering professionals in the workplace, providing insights into aligning academic training with industry requirements. Regarding Language Skills Emphasis, the article underscores the importance of speaking and listening skills for ESP students in the engineering department. Future ESP programs could adopt a more balanced approach, recognizing the unique requirements of each language skill within the engineering context.

The recommendation to incorporate more real sources in ESP teaching materials, such as IT news, work documents, and technology speeches, underscores the importance of inclusive and authentic content. Curriculum developers should consider integrating diverse materials that reflect real-world language use in engineering.

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