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REIMAGINING ACADEMIC LITERACY IN THE GENERATIVE AI ERA: ESSENTIAL SKILLS FOR DISCIPLINARY LEARNING IN EMI ECONOMICS PROGRAMS

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Abstract: Students studying English as a Medium of Instruction (EMI) programs, particularly in economics, often face challenges due to students' insufficient academic literacy and content-language misalignment. The rapid rise of Generative Artificial Intelligence (AI) introduces a new dilemma; while it potentially displaces low-level linguistic tasks, it also raises worries about academic integrity and learning competence. This study evaluates academic skill deficits in preparatory courses (Pre-EMI courses) and examines students' shifting perceptions of essential disciplinary literacies in the AI era. To achieve this aim, an explanatory sequential mixed methods design was used. To be specific, a quantitative survey (N=64) and qualitative interviews (N=5) gathered data from senior economics students on the effectiveness of preparatory courses, the necessity of 21 academic skills, and their value shift due to Generative AI. The quantitative data were analyzed descriptively, and the qualitative data were analyzed thematically to reveal a significant preparedness deficit across all skills, notably in critical evaluation of information, argument development in academic writing, and higher-order analytical skills. Importantly, although AI reduces the need for basic linguistic mechanics, the students affirm the importance of higher-order cognitive skills such as critical analysis, data interpretation, and discipline-specific reasoning. The findings confirm that success in EMI requires procedural disciplinary literacy and thus, suggest an urgent need to restructure preparation courses to integrate discipline-specific skills and critical AI literacy to close the identified skill gaps.

Keywords: EMI, assessment, academic skills, AI

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TÁI ĐỊNH HÌNH NĂNG LỰC HỌC THUẬT TRONG THỜI ĐẠI AI TẠO SINH: CÁC KỸ NĂNG CẦN THIẾT CHO SINH VIÊN HỌC CHUYÊN NGÀNH KINH TẾ BẰNG TIẾNG ANH

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Tóm tắt: Các chương trình giảng dạy chuyên ngành bằng tiếng Anh, đặc biệt trong lĩnh vực kinh tế, đang gặp nhiều thách thức do sinh viên còn hạn chế về năng lực học thuật và trình độ ngôn ngữ. Sự phát triển nhanh chóng của trí tuệ nhân tạo sinh có thể hỗ trợ sinh viên hoàn thành các tác vụ ngôn ngữ đơn giản nhưng lại đặt ra thách thức về liêm chính học thuật và năng lực học tập thực chất của sinh viên. Nghiên cứu này^o đã đánh giá niềm tin của sinh viên về tính hiệu quả của các khóa học hỗ trợ kỹ năng ngôn ngữ cho sinh viên học chuyên ngành bằng tiếng Anh, đồng thời khảo sát sự thay đổi trong nhận thức của sinh viên về các năng lực học thuật cốt lõi trong thời đại trí tuệ nhân tạo. Bài nghiên cứu sử dụng phương pháp hỗn hợp tuần tự giải thích để thu thập dữ liệu từ câu trả lời bảng hỏi của 64 sinh viên ngành Kinh tế và 5 cuộc phỏng vấn sâu. Bảng hỏi tập trung vào hiệu quả của khóa học hỗ trợ kỹ năng ngôn ngữ cho sinh viên học chuyên ngành bằng tiếng Anh, mức độ cần thiết của 21 kỹ năng học thuật, và sự thay đổi giá trị của các kỹ năng này dưới tác động của trí tuệ nhân tạo. Dữ liệu định lượng được phân tích mô tả, còn dữ liệu định tính được phân tích theo chủ đề. Kết quả cho thấy sinh viên nhìn chung chưa được chuẩn bị đầy đủ ở hầu hết các kỹ năng, đặc biệt là trong đánh giá chất lượng thông tin, phát triển lập luận trong viết học thuật và các kỹ năng phân tích bậc cao. Quan trọng hơn, dù có được sự hỗ trợ từ trí tuệ nhân tạo đối với các kỹ năng ngôn ngữ cơ bản nhưng họ vẫn khẳng định tầm quan trọng lâu dài của các kỹ năng nhận thức bậc cao như: phân tích phản biện, diễn giải dữ liệu và tư duy chuyên ngành. Kết quả nghiên cứu khẳng định rằng thành công trong môi trường học chuyên ngành bằng tiếng Anh phụ thuộc vào năng lực học thuật chuyên ngành. Điều này đòi hỏi các khóa học hỗ trợ cần được tái cấu trúc để tích hợp giảng dạy về cách học trong từng chuyên ngành và năng lực làm chủ trí tuệ nhân tạo một cách có đạo đức.

Từ khóa: giảng dạy chuyên ngành bằng tiếng Anh, đánh giá, kỹ năng học thuật chuyên ngành, trí tuệ nhân tạo

1. Introduction

EMI has emerged as a trend and vital pedagogical approach, particularly in diverse academic disciplines around the world. However, the challenges of implementing EMI remain evident for all stakeholders, particularly the learners (Vu & Burns, 2014; Dang et al., 2023; Ismailov et al., 2021; Lam et al., 2022). Some of the biggest challenges are using technical vocabulary comprehension, grasping lecture content, and sticking to academic style, which are exacerbated when students have limited English proficiency (Aizawa et al., 2025). Such linguistic obstacles often lead to diminished student-teacher interaction, reduced peer discussions, and lower graduation rates within EMI programs (Byun et al., 2011). Despite these

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challenges, the implementation of EMI in universities across Vietnam, especially in Business and Economics programs, is not only a policy but it is also considered crucial for enhancing students' employability in a globalized workforce (Phan et al., 2024). However, according to Galloway and Ruegg (2020), these benefits cannot be guaranteed without empirical research conducted at the micro-level to examine the actual implementation to provide the necessary evidence base to formulate effective EMI planning and policies (Karabay & Durrani, 2024).

In my university's context, there is a mismatch between policy and practice. Theoretically, students are expected to get B2 at the end of the first year, and begin to learn their specialized subjects in English from their second year. However, the reality of how students are prepared for this transition differs. For example, at the University of Economics and Business (UEB), students' language support is largely limited to general English courses and a study skill course taught in Vietnamese. In contrast, at the VNU University of Languages and International Studies (ULIS), apart from general English courses, students receive preparation courses like study skills, academic writing and public speaking. Despite the different start in academic literacy, students encounter substantial difficulties when studying their discipline-specific content in English. The content lecturers also voiced significant concerns about students' language proficiency. However, their responsibility is not supporting students' language but teaching content. The students' low language proficiency, compounded with the lack of language support, may require content teachers to decrease the amount or depth of content covered or even ignore English-only policies to ensure learning takes place (Hu, 2009, Galloway et al., 2020). A critical factor exacerbating this dilemma is the timing and nature of the language support itself. If students enter university with a proficiency level below what is actually required (B2), in-session language courses are unlikely to help them reach the needed level quickly enough to support their first-year studies. In addition, literacy instruction often comes too late because EAP tutors who work separately from the main content courses may not fully understand the timing or nature of the challenges which students face in their specific disciplines (Green, 2023).

In this context, generative AI appears as a remedy to solve students' problem of their proficiency deficit. However, in reality, this rapid growth presents a major challenge: Generative AI can produce content that makes it difficult to tell what is genuinely a student's own work. This raises serious questions about academic integrity and the true meaning of learning and competence.

Current academic literacy frameworks and teaching practices are not well-equipped to handle these new ethical and educational challenges. Therefore, instead of simply banning AI tools, this study aims to rethink academic skills development by integrating critical thinking and ethical reasoning. The goal is to help students use AI responsibly to enhance productivity and efficiency while still maintaining academic honesty and improving academic literacy.

Based on the above rationale, this study focuses on the three following research questions:

- 1. To what extent do current preparatory courses equip students with essential academic skills?*
- 2. What academic skills do economics and business students consider essential for success in EMI programs?*
- 3. How do their perceptions shift in the age of generative AI?*

2. Literature Review

2.1. EMI and Contextual Challenges

Since the early 1990s, EMI has gained popularity as a teaching and learning methodology in higher education settings in non-English speaking contexts. While initial growth was primarily seen in Europe, the past few years have exploded across East and Southeast Asia, including highly competitive education markets such as China, Japan and Vietnam (Hu & Lei, 2014).

Previous studies show increasing concerns related to students' insufficient English proficiency which leads to their difficulties in academic writing, vocabulary comprehension, and understanding lecture content (Shepard & Morrison, 2021). This can impede their learning of subject content and adversely affect overall academic performance. Also, students facing linguistic limitations may have lower engagement with course material and encounter difficulties participating in class discussions. Thus, they may feel excluded from discussions and afraid of asking questions in class (Aizawa et al., 2025). Moreover, students also face the dual challenge of mastering demanding disciplinary content while simultaneously navigating a foreign language (Green, 2023). This requires students to develop both content knowledge and the specific aspects of academic literacy necessary to communicate and apply that knowledge.

Studies related to EMI in Asia, especially in Vietnam, tend to focus on the unique challenges that students face. Particularly in business and economics disciplines, mastering foundational academic literacy in English is the key for students' success (Phan et al., 2024). This requires a sophisticated understanding of academic literacy, far more than just linguistic fluency, to engage with the discipline's specific ways of thinking, doing, and writing. Academic literacy, within this context, therefore, involves the ability to understand and critically interact with complex academic content through analytical thinking and communication skills (Aizawa et al., 2025). To be successful in this environment, students have to go beyond mere basic interpersonal communication skills and demonstrate procedural knowledge, which is "knowing how" to apply concepts through discipline-specific academic tasks (Richards & Pun, 2022).

In this context, the emergence of Generative AI offers both opportunities and serious dilemmas for fostering academic literacy in EMI economics programs (Bannister et al., 2023; Kim et al., 2026). The AI tools, such as ChatGPT, provide instant feedback and dynamic writing support like synthesizing information, suggesting structure and article titles, or generating literature lists. So, it potentially transforms how students acquire linguistic skills and engage with complex linguistic analyses (Zaim et al., 2025).

In short, the specific language-dependent nature of this field justifies more research to ensure that EMI programs effectively prepare students not just in content knowledge. They should equip students with communicative practices required to participate actively in this professional community. It is also vital to ensure that the skills being taught are relevant to the actual procedural demands of their content courses, allowing institutions to better adapt curriculum to the real students' needs and demands (Richards & Pun., 2022).

2.2. Academic Literacy

The term academic literacy or academic literacies has developed over the past 20 years. Traditional approaches often treated literacy as a set of technical, generic, transferable study skills, applicable in most of the tertiary contexts. But the modern model often uses the plural form, known as academic literacies, to signal a specific epistemological and ideological position.

This views literacy through the lens of social and institutional practices (Lea & Street, 2006). From this perspective, academic literacies are best defined as multi-modal communicative practices that students must master to construct and share disciplinary knowledge. Importantly, this definition implies that academic literacy is much more than the use of correct grammar or vocabulary. It refers to being able to engage with a discipline's particular ways of thinking, doing and writing. These include epistemological constructs, knowledge-building competencies and disciplinary rhetorical conventions (Wingate & Hakim, 2022).

Building on the idea that academic literacies change according to context, the concept of disciplinary literacy has gained prominence in recent years. Disciplinary literacy is defined as the specialized knowledge and abilities required to read, reason, and communicate within a specific subject. The adoption of this term reflects the recognition that competency must be tailored to the distinct knowledge and practices within each discipline (Airey, 2011).

An important element of academic literacy or disciplinary literacy, particularly in the context of EMI, is that content and language are inseparable. Thus, disciplinary success requires mastery of not only both Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP), which involves the sophisticated linguistic abilities required for conceptual thought and complex communication (Richards & Pun, 2022).

Disciplinary learning is also characterized by the acquisition of two interdependent forms of knowledge: Declarative knowledge and procedural knowledge (cited in Richards & Pun, 2022).

Declarative knowledge refers to the mastery of disciplinary content itself, including the concepts, theories, and methodologies related to the field. In economics, this would include knowing key concepts like “elasticity” or “GDP”.

Procedural knowledge refers to knowing how to use language in specific ways to communicate and apply that content. It involves the systematic use of discipline-specific academic tasks. In economics, these tasks might include knowing how to construct models, how to analyze government statistics, or how to formulate a research design and detailed reports.

These two forms of knowledge are closely connected. In EMI programs, students need to show what they know by actually doing something with it. For example, understanding economic theory (declarative knowledge) is not enough on its own, but students must also be able to write a critical analysis paper (procedural knowledge) to demonstrate that understanding. In other words, procedural knowledge serves as the tool through which mastery of declarative knowledge is measured (Richards & Pun, 2022).

2.3. Effect of AI on Academic Literacy

The rise of generative artificial intelligence systems has profoundly reshaped the way that students study. It helps to handle many academic tasks traditionally linked to core literacy skills like synthesizing information, suggesting the structure of written content, generating titles or literature lists, and providing assistance with language practice, feedback, and error correction. In this context, some of the biggest concerns are academic integrity and students' lack of critical thinking (Kasneci et al., 2023, Țală et al., 2024). The disruptive nature of AI suggests that academic success is no longer solely about the ability to produce linguistically correct academic texts, but it is more about the capability to interact critically and ethically with AI tools. This shift necessitates the development of a new skill set, often related to AI literacy.

3. Research Methodology

3.1. Research Design

In this study, an explanatory sequential mixed methods design was used because it “involves a two-phase data collection project in which the researcher collects quantitative data in the first phase, analyzes the results, and then uses the results to build the second, qualitative phase”. (Creswell & Creswell, 2018, p. 304). The purpose of the qualitative phase is to help explain or interpret the initial quantitative findings. The study's quantitative phase used a closed questionnaire due to its ease of construction and ability to collect large amounts of data from a representative sample. The quantitative data provided initial insights into overall participants' perception toward the effectiveness of preparation courses in improving a set of skills necessary for their success in EMI courses and this also provided background information to build the semi-structured interview.

3.2. Sampling

This study used purposeful sampling to select participants based on specific criteria and characteristics (Creswell & Creswell, 2018). 64 third-year and fourth-year students from various economics and business majors were chosen in 2 universities. These students were purposively selected to ensure the participants have studied many of their disciplinary subjects in English and had finished preparatory courses like study skill (known as sophomore seminar), public speaking and academic writing (known as college composition). This was vital because these senior students were maximally experienced with the EMI context and as a result provided a comprehensive and mature assessment of the EMI experience.

3.3. Data Collection Tools and Procedures

3.3.1. Quantitative Phase

The core data collection tool for the quantitative phase was a semi-structured questionnaire (*Appendix A*) employing a 5-point Likert scale. This questionnaire was designed based on a document analysis of the formal curricula of students' preparatory courses at two universities. These courses included study skills, public speaking, and academic writing. Specifically, the questionnaire items were developed based on the explicit learning outcome skills listed in the syllabi of these three preparatory courses. The questionnaire was organized into 2 main parts: closed questions and open questions.

The closed questions were designed to directly address the three research questions. The first part was to measure the students' self-reported effectiveness of the preparatory courses in equipping them with specific academic skills. The second one was to measure the students' perception of the necessity of these same academic skills for achieving success in their economics and business EMI programs. The last one was to measure the students' perception of how the necessity of certain academic skills was changing due to the availability of generative AI tools. Each of these three sections included the same list of 21 academic skills, which were identified through a detailed review of all preparatory course syllabi. This ensured that the survey reflected the full intended curriculum of those courses.

The open questions were designed to gain more personal insights into the students' experiences, especially their challenges and expectations in the preparatory courses. Besides, these questions helped to explore how willing and engaged students were in sharing their experiences. This became an important factor in selecting participants for the follow-up interviews.

The execution of the survey involved specific considerations related to language use, validation, pilot testing, and ensuring data reliability. The questionnaire was given entirely in Vietnamese so that students could fully understand the questions without struggling with complex academic terms in English. Before the questionnaire was distributed, it was validated by three instructors who teach the preparatory courses (Study skills, Public speaking, and Academic writing). This expert review ensured that the items accurately reflected the course objectives and the terminology used in the university context.

A pilot test was then attempted via online distribution. However, the results were unsatisfactory because students did not complete the survey seriously. This necessitated a revision of both the survey and the data collection method. The questionnaire was then edited to make any unclear items easier to understand, and a "checking item" was added. For example, item 9 and item 22 were contradictory ones; thus, if a student gave the highest rating to both items, their response was unreliable.

To ensure high-quality data, the questionnaire administration transitioned from an unsupervised online format to a direct, in-class procedure. The researcher personally visited each selected class of third- and fourth-year economics and business students, explained the aim of the survey, provided a brief explanation of key concepts, such as the meaning of "preparatory courses", and emphasized the importance of completing the questionnaire seriously and thoughtfully. After collection, every response was manually checked. All the answers for item 22 and unreliable responses were discarded using two criteria: responses that demonstrated inconsistency, such as those that selected the highest rating for both the contradictory checking items (item 9 and item 22); and responses that were completed in an unrealistically short time (less than 3 minutes). Initially, 70 students were included; however, after the data screening procedure, reliable data from 64 participants remained. The final sample of 64 participants comprised 31 students from ULIS and 34 students from UEB. Regarding year of study, 41 were third-year students and 23 were fourth-year students. All of them are studying Finance and Economics-related majors.

3.3.2. Qualitative Phrase

The qualitative phase used semi-structured interviews to explain and contextualize the quantitative findings (*Appendix B*). While 22 students agreed to participate in follow-up interviews, only five respondents were ultimately selected through purposeful sampling. This small, targeted sample size was chosen to maximize the depth of information collected, aligning with recommendations for intensive qualitative studies. Respondents of a diverse range of academic performance levels were drawn from both universities to ensure insights from both high and low-achieving students in each institution. They also were those who provided detailed and thoughtful answers in the initial questionnaire's open-ended section. This criterion ensured that the interviewees were willing and able to offer rich narratives.

The interviews were conducted from 1 to 3 days after the questionnaire. The language of the interviews was Vietnamese so that the participants could freely share their perceptions, behaviors, and challenges without linguistic constraints, thereby maximizing the depth and quality of the collected data.

3.4. Data Analysis Tool

All statistical analyses from the quantitative phase were conducted using SPSS Statistics 30. To check the reliability of the survey, a Cronbach's alpha test was used to measure the internal consistency of each section in the questionnaire. The overall reliability score was high

($\alpha = .914$), indicating that the items in the survey consistently measured what they were intended to measure. Because the study's aim was to measure and describe students' perceptions, the quantitative analysis was primarily descriptive. Mean scores were calculated to identify patterns in students' perceptions of skill necessity and preparation. This can provide an overview of perceived skill priorities and preparation gaps that could provide foundation for the subsequent qualitative phrase.

The qualitative data from 5 student interviews were analyzed thematically to complement the quantitative survey findings ($n=5$). The interviews focused on perceptions of essential academic skills for EMI in economics programs, particularly in the AI era. Themes were coded based on the study's objectives: (1) skills rated as important, (2) skills insufficiently prepared by the preparation courses, and (3) skills potentially diminishing in importance.

4. Results and Discussion

This section presents the results of the quantitative survey, focusing on the mean scores for three distinct constructs: the perceived effectiveness of preparatory courses, the necessity of specific academic skills, and the perceived change in skill necessity due to generative AI.

Table 1

Mean Scores in Students' Perceptions of Academic Skill Necessity, Course Effectiveness and AI-Resilience (N=64)

Academic Skill	Necessity of skills	Effectiveness of preparation courses	Necessity of skills in AI
1. Searching for relevant information from traditional and electronic sources	4.47	3.77	4.05
2. Evaluating the quality of information from traditional and electronic sources	4.48	3.52	4.41
3. Identifying main arguments in academic texts	4.30	3.55	4.06
4. Developing clear arguments in writing	4.41	3.39	4.25
5. Organizing ideas logically in academic writing	4.30	3.48	4.17
6. Using evidence effectively to support arguments	4.31	3.61	4.19
7. Synthesizing multiple perspectives when writing essays	4.30	3.50	4.23
8. Communicating information effectively through data (tables, figures, statistics)	4.30	3.69	4.30
9. Understanding academic integrity and avoiding plagiarism	4.44	3.88	4.27
10. Citing sources correctly in academic work	4.47	4.08	4.23
11. Using correct grammar in academic writing	4.30	3.39	3.63
12. Using punctuation correctly in academic writing	4.27	3.66	3.47
13. Following conventions of academic writing (capitalization, formatting, etc.)	4.44	4.05	3.88

14. Working effectively in group projects	4.28	4.00	4.27
15. Planning an effective presentation	4.30	3.77	4.14
16. Designing and organizing presentation content logically	4.27	3.80	4.11
17. Responding effectively to audience questions during a presentation	4.08	3.44	4.02
18. Using appropriate vocabulary in academic writing	4.33	3.56	4.06
19. Revising your writing based on given feedback	4.16	3.69	4.21
20. Delivering presentations in English	4.32	3.59	4.05
21. Rephrasing or clarifying ideas when the listener does not understand	4.16	3.47	4.58

4.1. Research Question 1: What Academic Skills Do Economics and Business Students Consider Essential for Success in EMI Programs?

As can be seen in Table 1, Economics and Business students considered a wide range of academic skills highly essential for success in EMI programs, with the mean necessity scores for all listed skills falling between 4.08 and 4.48. Based on the highest mean scores in the "Necessity of skills" column, students prioritized skills related to information literacy, academic integrity, and foundational writing conventions.

The specific skills considered most essential (mean scores ≥ 4.44) included evaluating the quality of information from traditional and electronic sources, which scored the highest mean necessity rating at 4.48, searching for relevant information from traditional and electronic sources (4.47), citing sources correctly in academic work (4.47), understanding academic integrity and avoiding plagiarism (4.44), following conventions of academic writing (4.44). Students also placed high importance on effective argumentation in writing, specifically rating developing clear arguments in writing highly necessary (4.41). Several other writing and presentation skills were also highly valued (mean scores ≥ 4.30).

Based on the open-ended questions and interviews, all the interviewees expressed a strong need for enhanced support in several key areas. These students highlighted challenges with in-depth reading comprehension, critical thinking, effective listening and note-taking, as well as advanced academic and soft skills. Specifically, four in five interviewees felt the necessity to improve their ability to effectively read specialized English materials, such as scientific articles and financial reports. There was a clear demand for learning how to summarize, analyze, and synthesize information from complex documents. Critical thinking was frequently highlighted as an essential skill that lacked sufficient support, and this was supported by all five participants who hoped to develop their capacity to analyze, evaluate problems, and construct sharp arguments. While writing skills received some support, all interviewees sought more in-depth training in writing thesis and complex research reports. These students additionally stressed the importance of financial and quantitative analysis skills such as interpreting financial statements, assessing risk, and using statistical tools and financial software. They also highlighted the need to read and analyze English-language research and market reports, communicate and present financial ideas effectively in English, and develop negotiation, critical thinking, and problem-solving skills specific to financial contexts. These qualitative observations were consistent with the high necessity scores found for understanding academic integrity (4.44).

4.2. Research Question 2: To What Extent Do Current Preparatory Courses Equip Students With Essential Academic Skills?

Table 2

Preparation Gaps and AI-Driven Value Shifts (N=64)

Rank	Academic Skill	Gap 1: Preparation Deficit (a)	Gap 2: AI-Driven Value Shift (b)
1.	Developing clear arguments in writing	1.02	+0.16
2.	Evaluating the quality of information from traditional and electronic sources	0.96	+0.07
3.	Using correct grammar in academic writing	0.91	+0.67
4.	Organizing ideas logically in academic writing	0.82	+0.13
5.	Synthesizing multiple perspectives when writing essays	0.80	+0.07
6.	Using appropriate vocabulary in academic writing	0.77	+0.27
7.	Identifying main arguments in academic texts	0.75	+0.24
8.	Delivering presentations in English	0.73	+0.27
9.	Searching for relevant information from traditional and electronic sources	0.70	+0.42
10.	Using evidence effectively to support arguments	0.70	+0.12
11.	Using punctuation correctly in academic writing	0.61	+0.80
12.	Rephrasing or clarifying ideas when the listener does not understand	0.69	-0.42
13.	Communicating information effectively through data	0.61	0.00
14.	Understanding academic integrity and avoiding plagiarism	0.56	+0.17
15.	Citing sources correctly in academic work	0.39	+0.24

(a) Gap 1 = Necessity of skills - Effectiveness of preparation courses

(b) Gap 2 = Necessity of skills - Necessity of skills in AI

In Table 2, there were ten skills with a gap value of 0.70 or higher, indicating the insufficient preparation provided by current preparatory courses. While students rated the necessity of most academic skills highly (ranging from 4.08 to 4.48), the mean effectiveness scores for the current preparatory courses were generally lower, ranging from 3.39 to 4.08.

The largest gap (1.02) can be found in the skill developing clear arguments in writing, followed closely by the skill evaluating the quality of information from traditional and electronic sources (0.96). Other notably high deficits included using correct grammar (0.91), organizing ideas logically in academic writing (0.82), and synthesizing multiple perspectives (0.80). The concentration of large gaps in writing and critical thinking skills suggests that while foundational language support is provided, higher-order academic literacies remain insufficiently addressed in current preparatory courses.

In the interviews, the interviewed students demonstrated a clear awareness of these gaps and the difficulties they experienced in practice. S2, S3 reported that their only formal preparation prior to entering EMI courses were a general B2 English course and study skill (but this course was taught in Vietnamese), with no explicit training in academic writing, argumentation, or research skills in English. As a result, they felt underprepared for tasks

requiring critical evaluation, argument development, and disciplinary writing. Even the others who learnt all the three preparation courses repeatedly emphasized difficulties in evaluating information quality, developing and articulating arguments, and presenting ideas coherently in English. This qualitative information provided contextual examples of the challenges reflected in the survey results which showed that the preparatory course failed to equip students with the expressive and argumentative skills required for an EMI environment.

4.3. Research Question 3: How Do Students' Perceptions About the Necessary Academic Skills Shift in the Age of Generative AI?

The analysis of Gap 2 in Table 2 revealed how students believe the importance of certain skills is changing due to Generative AI. A clear distinction emerged between two categories of skills.

Several skills traditionally associated with linguistic accuracy were perceived as becoming less important. The most extreme shift was for skill using punctuation correctly (+0.80), followed by using correct grammar (+0.67). This pattern suggests that students recognize AI tools' capacity to handle lower-order mechanical tasks, thereby reducing the need for human mastery of these conventions. Searching for relevant information (+0.42) also showed a notable decline in perceived importance, likely reflecting students' reliance on AI for quick information retrieval.

In contrast, skills involving critical judgment, specialized communication, and human interaction maintained or even increased in perceived importance. These skills were evaluating the quality of information from various sources (+0.07), communicating information effectively through data (0.00), understanding academic integrity and avoiding plagiarism (+0.17), citing sources correctly in academic work (+0.24). The most striking figure is clarifying ideas when a listener did not understand (-0.42), which suggested that the distinctly human capacity for adaptive, real-time communication, especially in clarifying meaning during interpersonal interaction, is perceived as more valuable in an AI-driven academic environment.

The interview data provided additional illustrative insights into how some students interpreted the role of generative AI in their academic work. Mechanical writing and information searching were described by all five interviewees as tasks that could now be performed more easily with the help of AI tools, particularly ChatGPT or Gemini. Furthermore, AI could help ensure they "don't make grammatical errors or punctuation errors," (S2) so they did not need to care much about basic language knowledge like this. However, participants consistently emphasized the continued importance of higher-order skills like critical evaluation and analytical skills. Two students explicitly stated that the skill which AI cannot replace humans was "analysis", specifically, analyzing data, information, problem-solving, and financial reports; and this was also the "most difficult" skill for them (S1, S4). These students also expressed concerns that AI-generated analyses may be overly general or based on sources that are not always reliable. As a result, they reported the need to double-check information. Interviewees also reported that due to concerns about plagiarism, they typically use AI only for preliminary suggestions and then revise the content themselves. This process still requires them to apply critical evaluation, self-editing, and academic writing skills. In this sense, students viewed AI not as a replacement for human academic competence but rather as a supplementary tool that supports certain surface-level tasks.

In summary, the results of this mixed-methods study revealed three core findings regarding academic skills in the EMI environment for economics and business students. First, these surveyed students perceived a broad set of academic skills as highly essential for success

in EMI programs, with particular emphasis on information literacy, academic integrity, critical evaluation, and advanced writing and argumentation skills. Second, current preparatory courses were perceived as insufficient in equipping students with these highly valued skills, especially in areas that require higher-order thinking and academic expression, such as evaluating information quality, developing coherent arguments, and articulating ideas in discipline-specific academic English. Third, in the age of generative AI, the importance of critical analysis, data interpretation, academic integrity, and adaptive communication remained stable or even increased. Students did not view AI as a replacement for human academic competence but rather as a supplementary tool, particularly for surface-level language support and initial information gathering. These findings highlighted an urgent need to redesign preparatory courses to better address gaps in higher-order academic literacies.

4.4. Discussion

This result aligns with some previous research which show that success in abstract disciplines like Economics requires not only BICS but also CALP mastery (Richards & Pun, 2022). In this research, they also agree that disciplinary learning depends on the mastery of procedural knowledge, defined as "knowing how to do things" in the discipline, and declarative knowledge, known as "knowing about things". This procedural competence is developed and demonstrated by successfully completing academic tasks such as analyzing government statistics or formulating an economic report which serve as the core functional mechanisms for learning and applying disciplinary concepts.

Generative AI can effectively address foundational linguistic and mechanical aspects of academic work, such as grammar or textual coherence, thereby help students overcome many difficulties traditionally associated with basic language production. However, this fundamentally reshapes the core academic challenge, placing greater demands on students' higher-order critical thinking and evaluative skills. As a result, learners must assume responsibility for ensuring disciplinary accuracy, rhetorical appropriateness, and theoretical coherence when incorporating AI-generated content, particularly given that such outputs may be inaccurate or contextually unsuitable (Țală et al., 2024). This finding aligns with broader discussions in the educational AI literature. Kasneci et al. (2023), for instance, argue that while large language models can assist with language-related tasks and content generation, their effective use in education depends on students already having strong critical thinking and fact-checking skills. These insights suggest that EMI preparatory programs should prioritize higher-order academic literacies that help students to critically evaluate and ethically integrate AI-generated content within disciplinary learning.

5. Conclusion

The significant preparedness deficit identified in this study illustrates an urgent need to rethink current teaching approaches in preparation courses in EMI programs. It confirms that success in EMI economics programs requires not only general academic English but also a deeper kind of disciplinary literacy. The large gaps found in procedural skills such as citing correctly, utilizing specialized vocabulary, and demonstrating argumentation capacity validate the finding that current preparatory courses fail to adequately address the specific demands of economics discourse because they neglect the "language of learning" and the "language for learning" required for analysis and evaluation. This misalignment supports the core principle that "one cannot teach or learn content without teaching and learning language" (Richards & Pun, 2022).

This study has several limitations that should be acknowledged. First, the quantitative sample was relatively small and drawn from two universities, which may limit the generalizability of the findings to other EMI contexts or disciplinary settings. Second, the qualitative component involved only five interview participants. Although this allowed for in-depth exploration of individual experiences, the views expressed cannot be considered fully representative of all students in EMI programs. Thirdly, the study relies primarily on students' self-reported perceptions which may be influenced by subjective bias or individual learning experiences. Therefore, this may not always reflect actual skill proficiency. Finally, the quantitative analysis which relied primarily on descriptive statistics to identify trends in students' perceptions can limit claims about the significance of observed gaps.

Future research with larger samples, multiple institutions, and inferential statistical analyses could provide a more comprehensive understanding of academic skill development in EMI environments. It is also recommended to develop a rigorous disciplinary literacy framework specifically tailored to EMI Economics. This framework should combine the teaching of procedural and declarative knowledge while integrating explicit instruction on specialized genres, data analysis, and the critical evaluation skills needed for responsible use of Generative AI tools. Thanks to that framework, preparation courses can be designed to emphasize discipline-specific scaffolding that supports students in handling tasks involving complex multimodal synthesis, such as interpreting graphs, data, and economic models. Such scaffolding is expected to help students think independently and apply disciplinary reasoning to be successful in their disciplinary study.

References

- Airey, J. (2011). The disciplinary literacy discussion matrix: A heuristic tool for initiating collaboration in higher education. *Across the Disciplines*, 8(3), 1-9. <https://doi.org/10.37514/ATD-J.2011.8.3.18>
- Aizawa, I., Rose, H., Thompson, G., & McKinley, J. (2025). Content knowledge attainment in English medium instruction: Does academic English literacy matter? *Language Teaching Research*. <https://doi.org/10.1177/13621688241304051>
- Bannister, P., Urbieto, A. S., & Peñalver, E. A. (2023). A systematic review of generative AI and English-medium-instruction higher education. *Aula Abierta*, 52(4), 401-409. <https://doi.org/10.17811/rific.52.4.2023.401-409>
- Byun, K., Chu, H., Kim, M., Park, I., Kim, S., & Jung, J. (2011). English-medium teaching in Korean higher education: Policy debates and reality. *Higher Education*, 62(4), 431-449. <https://doi.org/10.1007/s10734-010-9397-4>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE.
- Dang, T. K. A., Bonar, G., & Yao, J. (2023). Professional learning for educators teaching in English-medium-instruction in higher education: a systematic review. *Teaching in Higher Education*, 28(4), 840-858. <https://doi.org/10.1080/13562517.2020.1863350>
- Galloway, N., & Ruegg, R. (2020). The provision of student support on English Medium Instruction programmes in Japan and China. *Journal of English for Academic Purposes*, 45, Article 100846. <https://doi.org/10.1016/j.jeap.2020.100846>
- Green, S. (2023). Rethinking the scaffolding of academic literacies in EMI higher education on the Arabian Peninsula. In M. Wyatt & G. El Gamal (Eds.), *English as a medium of instruction on the Arabian Peninsula* (pp. 168-184). Routledge. <https://doi.org/10.4324/9781003183594>
- Hu, G. (2009). The craze for English-medium education in China: Driving forces and looming consequences. *English Today*, 25(4), 47-54. <https://doi.org/10.1017/S0266078409990472>
- Hu, G., & Lei, J. (2014). English Medium Instruction in Chinese higher education: A case study. *Higher Education*, 67(5), 551-567. <https://doi.org/10.1007/s10734-013-9661-5>

- Ismailov, M., Chiu, T. K., Dearden, J., Yamamoto, Y., & Djalilova, N. (2021). Challenges to internationalisation of university programmes: A systematic thematic synthesis of qualitative research on learner-centred English-medium-instruction pedagogy. *Sustainability*, 13(22), Article 12642. <https://doi.org/10.3390/su132212642>
- Karabay, A., & Durrani, N. (2024). The evolution of English-medium-instruction research in higher education: A bibliometric study. *Education Sciences*, 14(9), Article 982. <https://doi.org/10.3390/educsci14090982>
- Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T.,... Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, Article 102274. <https://doi.org/10.1016/j.lindif.2023.102274>
- Kim, J., Lee, S. S., Detrick, R., Wang, J., & Li, N. (2026). Students–Generative AI interaction patterns and its impact on academic writing. *Journal of Computing in Higher Education*, 38, 504-525. <https://doi.org/10.1007/s12528-025-09444-6>
- Lam, Q. D., Pham, T. N. L., & Nguyen, T. T. (2022). EMI for engineering-technology students in Vietnam: Challenges and suggestions. *VNU Journal of Foreign Studies*, 38(5), 53-74. <https://doi.org/10.25073/2525-2445/vnufs.4869>
- Lea, M. R., & Street, B. V. (2006). The "academic literacies" model: Theory and applications. *Theory Into practice*, 45(4), 368-377. https://doi.org/10.1207/s15430421tip4504_11
- Phan, L. T. H., Nguyen, T. B. D., & Phung, T. D. (2024). English-medium-instruction in Vietnamese universities: Pitfalls, accomplishments, and impact on graduate employability. In T. L. H. Nghia, L. T. Tran, & M. T. Ngo (Eds.), *English language education for graduate employability in Vietnam* (pp. 283-303). Springer. https://doi.org/10.1007/978-981-99-4338-8_13
- Richards, J. C., & Pun, J. (2022). The nature of learning in the disciplines. In J. Pun & J. C. Richards (Eds.), *Teaching and learning in English medium instruction* (pp. 73–92). Routledge. <https://doi.org/10.4324/9781003191445-7>
- Shepard, C., & Morrison, B. (2021). Challenges of English-medium higher education: The first-year experience in Hong Kong revisited a decade later. In *Language use in English-medium instruction at university* (pp. 167-192). Routledge. <https://doi.org/10.4324/9781003134534-9>
- Țală, M. L., Müller, C. N., Năstase, I. A., & Gheorghe, G. (2024). Exploring university students' perceptions of generative artificial intelligence in education. *Amfiteatru Economic*, 26(65), 71–88. <https://doi.org/10.24818/EA/2024/65/71>
- Vu, T. T. N., & Burns, A. (2014). English as a medium of instruction: Challenges for Vietnamese tertiary lecturers. *Journal of Asia TEFL*, 11(3), 1–31. <https://researchers.mq.edu.au/en/publications/english-as-a-medium-of-instruction-challenges-for-vietnamese-tert/>
- Wingate, U., & Hakim, A. (2022). Moving beyond ‘infancy’: Towards a cross-fertilization between EMI and EAP scholarship. *ELT Journal*, 76(4), 529-537. <https://doi.org/10.1093/elt/ccac032>
- Zaim, M., Arsyad, S., Waluyo, B., Ardi, H., Hafizh, M. A., Zakiyah, M., Syafitri, W., Nusi, A., & Hardiah, M. (2025). Generative AI as a cognitive co-pilot in English language learning in higher education. *Education Sciences*, 15(6), Article 686. <https://doi.org/10.3390/educsci15060686>

APPENDIX

Please scan the QR code to access the questionnaire and interview protocol

