

## English Language Needs of Information Systems Students for Future Careers in the AI Era

Ditta Mustika Rakhmawati<sup>1</sup>, Murtini<sup>1</sup>, Ihsan Rolis<sup>2</sup>, Erma Damayanti<sup>1</sup>, Artipah<sup>1</sup>

<sup>1</sup>Fakultas Keguruan dan Ilmu Pendidikan, Universitas Tama Jagakarsa, Jakarta Selatan, Indonesia

<sup>2</sup>Labschool Cibubur, Jawa Barat, Indonesia

E-mail: [dittamustika@jagakarsa.ac.id](mailto:dittamustika@jagakarsa.ac.id)

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**Keywords:** *Artificial Intelligence; English Language Needs; Information Systems Students; Higher Education; Curriculum Development.*

**Abstract:** *The rapid integration of artificial intelligence (AI) into higher education and professional environments has transformed the role of English from a traditional academic subject into a critical competency for technology-driven careers. This study aimed to identify the English language needs of Information Systems students for future careers in the AI era. Employing a quantitative descriptive survey design, data were collected from 80 undergraduate Information Systems students at a private higher education institution in South Jakarta, Indonesia. A structured questionnaire was used to examine students' perceived needs in four areas: speaking skills, writing skills, reading skills, and AI-related English skills. The data were analyzed using descriptive statistics, including frequencies, percentages, means, and standard deviations. The findings revealed that all four competencies were perceived as important for future professional development. However, AI-related English skills emerged as the highest-ranked competency ( $M = 4.56$ ), followed by speaking skills ( $M = 4.45$ ), writing skills ( $M = 4.28$ ), and reading skills ( $M = 4.10$ ). The results suggest that students increasingly view English as an essential tool for interacting with AI technologies, accessing global knowledge, and participating in digital workplaces. The study highlights the need for English language curricula in Information Systems programs to incorporate AI-assisted communication and technology-oriented professional language skills to better prepare graduates for the evolving demands of the AI era.*

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## INTRODUCTION

The rapid advancement of artificial intelligence (AI) has transformed the landscape of higher education, reshaping how students access information, communicate, solve problems, and develop professional competencies. Recent developments in generative AI tools, such as ChatGPT and other large language models, have expanded the role of English beyond a

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traditional academic subject into a practical medium for interacting with digital technologies and global knowledge networks. As universities increasingly integrate AI into learning environments, students are expected not only to possess disciplinary expertise but also to demonstrate linguistic competencies that enable them to engage effectively with AI-driven systems and international professional communities (Chan & Hu, 2023; Chan & Tsi, 2023). AI is therefore becoming a significant factor influencing educational practices, curriculum development, and students' preparation for future careers in technology-related fields.

Within this context, English language proficiency remains one of the most important competencies for students pursuing careers in information and communication technology. Information Systems graduates frequently encounter English-language resources, including software documentation, technical manuals, research publications, online learning platforms, professional certifications, and AI-based applications. Furthermore, many AI tools operate primarily in English, requiring users to formulate prompts, interpret outputs, and critically evaluate generated information through English-mediated interactions. Recent studies have shown that AI technologies increasingly support language learning and professional communication while simultaneously creating new expectations regarding digital literacy and linguistic competence in higher education (Kristiawan et al., 2024; Fatihah & Mutawakillah, 2025). Consequently, understanding students' English language needs has become increasingly important in preparing graduates for an AI-driven workforce.

The growing importance of English in technology-oriented professions has also generated renewed attention toward curriculum relevance. Traditional English courses in higher education have often emphasized grammar, reading comprehension, and general language proficiency, whereas contemporary workplaces increasingly demand communication skills related to collaboration, presentation, professional writing, digital communication, and interaction with emerging technologies. Wahdini et al. (2025) argue that technological transformation requires curriculum reconstruction that responds to changing educational and professional demands. Similarly, recent needs-analysis studies emphasize that effective language curricula should be aligned with learners' academic, professional, and technological contexts rather than relying solely on conventional language-learning objectives (Sumari, 2026). Such perspectives suggest that curriculum design must continuously evolve to accommodate emerging workplace realities shaped by digital transformation and AI integration.

The emergence of AI has further complicated the relationship between language education and career preparation. Recent research indicates that students generally perceive AI as beneficial for learning, academic support, writing assistance, and knowledge exploration, yet they also recognize challenges related to ethical use, accuracy, critical thinking, and responsible engagement with AI-generated content (Chan & Hu, 2023). In language education specifically, AI-assisted tools have demonstrated considerable potential for enhancing vocabulary development, pronunciation, writing support, personalized learning, and learner engagement (Aulia, 2025; Nawir et al., 2025). At the same time, the increasing reliance on AI-mediated communication raises important questions regarding the specific English competencies students believe are necessary for their future professional success. Rather than diminishing the importance of English, AI may be creating new forms of language use that require higher levels of communicative, analytical, and digital competence.

Several recent studies conducted by Indonesian scholars have contributed important insights into curriculum transformation, technology integration, and language education in contemporary educational settings. Wahdini et al. (2025) highlighted the role of technology in reshaping language curriculum development, while Susandi et al. (2026) demonstrated the

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growing relevance of AI in English and Indonesian language pedagogy within higher education. In addition, Susandi et al. (2025) emphasized the importance of reconceptualizing educational practices in response to evolving sociocultural realities, and Damayanti et al. (2025) illustrated how student perspectives can provide valuable evidence for evaluating educational systems and institutional practices. Collectively, these studies underscore the importance of examining educational transformation from the viewpoint of learners themselves, particularly in contexts influenced by technological innovation and changing workforce expectations.

Despite the growing literature on AI in education and language learning, relatively little attention has been given to identifying the specific English language needs of Information Systems students in the AI era. Existing studies have primarily focused on the effectiveness of AI tools, students' perceptions of AI adoption, or broader discussions concerning curriculum transformation, while limited empirical evidence is available regarding which English competencies students perceive as most important for their future careers in technology-related professions. This gap is particularly relevant because Information Systems graduates are expected to operate within professional environments characterized by global communication, digital collaboration, and extensive interaction with AI technologies. Therefore, this study seeks to investigate the English language needs of Information Systems students for future careers in the AI era. Specifically, the study addresses the following research question: What English language skills do Information Systems students perceive as most important for their future careers in the AI era?

## **THEORETICAL FRAMEWORK**

This study is primarily grounded in Needs Analysis (NA), a foundational framework within English for Specific Purposes (ESP) that seeks to identify the linguistic competencies required by learners in relation to their present and future academic or professional contexts. While the origins of Needs Analysis can be traced to earlier ESP scholarship, contemporary researchers continue to emphasize its relevance for curriculum development, course design, and educational decision-making in rapidly changing professional environments (Basturkmen, 2019; Serafini et al., 2015). Within this framework, learners' perceptions are considered an important source of evidence because they provide insights into the language skills, communicative demands, and workplace expectations that educational programs should address. In technology-oriented disciplines such as Information Systems, Needs Analysis is particularly valuable because graduates are expected to navigate multilingual professional environments, engage with global information resources, and communicate effectively across digital platforms. Consequently, examining students' perceived English language needs can provide empirical support for designing curricula that are more responsive to contemporary professional realities and emerging technological demands.

In addition to Needs Analysis, this study draws upon the concept of 21<sup>st</sup>-century skills and digital communication competence, which has become increasingly relevant in the era of artificial intelligence. Contemporary educational research suggests that language proficiency can no longer be viewed solely as mastery of grammar, vocabulary, and traditional communication skills. Instead, effective participation in digital societies requires individuals to integrate linguistic competence with digital literacy, critical thinking, information evaluation, and the ability to interact productively with AI-mediated technologies (Redecker, 2017; Zhao et al., 2024). Recent studies have further demonstrated that AI tools are reshaping communication practices in educational and professional settings, creating new expectations regarding English-language interaction with digital systems, prompt construction, information synthesis, and

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collaborative problem-solving (Chan & Hu, 2023; Susandi et al., 2026). From this perspective, English language needs in the AI era should be understood not merely as traditional language requirements but as competencies that support effective participation in technology-driven workplaces and knowledge economies.

## **RESEARCH METHOD**

This study employed a quantitative descriptive survey design to identify the English language needs of Information Systems students for future careers in the AI era. A descriptive survey was considered appropriate because the purpose of the study was not to test causal relationships or examine the effects of specific interventions, but rather to describe students' perceptions regarding the English competencies they consider important for their future professional development. Survey research is widely recognized as an effective approach for collecting self-reported data about participants' attitudes, perceptions, and experiences in educational contexts (Ponto, 2015). Similarly, descriptive quantitative research enables researchers to provide a systematic overview of a phenomenon as it currently exists, making it particularly suitable for needs analysis studies in higher education settings.

The study was conducted at a private higher education institution located in South Jakarta, Indonesia. For ethical reasons, the name of the institution and all individuals involved in the study are not disclosed. The target population consisted of active undergraduate students enrolled in the Information Systems program. Since the total number of active students was relatively small, approximately 80 students were invited to participate in the study through a voluntary online survey. Data were collected using a structured questionnaire developed based on the principles of Needs Analysis in English language education. The instrument consisted of items measuring students' perceived needs related to speaking, writing, reading, and AI-related English communication skills. Responses were recorded using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), a format that is commonly employed to capture perceptions and attitudes in educational research.

The questionnaire was distributed electronically through institutional communication channels during the odd semester of the 2025/2026 academic year. Prior to participation, students were informed about the purpose of the study and were assured that their responses would remain anonymous and confidential. Participation was entirely voluntary, and respondents could withdraw from the survey at any time without consequence. The collected data were analyzed using descriptive statistics, including frequency distributions, percentages, minimum scores, maximum scores, means, and standard deviations. These statistical procedures were selected because they provide a clear summary of students' perceived English language needs and facilitate the identification of skill areas considered most important for future careers in the AI era (Yeki et al., 2025; Koo, 2025).

## **RESULT AND DISCUSSION**

### ***Respondent Profile***

A total of 80 Information Systems students participated in this study. All questionnaires were returned completely and were therefore included in the analysis. The respondents represented active undergraduate students who were preparing for future careers in technology-related sectors and who were expected to engage with digital technologies, international communication, and AI-assisted professional environments. Their responses provide valuable insights into how future Information Systems professionals perceive the importance of various

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English language competencies in the AI era.

**Table 1. Respondent Demographic Profile**

| Variable | Frequency | Percentage |
|----------|-----------|------------|
| Male     | 47        | 58.75      |
| Female   | 33        | 41.25      |
| Total    | 80        | 100        |

The demographic data indicate that the respondents came from diverse academic years and backgrounds within the Information Systems program. Such diversity is beneficial because students at different stages of study may possess varying levels of exposure to English-language materials, technical documentation, internships, and emerging AI technologies. Consequently, the findings offer a broader picture of students' perceived language needs rather than reflecting the perspectives of a single cohort.

### ***Descriptive Statistics of English Language Needs***

The descriptive statistical analysis was conducted to identify the extent to which students perceived different English language competencies as important for their future careers. Four dimensions were examined, namely Speaking Skills, Writing Skills, Reading Skills, and AI-related English Skills. The analysis included the number of respondents (N), minimum scores, maximum scores, mean values, and standard deviations for each dimension.

**Table 2. Descriptive Statistics of English Language Needs**

| Variable                  | N  | Minimum | Maximum | Mean | Std. Deviation |
|---------------------------|----|---------|---------|------|----------------|
| Speaking Skills           | 80 | 2.60    | 5.00    | 4.45 | 0.52           |
| Writing Skills            | 80 | 2.40    | 5.00    | 4.28 | 0.58           |
| Reading Skills            | 80 | 2.80    | 5.00    | 4.10 | 0.61           |
| AI-related English Skills | 80 | 3.00    | 5.00    | 4.56 | 0.47           |

The results revealed that all four dimensions obtained relatively high mean scores, indicating that students generally perceived English proficiency as important for their future professional development. However, differences emerged regarding which competencies were considered most essential. The highest mean score was observed in AI-related English Skills ( $M = 4.56$ ,  $SD = 0.47$ ), followed by Speaking Skills ( $M = 4.45$ ,  $SD = 0.52$ ), Writing Skills ( $M = 4.28$ ,  $SD = 0.58$ ), and Reading Skills ( $M = 4.10$ ,  $SD = 0.61$ ).

The relatively low standard deviations across all dimensions suggest a considerable level of agreement among respondents. In other words, students generally shared similar views regarding the importance of English competencies for future employment. This finding indicates that English is no longer perceived merely as an academic requirement but increasingly as a professional necessity within technology-oriented fields.

### ***Ranking of English Language Needs***

To facilitate interpretation, the mean scores were further ranked to identify the relative

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priority assigned to each English language competency.

**Table 3. Ranking of English Language Needs  
for Future Careers in the AI Era**

| <b>Rank</b> | <b>Skill Area</b>         | <b>Mean</b> |
|-------------|---------------------------|-------------|
| 1           | AI-related English Skills | 4.56        |
| 2           | Speaking Skills           | 4.45        |
| 3           | Writing Skills            | 4.28        |
| 4           | Reading Skills            | 4.10        |

The ranking demonstrates that AI-related English Skills emerged as the most important competency. This finding suggests that students increasingly recognize the relationship between English proficiency and the effective use of artificial intelligence technologies. Since many AI platforms, technical resources, and professional communities operate primarily in English, students appear to understand that language competence can influence their ability to interact with AI systems efficiently and critically.

The second-highest ranking was assigned to Speaking Skills. This result reflects the growing importance of oral communication in contemporary workplaces, particularly in environments characterized by teamwork, project collaboration, presentations, client interactions, and international communication. Information Systems professionals frequently work within multidisciplinary teams and may engage with colleagues, clients, or stakeholders from different linguistic and cultural backgrounds. Consequently, students perceive spoken English as a critical component of career readiness.

Writing Skills ranked third, indicating that students acknowledge the importance of professional written communication in the workplace. Information Systems graduates are often required to prepare reports, project documentation, technical explanations, business correspondence, and digital communications. Although writing was not ranked as highly as AI-related English Skills or Speaking Skills, the relatively high mean score suggests that students still consider written communication to be a significant professional competency.

Reading Skills obtained the lowest mean score among the four dimensions, although the overall rating remained high. This finding does not necessarily imply that reading is unimportant. Rather, it may indicate that students view reading as a supporting skill that facilitates access to technical documentation, online resources, research articles, software manuals, and professional knowledge. Since reading activities often occur independently, students may perceive them as less visible than communication-oriented competencies such as speaking and writing.

### ***Discussion***

One of the most significant findings of this study is the prominence of AI-related English Skills as the highest-ranked competency. Traditionally, English language needs analyses in higher education have focused on reading, writing, speaking, and listening. However, the present findings suggest that students increasingly associate English proficiency with their ability to interact effectively with AI technologies. This shift reflects broader transformations occurring in higher education and the labor market, where AI is becoming integrated into academic activities,

professional communication, information management, and problem-solving processes.

The findings also suggest that Information Systems students perceive English not merely as a language subject but as a technological resource. In contemporary professional environments, English functions as a gateway to AI platforms, software documentation, international communities of practice, and rapidly evolving technological knowledge. As a result, language competence and digital competence appear to be increasingly interconnected rather than existing as separate skill domains. This observation supports recent arguments that future professionals require integrated competencies that combine communication, technology, and information literacy.

The high ranking of Speaking Skills further highlights the growing emphasis on communication within technology-related professions. Historically, Information Systems curricula have often prioritized technical expertise, including programming, database management, systems analysis, and software development. However, modern employers increasingly seek graduates who can communicate ideas effectively, collaborate within teams, present solutions, and engage with stakeholders. The findings therefore reinforce the argument that technical competence alone is insufficient for success in contemporary digital workplaces.

Another noteworthy finding concerns the continuing importance of Writing Skills. Although advances in AI-assisted writing tools may support the production of written texts, students still perceive professional writing as an important workplace competency. This perception may stem from the need to evaluate, revise, and contextualize AI-generated content appropriately. Consequently, future English curricula should not only teach writing as a linguistic skill but also emphasize critical engagement with AI-assisted writing technologies.

Finally, the findings carry important implications for curriculum development in Information Systems programs. The results suggest that traditional English courses focused primarily on grammar instruction may no longer adequately address students' professional needs. Instead, curriculum designers may consider incorporating activities related to AI-assisted communication, professional presentations, workplace interaction, technical documentation, prompt construction, and critical evaluation of AI-generated outputs. Such curricular adjustments could better align English language education with the realities of contemporary technology-driven careers and prepare graduates for increasingly AI-mediated professional environments.

## **CONCLUSION**

This study sought to identify the English language needs of Information Systems students for future careers in the AI era. The findings demonstrate that students perceive all examined English language competencies as important, with AI-related English skills emerging as the highest priority, followed by speaking, writing, and reading skills. These results suggest that English is no longer viewed merely as a traditional academic subject but increasingly as a strategic professional resource that enables students to engage with artificial intelligence technologies, access global knowledge, communicate across digital environments, and participate effectively in technology-driven workplaces. The prominence of AI-related English competencies indicates a significant shift in how students conceptualize the role of language in their future careers, reflecting the growing convergence of communication, technology, and professional practice.

The findings carry important implications for curriculum development in higher education, particularly within Information Systems programs. English language courses should move beyond conventional grammar-oriented approaches and increasingly incorporate authentic

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professional communication, AI-assisted interaction, digital collaboration, technical documentation, and critical engagement with AI-generated content. Such curricular transformation is necessary to ensure that graduates are equipped not only with technical expertise but also with the linguistic and communicative competencies required to thrive in an increasingly AI-mediated world. Ultimately, preparing students for future careers in the AI era requires a reimagining of English language education as an integral component of digital professionalism, technological adaptability, and lifelong learning.

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