

Exploring EFL Students' Needs in English for Online Business Course through AI Learning Analytics

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Abstract

The rapid transformation from the traditional to the digital business world has created new challenges for English for Specific Purposes education. The lack of appropriate course books for online business English communication requires a systematic investigation of need analysis and learning analytics to guide curriculum and material development in current digital business education. This paper, therefore, aims to explore Thai EFL university students' perceived needs on "English for Online Business" and to develop an English for Online Business course for EFL university students by using AI learning analytics. Fifty-nine participants were voluntarily asked to complete a needs analysis questionnaire with open-ended questions reporting what high-priority or low-priority needs of English language skills were perceived by these Thai university students. The data obtained from the questionnaire were first analyzed by frequency, percentage, and standard deviation. The findings showed the top three high-priority needs perceived by students, including reading product details, writing promotional posts on social media, and listening to customers' feedback. The students' responses were also thematically categorized into two domains: business English communication and international online business platforms. Three data sets (needs analysis, the students' English proficiency levels, and the course description) were processed by using AI learning analytics, suggesting the teaching methods, activities, and materials for the mixed-ability group. This paper proposes AI learning analytics to enhance English language learning and tailor the English course. Limitations and recommendations for practical implementation guidelines are also discussed.

Keywords: Need Analysis, Generative AI, Learning Analytics, Course Development, English Language Teaching

Introduction

In the 21st Century, digital literacy and communication skills have become essential for career success (Martinez-Bravo et al, 2022). The advancement of digital technology alters every industry and the workers in modern careers. Workers should have the skills to use complicated technologies and communicate with people across cultures in an international environment (Jacqueline, 2024). This transformation has caused educational institutions to critically examine and revise their curricula to prepare their students to meet the evolving demands of job market (Khan et al., 2022; Komalasari, 2021).

In the higher education context of Thailand, universities have responded to this transformation by integrating digital technology content with language education, particularly in English instruction (Rajamangala University of Technology Rattanakosin, 2025; Thammasat University, 2023; Ubon Ratchathani University, 2025). A review of curriculum documents from several universities reveals a notable shift in pedagogy from traditional business communication toward instruction focused on digital marketing, e-commerce, online business transactions, and cross-cultural digital communication (Crocco & Pitayanuwat, 2022; Rajamangala University of Technology Lanna, 2023).

Digital business communication that evolves rapidly has created critical pedagogical challenges. Emerging new technologies, communication platforms, and shifting industry practices make course materials quickly outdated. Teaching with commercial textbooks or fixed syllabi cannot keep pace with this speed of change. It consequently places the burden on instructors to monitor digital business and industry developments and continuously update course materials. Additionally, teachers must analyze learners' perceptions of the course content and the essential communication skills for digital business contexts. This analysis helps identify appropriate teaching methods and supplementary learning activities that promote students' learning engagement and develop their skills throughout the course to confirm that they acquire practical skills applicable to their future professional careers.

Given the challenges mentioned above, teachers need innovative solutions to manage their workload while maintaining educational quality. AI learning analytics enable English language teachers to analyze student performance data and design

targeted instructional materials suitable for individual needs (Dugošija, 2024). This study integrates learner needs analysis and AI learning analytics to minimize challenges in analyzing students' perceived needs. By using AI to identify skill gaps and generate learning tasks and assessments, teachers can focus on pedagogical decision-making and personalized student support rather than manual data analysis.

Research Purposes

1. To explore Thai EFL university students perceived needs on “English for Online Business”
2. To develop English for Online Business course for EFL university students by using AI learning analytics

Need Analysis in ESP and Learning Analytics

Addressing the challenges of preparing materials and activities for online business English courses, Needs Analysis (NA) provides a systematic basis for course development. According to Hutchinson and Waters (1987), NA is a systematic process that informs learners' needs, including learning needs (what learners want to learn) and target analysis (what learners need to learn in specific situations, what they do not know, and what they should learn). To conduct needs analysis effectively, researchers frequently employ mixed research methods, including structured questionnaires, interviews, focus groups, and classroom observations, to explore students' needs and transform them into course content (Alavi, 2024). In ESP courses, learning analysis typically examines the language learning environment, while target needs analysis focuses on the language skills learners perceive as important and prioritize, as well as the gap between their current skills and what they want to achieve (Barghamadi, 2020; Buasuwan, 2018). This systematic approach provides valuable information about learners' existing knowledge, current skills, and learning behaviors (Alhasani, 2024).

Previous studies have demonstrated the practical value of this approach in course development. Research shows that conducting needs analysis helps ensure instructional content matches students' proficiency levels and aids in developing learning

tasks that effectively address students' needs, leading to comprehensive outcomes (Aizawa, 2023; Susanti, 2023). In the context of digital transformation, recent research suggests that needs analysis for Business English should shift from traditional frameworks to encompass digital communication channels, including email, workplace chat, social media, video conferencing, and digital platforms (Alhasani, 2024). Specifically, studies highlight the need for practices that utilize actual digital tools and real-world workplace situations and confirm that needs analysis serves as an essential approach for developing curricula and assessments that prepare students for professional success in today's digital workplace.

Generative AI (GAI) Learning Analytics in ELT

Building on the needs analysis framework discussed above, this paper explores how Generative AI (GAI) such as ChatGPT, Copilot, Grok, Manus, Claude and DeepSeek can enhance the process of analyzing students' needs and developing the English for Online Business course. Educational studies (Liu, 2024; Liu, 2024) demonstrate that AI learning analytics can analyze big data and develop personalized learning, especially for facilitating English language learning—an approach that was previously restrictive and limited to the field of information technology. Specifically, GAI can function as an effective teaching assistant by identifying students' needs, learning styles, and behaviors; providing real-time feedback; and facilitating personalized learning. These are particularly valuable in virtual classroom environments (Jerucha & Rajakumari, 2024; Liu, 2024; Liu, 2024). They directly address the workload challenges faced by English teachers and course coordinators when developing courses for diverse groups of students (Thompson et al., 2025).

English teachers at Thai universities traditionally have spent a lot of time developing courses for Thai university students across disciplines like finance, fashion and textiles, home economics, and digital marketing. According to Fang and Broussard (2024), this leads to gaps between pedagogical needs and content knowledge, which demands time-consuming procedures like conducting course orientation, creating teaching materials, and analyzing students' needs across disciplines. While reviewing research studies in Thailand has explored GAI applications in English language teaching,

including algorithm optimization for better learning outcomes (Chonrasak & Boonlue, 2024), teachers' acceptance (Waluyo & Kusumastuti, 2024), and as a part of English teaching instruction (Chavangklang & Chavangklang, 2024). These are limited guidance for instructors with limited AI literacy who seek practical applications for course development.

Therefore, this paper addresses this gap by demonstrating how GAI can support English course development according to individual differences, personalized and effective learning experience by using GAI, especially in teaching the mix-ability group. According to the investigation by Su and Zhong (2025), GAI offers several advantages for needs analysis. They can produce tailored content for curriculum design, lesson planning, and learning objectives; organize differentiated learning materials; generate aligned assessment items; develop adaptive content pathways; and automate student performance evaluation while providing timely feedback.

Research Methodology

Population and Sample

Fifty-nine Thai second-year university students enrolled in English for Business Online (academic year 2025) participated by using convenience sampling technique. Their English proficiency levels ranged from A2 to B2 according to the Common European Framework of Reference for Languages (CEFR), assessed by the Language Institute at Rajamangala University of Technology Phra Nakhon. All participants provided informed consent and were notified of their right to withdraw at any time before completing the questionnaire. Anonymity was maintained by removing personal information and assigning numerical codes for data analysis.

Setting: English for Online Business Course

English for Online Business, one of the General Education courses, has been developed since 2023 to develop task-specific competencies for students' future careers, address 21st-century skill competencies, and enhance language literacy. This course covers six topics designed to prepare English for start-up entrepreneurs: understanding vocabulary, expressions, and grammatical structures; communication

in online business contexts; dealing with international customers; product presentation; product advertisement; and online sales pitching. This course is a required General Education course for students from various faculties who have different background of English knowledge. Considering this situation, this study, therefore, intend to study how Thai university students' perceived needs on task-specific competencies in English for Online Business, and how AI learning analytics can enhance this English language course responding the students' needs in various field of studies

Research Instruments

Perceived Needs Questionnaire

The questionnaire was designed to identify Thai EFL university students' perceived needs for task-specific competencies in the English for Online Business course, focusing on the six topics, such as writing promotional social media posts and delivering online sales pitches. The questionnaire was developed, and content validity was verified by three experts in English language teaching. In this study, the questionnaire was piloted with twenty university students, showing that some irrelevant items needed to be removed. The formal academic Thai language was simplified to improve student comprehension.

The questionnaire was divided into three parts: the first part included the background information such as field of study and faculty; the second part included 16 items with a four-point rating scale from 1 (lowest priority) to 4 (highest priority), focusing on the students' perceived needs related to task-specific competencies in the English for Online Business course. The four-point scale was used to receive a definite positive or negative responses what English language skills perceived by the students from the lowest to the highest priority needs in the English for Online Business course; and the third part concerned an open-ended question eliciting students' perceived as high-priority and low-priority needs for other related skills. The reliability of the questionnaire was analyzed by using Cronbach's Alpha = .97.

Selection of Generative AI (GAI) Learning Analytics

This study proposes Generative AI (GAI) as an alternative approach to develop an English for Online Business course more suitable for Thai EFL tertiary students. Several GAI tools were piloted to find out which AI tool was the most suitable for this study. The results of the pilot study showed that Claude AI (Pro) is the most suitable for learning analytics due to its reliability, accuracy, data privacy protection, token support capacity, and user familiarity. We also piloted what prompts and input data should be used for English course development.

Data Collection and Data Analysis

The participants in this study were fifty-nine voluntary students enrolled in English for Online Business from the Business Administration Program, including Management, Marketing, and Financial Innovation and Investment at Rajamangala University of Technology Phra Nakhon, Thailand. These participants were asked to complete a questionnaire in Thai, reporting their needs and what kinds of English language skills they perceived as necessary to develop in the English for Online Business course during the first class session. The students' responses obtained from the questionnaire were analyzed as follows.

In the first stage, these responses were analyzed using frequency counts, percentages, means, and standard deviations. To analyze the four-point rating scale questionnaire, the range was calculated as $(4-1 = 3)$ and divided by four $(3 \div 4 = 0.75)$. The mean scores, therefore, were determined and interpreted as follows (Srisa-ard, 2003): a mean score from 1.00 to 1.75 indicates "the lowest priority needs"; a mean score from 1.76 to 2.50 indicates "low priority needs"; a mean score from 2.51 to 3.25 indicates "high priority needs"; and a mean score from 3.26 to 4.00 indicates "the highest priority needs."

For the open-ended question, the students' responses were thematically categorized to identify other skills that the students perceived as high-priority and low-priority needs in English for Online Business, such as the integration of AI for online business. These responses were analyzed manually.

In the second stage, the data were prepared by converting the summarized data from Word into .xlsx files. All personal information was anonymized by assigning participant numbers; only their English proficiency levels and the questionnaire findings were included in the input data. The data were then double-checked to ensure language compatibility and reduce potential errors when using GAI. All data used in this study were opted out of AI model training. Three input datasets used in this study were the course description of English for Online Business, the students' English language proficiency, and the findings of students' perceived needs. The prompt, as shown below, was designed based on objective, context, target, role, and task.

Context You are designing a comprehensive English for Online Business course for Thai university students whose English ranged from A2 to B2 (mix-ability group) who perceived needs in studying English course. The course will be developed through the results of the needs analysis that captures detailed learning analytics data.	Target Thai EFL students who study in English for Online Business in the academic year of 2025, who need to improve their English proficiency for online business environments, with measurable learning outcomes that can be tracked through analytics.
Role Act as an expert curriculum designer and learning analytics specialist with expertise in business English pedagogy, EFL course development with mixed-ability group, and data-driven educational design.	Task Develop a course structure that follows course description: <ul style="list-style-type: none">• Interactive activities designed to generate meaningful analytics data• Assessment strategies that provide actionable insights• Adaptive learning pathways based on performance metrics• 21st Century Skills Integration

Results of Students’ Perceived Needs

Table 1 presents survey data obtained from undergraduate students (N=59) studying English for Online Business in the beginning academic year of 2025. The findings report several areas perceived as high-priority needs. In other words, reading with students’ high perceived needs concerned reading product details, labels, and

product information ($M = 2.89$, $SD = 0.78$) reading and understanding emails from international customers ($M = 2.60$, $SD = 0.89$), as well as reading comments and product reviews in English ($M = 2.54$, $SD = .85$)

In terms of writing skills, the findings show that the students perceived writing product descriptions ($M = 2.40$, $SD = 0.87$) and replying to customer emails ($M = 2.37$, $SD = 0.87$) were rated as low-priority needs. By contrast, writing promotional posts on social media as a high-priority need ($M = 2.72$, $SD = 0.97$). It is most likely that these participants were familiar with formal business inquiries and correspondence; however, they were unfamiliar with persuasive writing for marketing purposes on social media.

For listening and speaking skills, these participants focused on high-priority perceived needs in listening orders from foreign customers ($M = 2.60$, $SD = 0.94$), and listening to feedback from international customers ($M = 2.61$, $SD = 0.92$), while other items, for example, negotiation and presentation skills were considered as low-priority needs perceived by undergraduate students. The findings also show that using polite English in business communication was identified as a high-priority need ($M = 2.55$, $SD = 0.98$), while specific vocabulary ($M = 2.27$, $SD = 0.97$) and correct grammar ($M = 2.33$, $SD = 1.01$) were perceived as lower priorities.

Table 1 Thai EFL university students perceived needs on English for Online Business

N = 59

Reading Skills		The lowest	Low	High	The highest	M	SD	Interpretation
1.	Reading and understanding emails from international customers	11.9%	32.2%	40.7%	15.3%	2.60	.89	High priority needs
		7	19	24	9			
2.	Reading comments and product reviews in English	5.1%	54.2%	22%	18.6%	2.54	.85	High priority needs
		3	32	13	11			
3.	Reading international business documents such as charts, graphs, infographics	15.3%	47.5%	23.7%	16.6%	2.35	.90	Low priority needs
		9	28	14	8			
4.	Reading product details, labels, and product information	—	35.6%	39%	25.4%	2.89	.78	High priority needs
			21	23	15			
Writing Skills		The lowest	Low	High	The highest	M	SD	Interpretation

5.	Writing product descriptions in English	10.2% 6	54.2% 32	20.3% 12	15.3% 9	2.40	.87	Low priority Needs
6.	Replying to emails or messages from international customers	12.1% 7	51.7% 30	22.4% 13	13.8% 8	2.37	.87	Low priority needs
7.	Writing promotional posts on social medias	8.5% 5	39% 23	23.7% 14	28.8% 17	2.72	.97	High priority needs
Speaking and Listening Skills		The lowest	Low	High	The highest	M	SD	Interpretation
8.	Presenting and pitching products in English on social medias	22% 13	39% 23	27.1% 16	11.9% 7	2.28	.94	Low priority needs
9.	Communicating with international customers through online platforms	16.9% 10	45.8% 27	22% 13	15.3% 9	2.35	.94	Low priority
10.	Negotiating with foreign suppliers	18.6% 11	45.8% 27	18.6% 11	16.9% 10	2.33	.97	Low priority needs
11.	Listening to and understanding orders from international customers	11.9% 7	37.3% 22	30.5% 18	20.3% 12	2.60	.94	High priority needs
12.	Listening to online business tutorial videos in English	11.9% 7	49.2% 29	23.7% 14	15.3% 9	2.42	.89	Low priority needs
13.	Listening to feedback from international customers	8.5% 5	44.1% 26	25.4% 15	22% 13	2.61	.92	High priority needs
Language Usage Skills		The lowest	Low	High	The highest	M	SD	Interpretation
14.	Using specialized e-commerce business vocabulary	24.7% 14	39% 23	23.7% 13	13.6% 8	2.27	.97	Low priority needs
15.	Using polite English in business communication	13.6% 8	39% 23	25.4% 15	22% 13	2.55	.98	High priority needs
16.	Using correct grammar in business communication	22% 13	39% 23	22% 13	16.9% 10	2.33	1.01	Low priority needs

While the key findings showed that the highest-priority English language needs involved customer-facing communication tasks: reading emails and product information, listening to orders and feedback, and writing promotional content. The qualitative data from the open-ended section revealed two categories of priority needs. First, business English communication difficulties emerged as the dominant

concern, focusing on fundamental communicative skills. Participants expressed needs to "develop listening and speaking skills" and achieve "conversational comprehension", for example "I want to understand conversations," "want knowledge in presentation skills". Second, international online business platforms reflected awareness of cross-border commerce, for example, one participant showing the desire for "channels for selling with America". The qualitative findings indicate that English communication difficulties present a major concern rather than the specific business skills identified in the questionnaire, revealing a gap between students' perceived needs and task-specific competencies in the English for Online Business course (see Discussion).

Results of Course Development by GAI

To develop this course by using AI learning analytics to address EFL students' perceived needs of English for Online Business. Figure 2 presents infographic by GAI.

Figure 2 Infographic of learning analytics for English for Online Business by GAI



Teaching Methods by Level

A2 Level

Scaffolded Learning

- Heavy teacher support with templates
- Peer mentoring with advanced students
- Multimodal input (visual + audio + text)
- Basic digital tools (Google Docs, Canva)

B1 Level

Task-Based Learning

- Project-based marketing campaigns
- Problem-solving customer scenarios
- Semi-independent research tasks
- Google Analytics introduction

B2 Level

Autonomous Learning

- Content creation for peer teaching
- Advanced data analysis projects
- Cross-cultural communication leadership
- AI chatbot experimentation

Teaching Materials & Technology

Digital Platforms

- Canvas/Moodle LMS
- Microsoft Teams
- Canva Pro
- Google Analytics
- Facebook Insights

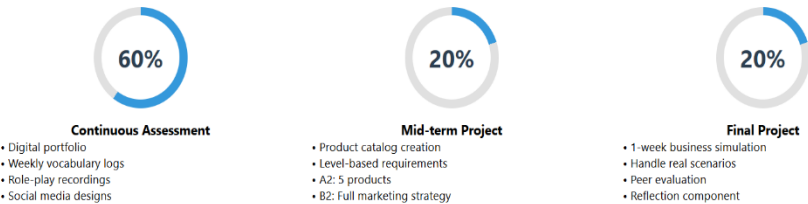
Authentic Materials

- Real Thai export company emails
- Lazada/Shopee product pages
- Successful Thai business social media
- YouTube business channels
- Digital marketing webinars

Support Tools

- Grammarly for writing
- Cambridge Business Dictionary
- Kahoot for vocabulary
- FlipGrid for speaking
- WordPress for portfolios

Assessment Strategy



Support Systems

Language Support

- Buddy system (A2 + B1/B2)
- Grammar clinics
- Self-paced online resources

Digital Literacy Support

- IT department mentors
- Video tutorial library
- Practice before assessment

Motivation Strategies

- Guest speakers
- Competition elements
- Progress visualization

Assessment Framework





This study demonstrates how GAI learning analytics can systematically transform ESP course development through data-informed design. The results showed that GAI learning analytics showed GAI's potential to address ESP challenges. First, GAI generated adaptive learning pathways for diverse students. Second, the system autonomously identified and organized authentic business materials such as Lazada/Shopee product pages, social media accounts, YouTube channels, and marketing webinars—reducing instructor preparation time. Third, curriculum design and technology integration as GAI produced comprehensive, scaffolded activities across four English language skills. Finally, GAI also identified optimal platform combinations—Canvas, Google Analytics, Facebook Insights—and support tools such as Grammarly and Flipgrid based on pedagogical effectiveness research, eliminating costly trial-and-error technology adoption.

Discussion

The research findings reveal that students perceived practical skills (e.g., reading product labels and emails, understanding product reviews, writing promotional posts on social media, and listening to order processing and feedback from international customers) as high-priority needs, while undervaluing negotiation, presentation, and digital competencies. These findings demonstrate critical tensions in ESP course design that require careful interpretation. The emphasis on practical skills supports Hutchinson and Waters' (1987) framework distinguishing "learning needs" (what learners want to learn) and "target needs" (what learners actually need in ESP contexts). Students demonstrated

clear orientation toward immediate workplace applicability, supporting findings from Cheng (2022) and Susanti (2023) that Business English learners prioritize tasks directly applicable to professional settings.

However, the low priority assigned to negotiation and presentation skills, despite their documented importance (Deng, 2024), indicates students lack exposure to authentic international business contexts where these competencies prove crucial. As Barghamadi (2020) and Buasuwan (2018) emphasize, effective needs analysis must examine both what learners perceive as important and the gap between current skills and those required—a gap evident in students' undervaluation of strategic skills. This finding validates Alhasani's (2024) argument that needs analysis should provide insights into not only learners' current perceptions but also actual target situation requirements. Thai students appear to conceptualize business English traditionally—formal correspondence and face-to-face meetings—rather than recognizing digital platforms as legitimate professional communication, reflecting gaps between pedagogical content and actual workplace practices in Thai contexts (Fang & Broussard, 2024). Therefore, teachers should prioritize a balance of students' perceived needs and task-specific needs.

In addition to GAI learning analytics, these findings were consistent with prior studies (Fang & Broussard, 2024; Liu, 2024; Su & Zhong, 2025), demonstrating GAI's capacity to represent a paradigm shift from labor-intensive, intuition-based course design to efficient, data-driven, pedagogically optimized development. In other words, this study has illustrated GAI's potential to transform English for Specific Purposes (ESP) curriculum development while maintaining pedagogical precision and enhancing student outcomes. Despite the numerous benefits of using GAI learning analytics, English instructors have encountered many difficulties. For example, staying up-to-date with the latest trends and technologies and learning how to use them to produce innovative and engaging learning materials remains challenging due to the rapid evolution of GAI (Gayed, 2025; Moorhouse, 2024). Additional challenges include insufficient training, lack of institutional support, resistance to change, and technological barriers (Dugošija, 2024). The limitations of using GAI in this study focus solely on three data sets: course description, perceived needs, and

English language levels. Other factors, such as learning behaviors, learning styles, and students' interests, should be included to enhance students' motivation and engagement (Chonraksuk & Boonlue, 2024; Liu, 2024). In addition, the findings should be monitored long-term to determine whether GAI can sustainably foster English language learning.

Hence, English instructors should take multiple factors into consideration when integrating GAI into their teaching practices. These include data privacy and security concerns (Antoniak, 2023), ethical implications such as algorithmic bias, transparency, and responsible use (Eden et al., 2024), reliability and accuracy of AI-generated outputs (Zaman, 2024), and the development of both teachers' and students' AI literacy competencies (Liu, 2025). This study, therefore, demonstrates that GAI can serve as an alternative tool for analyzing learning analytics, enhancing language learning, and designing suitable courses for Thai EFL university students. However, the course content and materials generated by GAI should be carefully reviewed and validated by English instructors prior to classroom implementation, as AI systems may produce hallucinations, factual inaccuracies, or misleading information that could compromise pedagogical quality (Huang et al., 2024). Human oversight remains essential to ensure accuracy and pedagogical appropriateness (Yan et al., 2024).

Conclusions and Recommendations

This study shows that Thai students prioritized the basic language skills for operating business tasks such as reading product information and writing polite business correspondence; however, they paid less attention to advanced skills considered essential for real-world digital marketing demands, such as negotiation, presentation, and digital media communication. Therefore, English instructors should balance learners perceived needs with the real skill demand of the current job market and digital business context.

The integration of GAI learning analytics offers significant pedagogical implications for ESP instruction by enabling educators to bridge the gap between students' perceived needs and actual market demands, but the challenges are maintaining communicative and cultural authenticity that is critical to effective learning.

This paper, therefore, provides an alternative approach to design pedagogically ESP courses that prepare students for the demands of digital business environments.

Future research should investigate the long-term effectiveness of GAI-integrated ESP courses by conducting longitudinal studies that track students' language development and career success in digital marketing positions over time. Researchers should also explore how different AI tools and learning analytics platforms can be optimized to maintain communicative and cultural authenticity while delivering personalized instruction.

Authorship

All authors contributed equally to this work and are recognized as essential intellectual contributors. Each author was involved in the conceptualization, design, analysis, interpretation, and writing of the manuscript, and all took full responsibility for its content.

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