A Systematic Review of English Medium Instruction in East Asia: Challenges and Implications

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Article information	Abstract
	English has been formally adopted by many East Asian universities as the dominant language in higher education to foster quality education. An increasing number of universities are now providing English Medium Instruction (EMI) programs to undergraduate and postgraduate students in a diverse array of disciplines, ranging from the humanities to the sciences. However, research has consistently shown that EMI poses significant challenges for teachers and students in achieving instructional goals due to limitations in English proficiency, especially in meeting the demands of EMI. Although much literature has been published on English language-related challenges in EMI, very little is known about these issues and their negative impacts holistically in East Asia. This systematic review offers a comprehensive understanding of the challenges associated with EMI implementation in higher education across East Asian countries. Based on empirical evidence from scholarly articles published between 2012 and 2024, this review confirms that English language proficiency continues to pose significant challenges for teachers and students despite the wealth of advanced research on EMI over the past twelve years. Unexpectedly, practical solutions remain insufficient in many contexts. This review serves as a wake-up call for EMI stakeholders (e.g., policymakers, teachers, and students) to reconsider their management and practices. Further research is needed to investigate practical solutions that address these issues and help teachers and students achieve EMI implementation goals smoothly.

INTRODUCTION

English has become a global phenomenon, spreading widely worldwide (Dearden, 2014; Galloway & Ruegg, 2022; Macaro et al., 2018). Numerous countries have adopted English as their official language, using it as a preferred medium for economic and political governance (Crystal, 2012). Over the past several years, English has played a significant role in East Asia's rapidly expanding economy (Kirkpatrick, 2017). In other words, English is linked to economic

success. Many countries encourage students to study abroad in the U.S., U.K., Canada, Australia, and New Zealand. Upon returning to their homelands with international degrees, these students are often associated with the elite class of employees. English is also linked to academic success in East Asian countries. The rise of English in East Asia dates back to the late 20th century when globalization accelerated, and concerns about national competitiveness grew in the region (Lin, 2014). Consequently, adopting English as the lingua franca in globalized higher education is considered the most crucial trend in internationalizing higher education (Chapple, 2015).

In the early 21st century, English was widely adopted as a medium of instruction in university settings for teaching academic content (Macaro, 2018). In this context, English Medium Instruction (EMI) refers to "the use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions in which the majority of the population's first language is not English" (Macaro, 2022, p. 534). In simpler terms, EMI occurs in places where English is not the native language. Nevertheless, instruction focuses not on English but academic subjects such as medicine, physics, biology, economics, and fine arts. The reasons for this adoption vary by context, as proficiency in English is perceived as essential for enhancing the quality of education in the region (Tang, 2020) and internationalizing higher education institutions (Knight, 2013), allowing them to be more competitive. As a result, English-only instruction policies were widely implemented in East Asian countries to facilitate a shift in the medium of instruction, curricula, environments, teachers, and resources.

However, in doing so, East Asian countries encountered challenges with maintaining the quality and effectiveness of EMI due to issues such as the language proficiency of students and the inadequacy of EMI teacher education (Lin, 2014). To clarify, EMI teachers faced numerous challenges, including difficulties that arose from teachers' English pronunciation, intonation, accent, or dialect, which in turn made it challenging for students to understand them. Students often experienced anxiety and lack confidence when required to speak English, particularly in courses conducted entirely in English or involving international students. To date, these factors indicate that the support for EMI implementation may not be optimized for students and teachers.

This systematic review examines broader and deeper English language-related and language-oriented pedagogical challenges in EMI across East Asian countries and the jurisdictions of China, Hong Kong, Japan, Macau, Mongolia, South Korea, and Taiwan. It also analyzes the negative impacts of these challenges and explores potential solutions within each context, aiming for coordinated institutional and national efforts to enhance EMI implementation.

LITERATURE REVIEW

The bright side of EMI in East Asia

At the managerial level, EMI implementation is steadily enhancing incomes, reputations, and university rankings. Thus, faculty-hiring decisions are based on their ability to teach in English.

Newly hired faculty are frequently required to teach at least some of their academic classes in English, and many students are required to take at least some EMI classes to graduate (Galloway et al., 2020). At the classroom level, EMI is believed to boost students' confidence in comprehending and communicating in English (Arik & Arik, 2018).

Additionally, EMI fosters a greater inclination to engage with peers. Students motivated by EMI tend to demonstrate increased participation in their studies and make greater cognitive progress (Chen et al., 2020; Guo et al., 2018). Many institutions mention EMI's language-learning benefits, implying an "expectation that English language proficiency will improve in tandem with subject discipline expertise" (Rose & Galloway, 2019, p. 195). Language abilities are frequently assumed to improve as a side effect of learning English content (Taguchi, 2014). For example, to enhance English proficiency, numerous South Korean universities have broadened their EMI offerings. With EMI in subject area classes, students not only grasp the subjects but also acquire proficiency in the English language. Consequently, employing English as a secondary language for communicative purposes within EMI settings aids in stimulating and encouraging students to enhance their English proficiency (Kim, 2002; Kirkgöz, 2005; Witty, 2008).

Stakeholders in the education sector generally support EMI, acknowledging its potential benefits for students and educational institutions (Bradford, 2016; Fenton-Smith et al., 2017). For instance, prolonged exposure to English helps students enhance their language proficiency and develop the professional skills needed for their future careers (Qiu & Fang, 2019). EMI is also adopted as a pedagogical strategy to improve students' English proficiency efficiently without overly burdening their time and energy.

To advance higher education standards, EMI serves as a curricular strategy to internationalize tertiary institutions and enhance the quality of higher education (Peng & Xie, 2021). The Ministry of Education in China has even integrated EMI as one of the foundational strategies to enhance the quality of undergraduate education. Universities throughout China have enthusiastically embraced EMI to elevate Chinese higher education to international levels and bolster China's global competitiveness (Hu & McKay, 2012). Furthermore, these institutions perceive the adoption of EMI as a way to bolster program credibility, elevate national and global rankings, attract more students, and enhance their graduates' competitiveness in the job market (Hu, 2007). With the push for the internationalization of higher education, Macau's tertiary institutions have also adopted English as the primary medium of instruction to bolster their competitiveness and attract students from Mainland China (Zhang, 2020). In Mongolia, national and private institutions now offer over 385 EMI courses. Mongolia International University has offered degree programs entirely in English since 2002, while the Royal International University introduced English-language business degree programs back in 2010. At the graduate level, leading public and private universities provide joint and dual degree programs, typically Master's degrees, conducted in English (Sainbayar, 2019). South Korea, on the other hand, has promoted over 9,000 EMI programs (Byun et al., 2010), while Taiwan has offered complete EMI-based degree programs for 92 universities (Yang, 2014).

These perceived benefits are shared by stakeholders in many educational contexts. Many institutions aggressively implement EMI without empirical evidence to support the claims as mentioned earlier. This practice could potentially backfire if there is no monitoring of EMI implementation from policy to practice. The most cost-effective way to proceed is to study the effects of EMI implementation across various contexts and learn from them.

Critical concerns over EMI implementation

Implementing EMI programs at the university level globally poses numerous challenges. While EMI programs are not inherently focused on language acquisition, they are often associated with improving students' English proficiency. Consequently, enhanced language acquisition is often seen as a measure of success for EMI programs. The question of whether the medium of instruction through English is universally successful remains unproven, prompting many scholars to investigate further. Beyond that, Galloway and Sahan (2021) have highlighted various language-related challenges students face, including difficulties comprehending their teachers' English and issues with spontaneous speech. EMI was also reported to reduce the ability to understand concepts of the content; students tend to feel overwhelmed or separated from the class, and it leads to lower levels of participation due to low-level English proficiency (Cankaya, 2017). Bassturkmen (2018) stated that in disciplinary studies through English, students need to acquire discipline-specific terminology and must know at least 10,000 English words to understand the reading material. Unsurprisingly, students with insufficient vocabulary tend to be left behind, unable to catch up with the content.

Other challenges include understanding lengthy lectures, managing extensive reading assignments, and mastering discipline-specific academic vocabulary. Despite efforts in EMI policies to provide opportunities for non-native local students to use English alongside learning their subject areas in the classroom, previous studies (Aizawa & Rose, 2019; Bassturkmen, 2018) do not consistently report positive learning outcomes. EMI has frequently been criticized for potentially hindering students' acquisition of subject knowledge, with insufficient evidence supporting improvements in English proficiency (Çankaya, 2017; Coşgun & Hasırcı, 2017; Dafouz & Camacho-Minano, 2016; Tran et al., 2021).

EMI teachers also encounter significant challenges in teaching academic content in English. Multiple studies (Deaden, 2014; Sameephet, 2020; Vu & Burns, 2014) have highlighted that English proficiency poses difficulties for content teachers, who struggle to effectively convey subject knowledge to students in English (Tang, 2020). Teaching specific disciplines requires more effort to meet EMI standards. Consequently, these language-related challenges can lead to pedagogical issues. For instance, a study by Alhassan (2021) underscored critical aspects in terms of language proficiency and pedagogical challenges. Participants in the study, including teachers, expressed that insufficient language skills negatively affected their confidence in teaching EMI classes, resulting in feelings of discomfort and reduced efficacy compared to teaching in their native language. Furthermore, Aizawa and Rose (2019) conducted a study in Japan revealing that EMI teachers faced language-related obstacles that hindered students' understanding of lecture content and overall academic performance in the EMI program. These findings suggest that these challenges could undermine the perceived success of EMI programs in higher education.

EMI can adversely affect both students and teachers, whether through language barriers or pedagogical issues. These challenges need to be overcome to achieve success. This systematic review offers context analyses and an overview of the challenges that occur in East Asian contexts so that key stakeholders can use this information to improve the situation.

RESEARCH METHODS

Scope and data collection

The primary aim of this study was to compile, analyze, and synthesize empirical evidence on EMI in East Asian universities to address the central question: Given that the literature reveals English language-related challenges encountered by both students and teachers in EMI classes, what effects do these challenges have on both groups?

The researchers in this study employed three main processes to conduct this systematic review: data collection, criteria establishment, and data analysis. For data collection, researchers began with a literature search using keywords such as "English medium instruction in East Asia," "issues and challenges of EMI in higher education," "language proficiency," and "pedagogy management." The researchers also focused on scholarly research articles published from 2012 to 2024. The databases included the Khon Kaen University digital library and Google Scholar, which provide access to scholarly research articles published in Scopus-indexed journals.

Inclusion and exclusion criteria

The study included only articles that focused on EMI in East Asian universities, English language-related challenges in EMI implementation, and language-oriented pedagogical challenges within this context. Comparative articles were included as well, but only findings relevant to the study contexts were considered.

The researchers excluded research articles that focused on EMI outside of East Asia and higher education contexts, English for Specific Purposes (ESP), English for Academic Purposes (EAP), Content and Language Integrated Learning (CLIL), and policy documents and document analysis. The researchers also excluded articles that were not fully accessible, not yet published, duplicates of other papers, articles that were without primary data, and articles that were also systematic reviews.

Next, the researchers followed a five-step sequential approach in article selection: (1) keyword selection, (2) screening of titles, (3) review of abstracts, (4) examination of full-text articles, and (5) comprehensive data extraction. Initially, the keyword search yielded 50,982 studies. Inclusion and exclusion criteria were utilized for automatic screening in the advanced search boxes. Subsequently, the abstracts were thoroughly screened. To ensure relevance to the research questions, each selected research article was carefully reviewed to locate relevant data for analysis and synthesis. Ultimately, the number of articles was significantly reduced to 52 studies in this systematic review.

An overview of reviewed sources

After thorough screening, 52 scholarly research articles were identified in which their contexts and participants (i.e., teachers and students) were based in East Asian universities. These articles primarily focused on relevant challenges. The tables below provide fundamental information about the reviewed sources.

Table 1
Selected scholarly research articles from East Asian contexts

Education Phase	Geographical Region	Countries/Jurisdictions	Total
Higher Education	East Asia	China	8
		Hong Kong	7
		Japan	12
		Macau	3
		Mongolia	5
		South Korea	6
		Taiwan	11
		Total	**52**

All selected sources were derived from various research contexts across East Asia. Eight were from China, and seven were from Hong Kong. The majority (twelve of them) were from Japan. The fewest, numbering only three, were from Macau. The researchers also managed to identify five research articles from Mongolia, six from South Korea, and eleven from Taiwan, all related to EMI implementation.

The following table provides an overview of the research methods employed in the 52 scholarly research articles.

Table 2
Research methods used across reviewed sources

Countries/Jurisdictions	Quantitative	Qualitative	Mixed	Total
China		3	5	8
Hong Kong	1	3	3	7
Japan	3	2	7	12
Macau		3		3
Mongolia	2	1	1	4
South Korea	1	1	5	7
Taiwan	2	5	4	11
Total	**9**	**18**	**25**	**52**

The research methods employed in the 52 reviewed sources consist of the following: 25 mixed-methods approaches, 18 qualitative methods, and 9 quantitative methods. An analysis of the reviewed sources revealed nine major themes concerning English language-related issues and language-oriented pedagogical challenges. Across 52 data sources, the researchers found 80 occurrences among the nine themes, as one research article could focus on multiple areas or themes.

Table 3
Overview of themes emerged from EMI teachers' and students' perspectives

Countries/Jurisdictions	Teacher/Student Support Needed	Experiences/Attitudes/Beliefs	Language Improvement	Pedagogical Strategies/Practices	Linguistic Challenges	Policy	Motivation	Assignment	Managing Classroom Challenges	Total
China	2	2	2	2	1		1			10
Hong Kong	4	2		4	3			1		14
Japan	4	9		2	6	1	3	1	2	28
Macau			1	1		1				3
Mongolia	2			1		1				4
South Korea	1	3		2		2				8
Taiwan	3	4		2	3		1			13
Total	**16**	**20**	**3**	**14**	**13**	**5**	**5**	**2**	**2**	**80**

Across the reviewed sources, the most frequently occurring themes concerned EMI teachers' and students' experiences, attitudes, and beliefs. The second most prevalent theme was the support needs of teachers and students. Language-focused pedagogical challenges and linguistic (i.e., English-language-related) challenges were the third and fourth most common themes. By contrast, assignment-related and classroom-management challenges were mentioned least frequently.

The nine themes were split into two data sets: one from EMI students' perspectives and another from EMI teachers' perspectives. The following presents all nine themes and their occurrences from the perspectives of EMI students.

Table 4
Themes and their statistics emerged from EMI students' perspectives

Countries/Jurisdictions	Student Support Needed	Experiences/Attitudes/Beliefs	Language/Content Improvement	Pedagogical Strategies/Practices	Linguistic Challenges	Policy	Motivation	Assignment	Managing Classroom Challenges	Total
China		1	2				1			4
Hong Kong	3	2		3	2			1		11
Japan		8		1	5		2		1	17
Macau			1	1						2
Mongolia	1			1						2
South Korea	1	2		2						5
Taiwan		4		1	3		1			9
Total	**5**	**17**	**3**	**9**	**10**	**0**	**4**	**1**	**1**	**50**

The predominant theme associated with challenges among students learning academic content in English in East Asia was derived from their experiences, attitudes, and beliefs (n = 17). These challenges were retold through their self-reflections and narratives. Minor themes include linguistic challenges (n = 10), pedagogical strategies/practices (n = 9), and the need for student support (n = 5). Additionally, challenges related to motivation (n = 4), language and content improvement (n = 3), and managing classroom issues (n = 1) appear to be less prominent from the students' perspectives. There is no significant evidence that students mentioned any challenges concerning policy.

The second set of data presents all nine themes and their occurrences from the viewpoints of EMI teachers.

Table 5
Themes and their statistics emerged from EMI teachers' perspectives

Countries/Jurisdictions	Teacher Support Needed	Experiences/Attitudes/Beliefs	Language/Content Improvement	Pedagogical Strategies/Practices	Linguistic Challenges	Policy	Motivation	Assignment	Managing Classroom Challenges	Total
China	2	1		2	1					6
Hong Kong	1			1	1					3
Japan	4	1		1	1	1	1	1	1	11
Macau						1				1
Mongolia	1					1				2
South Korea		1				2				3
Taiwan	3			1						4
Total	**11**	**3**	**0**	**5**	**3**	**5**	**1**	**1**	**1**	**30**

The primary challenge for EMI teachers in East Asian universities appears to be the need for support (n = 11), followed by issues such as unsupported policies (n = 5) and problems with pedagogical strategies or practices (n = 5). Other challenges that pose difficulties for EMI teachers in East Asia but to a lesser degree include experiences, attitudes, and beliefs (n = 3), linguistic challenges (n = 3), motivation (n = 1), assignment (n = 1), and managing classroom issues (n = 1). Finally, there were no indications that EMI teachers mentioned challenges related to the interplay of language and content improvement.

Within EMI communities, it is widely acknowledged that the implementation of EMI is accompanied by both linguistic challenges and language-oriented pedagogical challenges. Tables 3–5 therefore present thematic examples of these challenges. This review critically examines their effects on students and teachers. However, the available evidence is considerably richer for students than for teachers; that is to say, the findings primarily emphasize student-related challenges.

FINDINGS

Occurrence of anxiety and affective barriers

Language-related challenges are a significant and ongoing issue faced by Asian students, and EMI further creates anxiety and emotional barriers. Students feel considerable anxiety when required to speak, ask, or answer questions in English. This anxiety is rooted in fears of negative evaluation and social comparison, making students reluctant to participate and diminishing their interest in enrolling in EMI courses. These pressures are compounded for those with lower levels of English proficiency, which has a direct impact on their academic performance. In China, Zhang and Pladevall-Balleste (2023) measured students' anxiety levels using pre-tests and post-tests over one semester in three disciplines: International Trade, Film Production, and Project Management. Their findings showed that learning anxiety among students in EMI classrooms was high at both the beginning and end of the semester, although there was a decreasing trend over time. As Lei and Hu (2014) demonstrated, higher anxiety levels in EMI classes are closely tied to lower English proficiency, while Lin and Lei (2021) found that students' GPAs were strongly linked to their ability to learn academic content in English. In essence, students who struggle more with the language also struggle more with academic achievement.

Even in settings where students are expected to possess strong English skills, such as among health sciences undergraduates in Hong Kong, language barriers persist. Despite rigorous admission standards that require high English proficiency, these students continue to encounter substantial challenges—especially in specialized, content-heavy subjects. Pun and Onder-Ozdemir (2023) highlighted the struggles of veterinary medical students, who, although accustomed to using English, found it difficult to communicate and express abstract or scientific ideas with clarity. Many lacked confidences when studying complex subjects in English.

Receptive and productive language skills presented further obstacles. Asian students reported difficulty understanding technical vocabulary, comprehending and applying acquired knowledge, and making sense of academic articles written in English. Writing was also a significant source of concern, with students expressing little confidence in their ability to convey ideas effectively in English, particularly when it came to using specialized vocabulary and structuring text according to academic conventions. They were often uncertain about appropriate word choice, tense usage—especially in reporting results—and how to write across different genres.

Kao (2024) confirmed that anxiety and the lack of confidence in speaking English are widespread among university students, although those in partial EMI environments were more likely to proactively practice and employ strategies to enhance their language abilities. Similar challenges have been observed in Taiwan, where the fear of speaking English—especially due to pronunciation concerns or the possibility of misunderstanding—remains prevalent. Around 20% of surveyed students admitted to fearing speaking in English, and 22% were anxious about not understanding others or being misunderstood themselves. Many attributed their struggles to inadequate preparation. Prior studies (Chien & Valcke, 2020;

Soruc & Griffiths, 2018) support the finding that lack of confidence and pronounced anxiety deter students from participating in EMI classes, especially in the presence of native English speakers or more fluent peers. Students expressed worries about being judged for their language abilities or making pronunciation errors, highlighting the strong link between language proficiency, performance anxiety, and academic engagement.

Similarly, teachers also encounter language-related obstacles stemming from inadequate English proficiency. This pattern is substantiated by Aizawa et al. (2023) and Alhassan (2021), who both highlighted English proficiency as a key predictor of teacher effectiveness in EMI programs in Japan. Alhassan (2021) revealed that insufficient proficiency often leads to feelings of embarrassment and a reluctance to teach in English, underlining insufficient language skills as a central factor adversely affecting the success of EMI initiatives. A similar situation is seen in many universities across East Asia. In Mongolia, for example, Gundsambuu (2022) reported that native English-speaking teachers questioned the English proficiency of their Asian colleagues, who, despite being graduates of Western universities, were non-native speakers and had never taught in English. As a result, these colleagues struggled with pronunciation during their first semester, leading to increased anxiety and a decline in affective engagement among EMI teachers.

Students, in turn, report difficulties understanding their teachers' pronunciation, intonation, accents, or dialects, further complicating comprehension, especially in linguistically diverse classrooms that include overseas students. In the context of South Korea, Reyes (2023) examined the experiences of 135 nursing students in EMI settings. His survey revealed that while 53% of students felt their instructors were aware when comprehension problems occurred, only 36% believed that they could communicate effectively with their teachers. This discrepancy highlights a gap between teacher recognition of student difficulties and the practical ability to facilitate meaningful, two-way communication in the classroom. This aligns with Chang (2010), who emphasized how accent variation frequently impedes international classroom communication, particularly when English is adopted as a lingua franca.

Drop in academic content learning and academic performance

EMI has presented considerable challenges for students' academic content learning and overall performance. Evidence from varied contexts reveals that insufficient English proficiency has become a critical barrier to success in EMI programs. This situation is well illustrated in Chapple's (2015) work, which notes the wide distribution of language abilities among students as a key factor affecting EMI outcomes. A focused look at social science undergraduates in Japan further illustrates the struggle. Hadingham's (2023) study followed forty first-year Japanese-speaking students—each with six years of prior English instruction—who found themselves grappling with academic writing. They struggled not only with mastering specialized vocabulary and writing in an academic style, but also with producing well-structured writing at the required standards. Many students lacked experience with such writing, as the demands of university-level assignments far surpassed those encountered in high school. In this setting, the absence of a transitional period made the move into intensive EMI coursework even more abrupt, forcing students to independently adapt to higher expectations with little targeted

support. This is true indeed, considering that academic writing emerges repeatedly as a major stumbling block for students across contexts (Aizawa & Rose, 2020; Kamasak et al., 2021; Shepard & Morrison, 2021).

The negative impact of EMI on content mastery is echoed in Macau as well. Wang and Yu's (2023) research at a local university underscores just how pervasive these issues can be. More than half of the participants reported that EMI detracted from their ability to understand academic material across general education and disciplinary courses. Students frequently missed key points in lectures due to limited listening comprehension and struggled to retain knowledge, both in the short- and long-term. Many expressed that if classes were conducted in Chinese, they would perform better and retain more information; learning in English, by contrast, led to more superficial and quickly forgotten knowledge. Some students described their understanding as vague, while those with the most serious difficulties could scarcely follow lectures, even when teachers provided extra explanations.

This confusion sometimes led students to believe they understood, when in reality, their comprehension was shaky, resulting in guesswork and the facade of understanding. Such challenges undermine students' opportunities for deep or higher-order learning, as they spend much of their cognitive effort attempting to grasp basic content, unable to move towards deeper analysis or synthesis. Tien's (2023) comprehensive study across departments within an international college provides additional insight. Among 86 university students surveyed, the majority struggled with vocabulary, speaking, listening, and identifying technical terms in particular as a major obstacle—where 70% of them found such vocabulary difficult in textbooks or lectures. Chapple's (2014) study revealed that 34% of the students failed to complete their EMI courses and either gave up or officially withdrew. The possible explanation is that students had significant gaps between their language abilities and the linguistic requirements in terms of productive and receptive skills needed to understand and produce learning outcomes.

Based on classroom observations in EMI settings, teachers noticed a decline in students' academic content learning and performance when classes were conducted exclusively in English. In their 2024 study, Sultana and Fang found that teachers employed mother-tongue-based translanguaging to support students' comprehension. Interestingly, the teachers reported that this approach was more effective than using English alone. Hence, the central consideration when choosing which language to use should be whether it meets the learning needs of most students and leads to favorable educational outcomes. Teachers should consider adapting their language choices according to their students' needs and performance. If using the mother tongue helps students comprehend the material better, then there is no reason to avoid it.

DISCUSSIONS AND IMPLICATIONS

One of the main challenges of EMI lies in the high demands it places on students' English proficiency. Students are expected to possess adequate language skills not only to understand the academic content presented in English (input), but also to express their knowledge and

ideas effectively (output) in assessments and classroom activities. However, EMI is complex because it involves both the language of academic instruction and the linguistic skills necessary to access, process, and communicate academic knowledge.

The difficulty increases when students' English abilities do not meet the requirements of EMI, leading to a disconnect between the intended learning outcomes and the students' actual performance. This gap can hinder both comprehension and participation in class. Figure 1 depicts the various layers of complexity inherent in teaching and learning through EMI, emphasizing the demands of EMI and the interplay among language proficiency, communication skills, academic content, and understanding of academic disciplines.
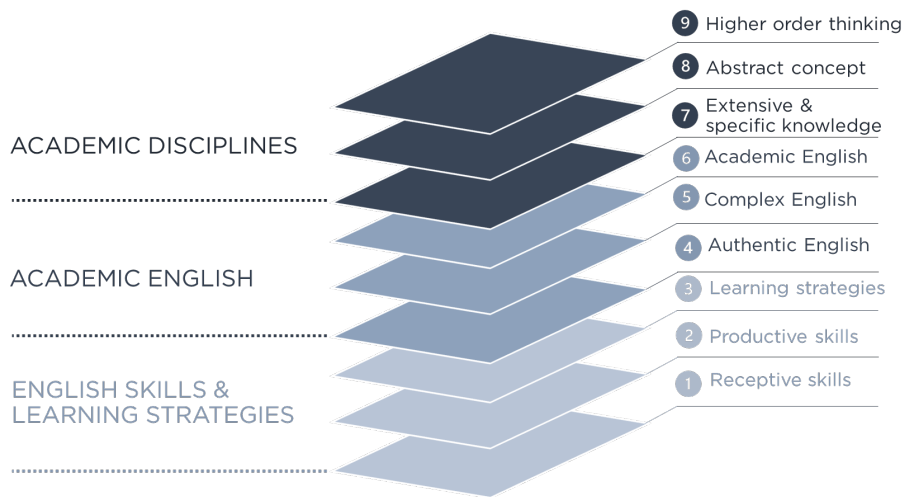

Figure 1 Layers of complexity in teaching and learning through EMI

At its core, EMI requires students to have foundational English skills, particularly everyday language for basic communication. In this case, Cummins (1981) defined it as basic interpersonal communicative skills (BICS). BICS denotes everyday conversational language for routine topics such as travel, shopping, and the weather—skills essential for daily life (Wang & Yu, 2023). Beyond language proficiency, EMI also demands certain academic skills, such as note-taking, summarizing, and meaning negotiation. Academic skills also involve transferable cognitive abilities—formulating and refuting arguments, understanding and synthesizing academic readings, organizing ideas into cohesive paragraphs, and giving presentations at academic conventions. These abilities are crucial for processing complex information, engaging in classroom discussions, and clarifying misunderstandings. Without a firm grasp of both basic English and these academic strategies, students may struggle to keep up with the demands of EMI. This underscores the importance of developing both language and academic skills to support students' success in EMI contexts. Receptive skills such as listening and reading are essential for understanding conversations and input, whether it is the academic material itself or messages from teachers and peers during classroom interactions. Equally important are productive skills—speaking and writing—which allow students to demonstrate their understanding and actively participate in the learning process.

Academic English is a specialized form of language that varies across different fields, as each discipline develops its own conventions and vocabulary. Hadingham (2023, p. 125) described "the demands of academic genre and tacit disciplinary conventions, which were revealed as persistent and nagging concerns." Academic texts, such as government reports, legal policies, research articles, and textbooks, typically use authentic, unsimplified English that is often complex and challenging to understand. This complexity can make comprehension difficult for students, especially when they encounter subject-specific terminology and advanced grammatical structures. Similarly, when students watch news broadcasts or documentaries on platforms like YouTube, they are exposed to a different type of academic English. These materials also tend to incorporate technical terms and discipline-specific language, posing additional listening challenges. Across all these genres, the use of academic English requires students to be proficient in both general and subject-specific language skills.

Academic disciplines and the knowledge they encompass are constructed through both general English and academic English. According to Cummins (1981), cognitive/academic language proficiency (CALP) refers to the literacy-based skills needed for academic work. All university students, including those whose first language is English, are challenged in grasping and utilizing specialized lexis specific to their academic disciplines, as academic English is ultimately "no one's first language" (Hyland, 2015, p. 57). Language not only shapes academic content, but the content itself is deeply intertwined with the language used to express and communicate it. Even in a student's first language, subjects such as life sciences, mathematics, and engineering can be complex and challenging to grasp. Under EMI, this complexity is compounded, as students are required to engage with these fields entirely in English. Each academic discipline possesses its own specialized vocabulary, distinct conventions (Bowles & Murphy, 2020), and abstract concepts—such as theories and models—which add layers of difficulty for students learning in a second language. To understand and succeed in EMI environments, students must use higher-order thinking skills, including creative thinking, evaluation, and analysis. These cognitive demands go beyond rote memorization, requiring students to engage deeply with content and language simultaneously.

According to Airey (2011), successful EMI depends on students mastering disciplinary literacy —the ability to work with a disciplinary discourse and participate in the discipline's communicative practices. Therefore, effective learning in EMI settings requires students to meet a range of demands: a solid foundation in basic English, proficiency in academic English, effective learning strategies, and strong communication skills. They must be able to navigate authentic materials that often feature complex grammar and discipline-specific vocabulary. Most importantly, students need to use all aspects of their English language proficiency and learning strategies to access and construct knowledge within their chosen academic fields— fields that are themselves shaped by the language in which they are taught and learned. Because EMI is demanding both linguistically and academically, it is unsurprising that students with limited English proficiency experience heightened anxiety and affective barriers when learning in a 100% English environment. Sameephet (2020) proposes practical solutions to address English-language-related challenges faced by both students and teachers. Figure 2 illustrates the English Linguistic Gears (Gears) framework.
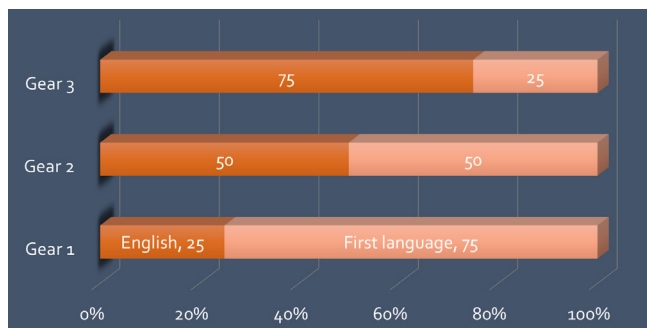
Figure 2 English linguistics gears (Sameephet, 2020, p. 132)

The Gears framework can potentially reduce anxiety and other affective barriers in EMI by letting students and teachers choose a level of English use that matches their readiness and context. In Gear 1, roughly 25% of classroom time is conducted in English and the rest in the first language (L1), offering a low-stress entry point for those with limited English. Gear 2 balances English and L1 at about 50/50. Gear 3 places the momentum on English— approximately 75% of class time in English and about 25% in L1—suited to participants with higher proficiency. The Gears are also flexible: within a lesson, course, or program, teachers and students can shift up or down as needed. For example, a class operating in Gear 3 might shift down to Gear 1 to unpack an abstract disciplinary concept in L1 to avoid misunderstanding, then shift back up once comprehension is secured. Making room for L1 helps create a more comfortable EMI environment, lowering anxiety and building confidence to engage with academic content. In a study by Barnard et al. (2023), participants adopted the Gears framework in their EMI language practices with the mindset of facilitating students' learning and understanding of academic content. As a result, teachers and students felt more comfortable and less anxious knowing they had choices to manage their difficulties.

The Gears framework aligns naturally with translanguaging because each Gear legitimizes multilingual practices by reserving space for students' L1s alongside English. This means that even in programs labeled "100% EMI," teachers can strategically integrate L1s to support comprehension and participation while keeping English as the primary medium. Translanguaging can enhance students' content learning, suggesting that English and L1 should be combined for better student comprehension (Zhang & Wei, 2021). Translanguaging can also occur intentionally or unintentionally when teachers and students alternate between languages to make and negotiate meaning. Lastly, translanguaging also plays an instrumental role in serious scientific discussions inside and outside the classroom (Sameephet et al., in press).

CONCLUSION

This systematic review examined and synthesized English-language challenges in EMI programs at universities across East Asia. Language-related challenges in EMI fuel anxiety and affective barriers for Asian students. Fear of negative evaluation reduces participation and interest, especially among those with lower proficiency, harming achievement. In China, Zhang and

Pladevall-Balleste (2023) found high but declining anxiety over a semester across three disciplines; Lei and Hu (2014) tied anxiety to lower proficiency, and Lin and Lei (2021) linked GPA scores to English abilities. Even high-proficiency cohorts (e.g., Hong Kong health sciences, veterinary medicine) struggle to express abstract, technical ideas. Students report difficulties with technical vocabulary, reading, applying knowledge, and academic writing (word choice, tense, genre). Kao (2024) noted widespread speaking anxiety, though partial EMI did encourage strategy use, while Taiwanese surveys showed 20% had a fear in speaking and 22% had a fear of misunderstanding, both intensified near native or fluent peers. The teachers' limited proficiency also hinders EMI (Aizawa et al., 2023; Alhassan, 2021), provoking embarrassment while accent variation complicates comprehension among students. This is further validated by a South Korean study which revealed persistent awareness–communication gaps between teachers and students.

EMI often depresses content learning and performance when students' English lags behind task demands. Studies highlight wide proficiency dispersion as a key risk factor (Chapple, 2015). In Japan, first-year social science majors with six years' prior English still struggled with academic vocabulary, style, and structure, lacking a transition to university-level writing (Hadingham, 2023). This is no surprise as academic writing recurs as a major stumbling block across contexts (Aizawa & Rose, 2020; Kamasak et al., 2021; Shepard & Morrison, 2021). In Macau, over half reported poorer comprehension and retention in EMI; lectures' key points were missed, leading to superficial, quickly forgotten knowledge, while many believed they understood when comprehension was shaky (Wang & Yu, 2023). Terminology, listening, and speaking were also common obstacles; 70% flagged vocabulary as difficult (Tien, 2023). This affected students' attrition as well when 34% of students were reported to have failed or withdrawn in one EMI program (Chapple, 2014), reflecting ability–demand gaps. On the plus side, teachers observed gains when mother-tongue translanguaging was practiced (Sultana & Fang, 2024).

Teacher- and student-focused training alone may be insufficient. Those searching for an inclusive, holistic approach should consider adopting Sameephet's (2025, p. 619) "agent education" to prepare all members of the communities of practice to recognize the problems and solutions. For example, multi-stakeholder workshops should be organized—bringing together policymakers, administrators, English specialists, teachers, students, and parents—to explain why EMI is challenging, drawing on this study's findings as lessons learned and using the "Layers of Complexity in Teaching and Learning through EMI" as a concrete illustration to ensure clear understanding. As part of the solution, both teachers and students should have ongoing opportunities to develop the four core English skills—listening, speaking, reading, and writing—to support interaction and access to English-medium content. As students' proficiency improves, their confidence will grow and language anxiety will diminish. At the classroom level, translanguaging practices can be introduced that strategically leverage the first language to support students' comprehension of academic content when needed. In parallel, Gears framework (Sameephet, 2020) should be applied as an innovative, flexible approach to these challenges. This would facilitate capacity-building and over time, teachers and students would be able to use the Gears effectively, so as to ensure policymakers authorize and resource its implementation.

The systematic selection of research articles, combined with access constraints, led to the exclusion of some relevant studies that were behind paywalls. Moreover, it was not feasible to report all content from every source reviewed; instead, we prioritized material most pertinent to the research question. As a result, this review does not fully capture the breadth of EMI phenomena and practices across all East Asian contexts. Future research should address English language–related and pedagogical challenges at different stages of EMI implementation to enable early prevention, rapid resolution, and sustained development. All key stakeholders should be involved to capture multiple dimensions, and methods should be tailored to each context, with an emphasis on longitudinal and comparative designs. In addition, the researchers invite other researchers and educators to test the Gears framework and assess its suitability for their specific contexts. The researchers also encourage the systematic evaluation of both the positive and negative effects of its implementation. The researchers hope that this systematic review is able to expand on policymakers' and practitioners' understanding of the challenges of EMI implementation and encourages further research into practical solutions that can support the smoother attainment of EMI goals in East Asian contexts and beyond.

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APPENDIX 1
Samples of the Most Recent Reviewed Sources

Authors	Origin	Title	Context of the study	Purpose	Types of sources	Research design	Research instrument	Target participants	Major themes
Chang et al. (2023)	Taiwan and Thailand	A comparative study of university students' 'English as medium of instruction' experiences in international faculty-led classrooms in Taiwan and Thailand	This study examines undergraduates' perceptions of international faculty-led EMI courses across private and public universities in Taiwan and Thailand.	This study examines undergraduates' perceptions of international faculty-led EMI courses across public and private universities in Taiwan and Thailand.	Research article from Academic Journal of Interdisciplinary Studies	Quantitative, cross-national comparative research	Survey	The Taiwan sample comprised 436 undergraduates from eight public and six private universities: 294 from public institutions and 142 from private ones.	Classmate traits Faculty traits Student traits
Gundsambuu (2022)	Mongolia	English Medium Instruction Programs in Private Universities in Mongolia: Rationales and challenges	Two Mongolian private universities specializing in social sciences	This study examined the rationales behind EMI in Mongolian private universities and explored the associated challenges.	Research article from Higher Education Forum	A qualitative multiple case-study approach	Using semi-structured interviews	A total of 20 participants, including administrators (senior and junior levels) and faculty members	Rationales for EMI implementation Challenges in EMI implementation
Hadingham (2023)	Japan	The Academic Literacy Journey of Student Writers at Transition to an English Medium Instruction (EMI) University Programme in Japan	Social science students in an EMI academic writing preparatory course at a Japanese university	This study examines the academic literacy challenges faced by 40 first-year social science students in a 14-week EMI academic writing preparatory course at a	Research article from Australian Journal of Applied Linguistics	A longitudinal mixed methods design	A mixed-methods approach using questionnaires, interviews, and written journals was employed to chart changes in student perceptions of	The study included 40 first-year undergraduates (aged 18–19) from a social sciences EMI degree program at a Tokyo university.	The unpolished writing of novice scholars at the school–university transition Discipline-specific academic literacies are

Authors	Origin	Title	Context of the study	Purpose	Types of sources	Research design	Research instrument	Target participants	Major themes
				university in Japan.			academic literacy challenges.		often the most daunting for students
									Illuminating EMI students' lived experiences during this transition is an essential first step toward greater analytical depth
Jarvis (2024)	Hong Kong	English Desires at an English-Medium Instruction University: The Journeys of First-Year Students in Hong Kong	The first-year English journeys of undergraduates at anEnglish-medium instruction (EMI) university in Hong Kong.	The study investigated the English desires of 10 first-year students at a public EMI university in Hong Kong.	Research article from TESOL Quarterly	The study adopted a critical ethnographic sociolinguistic approach	The main data collection methods were written reflections and semi-structured interviews which were employed at three stages (start, middle, and end) of the academic year.	The participants were first-year students and 18 years old when starting their university studies. They had grown up in Hong Kong and used Cantonese at home.	Overcoming Past English Learning Disadvantages Seeking Acceptance Through English Confidence and Fluency Pursuing Self-Directed and Authentic English Learning Language Barriers to English Goals

Authors	Origin	Title	Context of the study	Purpose	Types of sources	Research design	Research instrument	Target participants	Major themes
									Peer Comparison Pressure Regarding English Proficiency Unmet Expectations for Spoken English in EMI
Reyes (2023)	South Korea	A Rhizomatic Analysis of the Korean EMI Experience: A Report on ShiftingAttitudes towards English as a Medium of Instruction in South Korea	The study focuses on a Korean nursing program that offers English-medium content courses and classes taught by Korean instructors who code-switch while using English-language textbooks.	This study examines nursing students' experiences with EMI in South Korea.	Research article from Academic Journal of Interdisciplinary Studies	A mixed methods research design	The study employed two approaches. The first comprised a student survey, student commentary, and student interviews.	A total of 135 students participated in the study: 55 first-year, 4 second-year, 71 third-year, and 5 fourth-year students. The sample included 115 female and 20 male participants.	A contradiction exists between the preference for multilingualism and the prioritization of English as the principal language of instruction.
Wang and Yu (2023)	Macau	Learning through EMI (English-medium instruction) in a Macau university:	This study was conducted at a comprehensive university in Macau, a Special Administrative	Drawing on a qualitative inquiry into students' EMI experiences in Macau—an underexplored	Research article from Asia Pacific Journal of Education	Qualitative research	Data were collected through reflective journals and semi-	Twenty participants were purposively selected from the university under study: six	Content outcomes: Effects of EMI on academic content knowledge

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		students' perspectives and content and language outcomes	Region of China. At the time of data collection, the university comprised 10 colleges/schools and affiliated institutes, offering programs in science and technology, arts and humanities, social sciences, business, and education. Positioning itself as an international institution, it uses English as the working language and the primary medium of instruction for most programs.	tertiary context—the researchers sought to uncover dimensions of this educational provision that remain insufficiently understood, along with complexities open to alternative interpretations. Evaluating the effectiveness of EMI programs enables a rigorous examination of their costs and benefits, providing a stronger evidence base to justify or challenge EMI.			structured interviews.	local students and fourteen from mainland China; eight men and twelve women.	Language-related outcomes: Effects of EMI on English Language-related outcomes: Effects of EMI on Chinese
Zhang and Pladevall-Ballester (2023)	China	Students' English-medium instruction motivation in three	Three universities in Xi'an, China (Shaanxi University of	The study aims to explore the effects of EMI implementation on students'	Research article from Frontiers in psychology	A mixed methods pre to post research design	Questionnaires were administered to students at the beginning	Students from three EMI courses: International Trade (n = 96),	Changes in students' EMI motivation and anxiety

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		English-medium instruction courses in China	Science & Technology for International Trade, Xi'an Polytechnic University for Film Production, and Xi'an Eurasia University for Project Management)	learning motivation in China, specifically examining how students' EMI motivation and anxiety change over time and whether differences exist among different disciplines.			(September) and end (December) of the semester. Focus group interviews were conducted at the end of the semester following the post-questionnaire administration.	Film Production (n = 45), and Project Management (n = 29)	throughout the EMI courses; Differences in students' EMI motivation and anxiety between disciplines