



An exploration of factors that influence Taiwanese undergraduate students' academic speaking literacy in university EMI lessons

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Abstract

This research aims to investigate the factors that predict Taiwanese undergraduate students' academic speaking literacy in EMI lessons, and identify the speaking challenges they face, which can be supported by their universities. This is an important topic to look into as EMI lessons have been widely implemented in Taiwanese universities, due to the establishment of the Bilingual 2030 policy. Moreover, while speaking holds great importance in language and content development in EMI lessons, it has been suggested that this is Taiwanese students' weakest skill, when compared to listening, reading, and writing. With extremely limited research that specifically investigates speaking skills in the Taiwanese EMI context, this is a crucial gap to explore. This research studied 57 local Taiwanese university students using questionnaires, and invited 8 of them to participate in follow-up focus group discussions. ANOVA and simple linear regression were employed to find out the relationships between variables – including year of the study, discipline, EAP experience, and EMI experience – and students' speaking literacy. A thematic analysis was conducted to analyse the qualitative results collected from the questionnaires and focus group discussions, which provides insight into students' speaking difficulties and the possible methods by which the university could provide support them.

The results suggest that EAP experience and EMI experience, both inside and outside the university, predicts students' speaking literacy. It also suggests that universities can use EAP and EMI courses to support students through challenges, including speaking confidence, vocabulary, the ability to present ideas and information and to ask questions, as well as the use of L1 in class. Moreover, a discussion around grammar and fluency indicates the importance for universities to consider the practicality of teaching some speaking sub-skills, and whether those skills are equally important as others for EMI lessons, to decide the type of speaking challenge to offer support with. These findings provide useful implications on how the Taiwanese government should continue their implementation of supplemental EAP lessons and EMI lessons at the school level. It also provides important pedagogical implications on how universities can support students' speaking challenges.

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List of acronyms and abbreviations

EMI	English as the Medium of Instruction
EAP	English for Academic Purposes
CLIL	Content and Language Integrated Learning
RQ	Research Question
L1	First Language
L2	Second Language
NTU	National Taiwan University
ASWL	Academic Spoken Word List

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Section 1: Introduction

1.1 Background

According to a report carried out by British Council and Studyportal (2021), the number of English-taught programmes outside the UK, USA, Canada, and Australia has risen by 77% between 2017 to 2021, with East Asian countries accounting for 18.9% of them. English as the medium of instruction (EMI) has experienced a massive boom around the globe due to countries' increasing connections and a need for a lingua franca (Briggs & Smith, 2017) in the workplace and academic fields. To respond to this global trend, the Taiwanese Ministry of Education (2021) implemented 'The Program on Bilingual Education for Students in College' three years ago, aiming to cultivate Taiwanese students' English proficiency levels by increasing the proportion of EMI lessons in higher education. This ties into the 'Blueprint for Developing Taiwan into a Bilingual Nation by 2030', which aims to transform student bodies into workforces fitting the global community to attract more international enterprises to Taiwan (National Development Council, 2021). While this vision is aspirational, given Taiwan's heavy reliance on international businesses as an island, Gupta and Lin (2023) suggest that Taiwan's EMI implementation may be more difficult compared to countries like India, Singapore, and Malaysia, which were previously colonised by the UK and have stronger foundations in English. Huang (2024) also suggests the concern for most students to be 'left behind', although this claim cannot yet be confirmed as the policy is currently adopted in limited universities. Since the Taiwanese government has set the short-term goal for EMI development in 2024 as a milestone toward achieving the broader objectives by 2030 in the policy paper 'Bilingual 2030', this year is vital for evaluating the progress made and identifying necessary adjustments for EMI lessons in Taiwan.

1.2 Research Problem

While English has been a compulsory subject in Taiwan for all students from the age of 7, it is only used in English lessons specifically rather than in other subjects. That is, this major transition to start using English to learn other subjects can pose great challenges (Pun & Jin, 2021). Out of the four language skills – listening, reading, writing, and speaking – speaking was chosen as a focus in this research due to

Taiwanese students' limited abilities in it. Specifically, before publishing the policy, the Taiwanese government collaborated with the British Council and found significantly unbalanced proficiency levels within different English skills. While 20% of Taiwanese students have reached B2 or C1 in overall English skills, only 8.27% of them can achieve an equivalent band in speaking skills (Ministry of Education, 2021). This specific disadvantage in speaking can be attributed to the lack of emphasis put on English-speaking skills in the Taiwanese education system, common to other EFL contexts (Al Hosni, 2014), and the infrequency of formally assessed speaking at the school level (Chou, 2018). Since Sungatullina et al. (2018) argue that language abilities of students with proficiency lower than B1 cannot effectively conduct discussions with their peers, this is a significant problem to address in allowing students to better engage in EMI lessons.

1.3 Research Aims, Research Questions, and the Research's Significance

With the context provided above as the foundation, this research paper aims to explore the factors that influence Taiwanese undergraduate students' academic speaking literacy in EMI lessons and identify students' speaking challenges. This will be done using the two specified research questions (RQs), with the first being separated into five sub-questions for clearer interpretation.

- ***RQ1: Which factors best predict Taiwanese undergraduate students' academic speaking literacy?***
 - (1) Does year of study successfully predict students' English-speaking literacy?
 - (2) Does discipline successfully predict students' English-speaking literacy?
 - (3) Does EAP learning experience successfully predict students' English-speaking literacy?
 - (4) Does EMI learning experience outside the university successfully predict students' English-speaking literacy?
 - (5) Does the number of EMI lessons students take at the university successfully predict their English-speaking literacy?

- ***RQ2: What are the perceived speaking challenges students hope to improve on with the university's support?"***

Although much literature has explored speaking skills in EMI globally, this topic remains hugely under-researched in the Taiwanese context, which will be further discussed in the literature review section. Moreover, speaking is often explored alongside other skills (e.g. Aizawa et al., 2020; Tien, 2023; Yeh, 2014), and has not been the main focus of EMI research (e.g. Zhou and Thompson, 2023). Teng and Zhang (2022) also note that speaking skills are almost ignored in the EMI research, calling for papers that deeply investigate speaking, as Zhou and Rose (2024) did with listening. This gap in speaking skills and the need for EMI research in Taiwan this year, 2024, mentioned in section 1.1, make this study essential and timely. The characteristics of students with stronger speaking literacy and how the university's support can aid their speaking challenges that will be investigated in this paper are significant for generating implications for policymakers and EMI practitioners in Taiwan for improving the EMI implementation of Bilingual 2030.

1.4 Structure

This paper will begin with a literature review of the key ideas related to the topic. It will justify why a mixed method approach best fits the aims of the research, and will introduce the data-collecting and analysis methods in the methodology section. The findings will be presented in the results section, followed by a discussion addressing the research questions and providing implications by combining the collected data and the existing literature. Finally, the conclusion section will sum up the research, discuss its limitations, and offer suggestions for future research.

Section 2: Literature Review

2.1 Introduction

This literature review aims to set the context by providing background knowledge related to EMI and the use of speaking skills in it. It will also explore the existing literature on speaking in the Taiwanese EMI context, different factors to predict

students' speaking literacy, students' speaking challenges, and potential solutions to them.

2.2 Understanding EMI

With the introduction section presenting details about EMI development in Taiwan, it is important to clarify what EMI actually means. While the definition of EMI is criticised to be fluid (see Macaro, 2018), a broad consensus is reached on its core concepts. As Macaro et al. (2018, p.37) put it, EMI refers to 'the use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language of the majority of the population is not English'. Although some literature uses similar terms interchangeably, such as 'Englishisation' and 'CLIL' (content and language integrated learning), this research follows Lasagabaster (2022) in distinguishing them from EMI.

First, EMI emphasises education, unlike Englishisation, which takes a wider scope. Chang (2023) argues that the fast growth of English use around the world in different settings is the result of the need for a lingua franca due to globalisation. This idea is echoed by Wilkinson and Gabriëls (2021), who highlight the increasing dominance of English in domains such as politics, economics, and education around the globe. This implies that the increased use of English is not limited to education but also other fields, showing the importance to be cautious of the differences among terminologies to precisely refer to the meaning this paper hopes to convey.

Second, EMI usually refers to English education in specifically non-anglophone countries (Humphreys, 2017). This means that, while content knowledge is taught in English in the English-speaking countries, this is not considered to be EMI. This distinction is important because the language change increases the complexity of EMI implementation. Polyakova et al. (2022) make criticisms that 81% of the 24 lecturers they interviewed considered direct translations of their teaching materials into English to be adequate for EMI lessons. They have suggested this to affect students' content digestion negatively, although the inclusion of a disproportionate number of lecturers from different disciplines in this research may hinder its representativeness. Moreover, while both contexts involve learning subject knowledge in English, the backgrounds, perspectives, and needs of students in non-

anglophone countries can differ significantly from those in English-speaking countries, rendering direct copying and pasting of the curriculum from anglophone countries insufficient (Abdullah, 2005; Cai, 2017). This fits within the idea of education policy borrowing (Harris et al., 2016), in which different cultures and backgrounds should be considered and localisation is needed to ensure the desired effect (Miao, 2023). This again indicates the complexity of, and the numerous challenges posed by, EMI due to its specifically relating to non-anglophone contexts.

Last but not least, EMI tends to lend absolute priority to content knowledge, although incidental language learning can happen naturally. This idea is supported by Qiu and Fang (2022), who argue that, unlike CLIL, which usually includes both content and language learning goals (Aguilar, 2017), EMI only uses English as the medium to develop professional knowledge. This means that while much literature (Lestari, 2020; Tran et al., 2021) supports EMI's ability to improve language skills, and while the Taiwanese government sees it as a method for cultivating students' language abilities, the level of language development in different EMI classrooms can vary greatly, due to several reasons. Besides proficiency levels, which Lestari (2020) found to be significant, teachers' teaching approach can be another key factor. For example, Kim et al. (2017) found speaking to be the language skill that students develop the least, due to the preference for receptive over participatory lessons in most Korean EMI classrooms. This last characteristic explains how EMI is distinct from terms like CLIL, and the role of English in it. Since it best fits the context that this research is investigating, the term "EMI" will be used consistently.

2.3 The Importance of Speaking in EMI Lessons

Although EMI does not emphasise language teaching, speaking as a language skill can play an important role in it. In fact, spoken interaction, such as participations in communicating content knowledge and interacting using English (Roussel et al., 2017), has been suggested to be the most demanding language skill, due to the difficulty students and lecturers face (Tatzl, 2011). Speaking skills can be commonly used in EMI lessons, especially interactive classrooms, to ask questions, answer questions, conduct discussions, and present ideas (Tsou & Kao, 2017). These can facilitate both content and language development.

2.3.1 Content Development

Classroom engagement, of which speaking is a significant component, is widely believed to contribute to learning outcomes. One of the reasons is that without the speaking competence to ask questions, students can get stuck in the process of clearing up concepts (Phuong & Nguyen, 2019). In addition, speaking can facilitate social interaction, which Vygotsky (1986) posits to be the foundation of cognitive development. Mahn and John-Steiner (2012) also suggest active participation, including speaking, to be more useful within Vygotsky's account than acquisition through banking theory, in which students are "deposited" with knowledge (Freire, 2018). Social interaction, including discussions with peers and teachers, allows students to gain knowledge beyond their abilities from more knowledgeable others. Mercer (2004) also stressed the importance of students articulating thoughts to deepen their understanding, emphasising the "interthinking" that happens during interactions (Mercer, 2002). Routman (2005) added that actively involved in a lesson by talking is crucial to facilitate learning. This indicates that verbal exchanges are essential for cognitive development, which contributes tremendously to learning. Speaking enable students to internalise new information, adjust assumptions, and articulate their thoughts through social interaction.

This theoretical assumption is also supported by empirical studies. Tlhoaele et al. (2014) compared the learning outcomes of two groups of engineering students from an institution in South Africa. The intervention group (n=53) conduct active discussions and share their ideas verbally in the lessons, while the control group (n=53) receive traditional instruction through teachers' PowerPoint presentations. The results show improvements in mean score, based on pre-test and post-test for each group, of 11.85 and 5.22 respectively. Similarly, Kirkgöz (2013) found that the majority of the students favour the joint construction of knowledge, whereby they discuss and explain content knowledge to each other to aid understanding in EMI lessons. Li and Wu (2018) also argue that greater engagement in EMI lesson leads to better learning achievements. These examples imply the importance of speaking in improving students' content development.

2.3.2 Language Development

The use of speaking also contribute hugely to students' English skills. Swain's (2005) output hypothesis has emphasised language output as crucial for language development. By producing language, students start to focus on form instead of only meaning, to construct sentences (Lee, 2002). Moreover, output allows students to review their speaking resources and modify them to produce comprehensible output (Na, 2019). This allows students to notice gaps or mistakes by testing their hypotheses, which can lead to linguistic corrections. According to the noticing hypothesis (Schmidt, 1990), speakers' acknowledgement of errors they make and the gap between their output and their target language is key for language development. That is, speaking provide chances for students to become aware of their linguistic gaps and to improve. However, it is worth noting that the chance of noticing may be limited in the EMI context. Mancho-Barés and Aguilar-Pérez (2020) found that most teachers do not correct students' errors in EMI lessons, as they tend to focus on the content knowledge. That is, while students' language competence can improve through speaking in the lessons, this improvement may be capped due to limited language correction provided without language teaching as the focus.

Even so, the results in many studies support the idea of language use to be a major driver of language development as Prabhu (1999) suggests. Evans and Morrison (2011) tracked the EMI learning experiences of students throughout a year. They found them starting out feeling extremely challenged to speak in lessons, but they gradually developed speaking skills through constant planning and delivering presentations in EMI and EAP lessons. Paseka (2000) also identified students' speaking skills improvement in the final oral assessment through constant practice of speaking in class. The language development that speaking leads to extends beyond speaking skills and into overall language proficiency. Lai (2023) investigated 42 students enrolled in EMI modules in a Taiwanese university. The result found that 85.7% of the students disagreed with the statement: "Spoken English language output is unnecessary for me to improve my English". Moreover, 90.5% of the students selected agree or strongly agree to: "Doing work that requires long spoken answers in English is helpful for me to improve my English". This shows that students recognise the importance of speaking in improving their language skills. While missing data (Altman & Bland, 2007) was identified from some questions when

Lai (2023) asked about other skills, as the sum of the percentages of the Likert-scale did not total 100%, this study is nonetheless included here because this problem was not identified when asking about speaking skills, which were the data this paper drew from. Moreover, this research also investigates the higher education system in Taiwan, meaning that it could provide insights into a particularly similar context to the one being studied here.

2.4 Research on EMI Speaking in Taiwan

Despite speaking skills' importance, there is unfortunately very limited literature that specifically looks into Taiwanese students' speaking skills in EMI lessons. Most literature that investigates students' language literacy in EMI looks at four skills together (e.g. Tien, 2023; Yeh, 2014). Although the limited research that did focus on Taiwanese EMI speaking skills approached interesting topics, the ideas were relatively fragmented, making it difficult to directly infer or provide practical teaching implications. For example, Chou (2018) investigated students' speaking challenges and the learning strategies that students use to cope with EMI lessons, such as rehearsal and paraphrasing. While this is useful for understanding students' speaking difficulty, the discussion stops with these challenges and students' own abilities to overcome them without going further into understanding how they could be supported through external help. Meanwhile, research that does look into how students can be supported have not considered as many kinds of challenges as Chou (2018) does. For example, existing research discusses the usefulness of translanguaging in increasing student interaction in the Taiwanese EMI classroom (Chang & Ning, 2021; Kao et al., 2021), the importance of a supported environment for students to speaking (Chang & Ning, 2021), how local students start to speak after seeing international students doing so (Lin, 2018), and that students become used to speaking in EMI lessons when they are asked to speak more often (Huang & Jhuang, 2015). While these studies have suggested important ideas about methods that facilitate students' speaking in class, they can be relatively general without being linked directly to the speaking challenges.

As the papers listed here make up almost all the existing literature that specifically looks into speaking skills in the Taiwanese EMI context, it shows a significant gap to fill. For research on this topic to be at initial stages, this study decides to focus on

understanding the characteristics of students with stronger speaking abilities, using the RQ1, “Which factors best predict Taiwanese undergraduate students’ academic speaking literacy?” Due to the fragmented ideas within the existing literature, it also chooses to combine an exploration of speaking challenges and ways to support the students to provide clearer educational implications, resulting in the RQ2, “What are the perceived speaking challenges students hope to improve on with the university’s support?”

2.5 Relationship between Different Elements and EMI Learning Experience

This section explores the relationship between the elements chosen in the sub-questions of RQ1 and students’ EMI learning experience. These elements were selected from the extant literature as having promising correlations with students’ speaking literacy. Choosing specific variables to look at helps narrow down RQ1, as this is otherwise a relatively broad question to answer: there are innumerable linguistic and non-linguistic factors that could exert an effect on academic speaking literacy.

2.5.1 Year of Study’s Relationship with EMI Learning Experience

Recent literature has suggested that, over their years of study with EMI, students can experience changes in various aspects. For instance, Iwaniec and Wang (2023) found that year four students show significantly stronger motivation compared to year two and year three students. Concerning language barriers, Pun and Jin (2021) examined 73 students in an EMI university in Hong Kong. They found a significant result with moderate effect size on the amount of L2 support that first-year students and non-first-year students sought, and that first-year students required an adjusting period to fit into EMI lessons. Evans and Morrison (2011) also tracked 28 Hong Kong year-one students’ changes in language-related challenges over the three years. Although the sample size was too small to test the result’s significance, the data show that the difficulties dropped throughout the years. Additionally, Kirkgöz (2013) compared first-year students’ (n=73) and fourth-year students’ (n=78) approaches to learning in EMI lessons. The results showed that first-year students mostly used rote learning, i.e., memorising course content and language use instead of forming meaningful understanding. In contrast, year four students usually looked for meaning

and reasons behind the knowledge to form a deeper understanding, although memorisation still played a role sometimes. This suggests that students' EMI learning experiences can change over their years of study. Kirkgöz's (2013) research has shown strong generalisability and validity, as it includes 3 different disciplines, each with a similar number of students. This ensures that the result is not discipline-specific, and the similar number of students recruited from each discipline assures the statistical tests to be valid and reliable.

One interesting point that Kirkgöz (2013) further suggests is that while students' EMI learning experience changes over the year of study, predictions based on its may be influenced by teachers' teaching styles. This uncertainty of the predictive power can also extend to speaking literacy which this research paper investigates. Johnson and Picciuolo (2020) pointed out teachers' unwillingness to include speaking opportunities in EMI lessons because of time constraints, class size, and students' habit of teacher-centred learning. Han's (2022) research also suggested the teaching time in EMI lessons to be tighter because lecturers struggle to explain concepts as efficiently in English. In turn, if a lecturer has not provided chances for students to practise speaking English in class, there will be limited improvement in speaking skills, regardless of the years of study students undertook. That is, while year groups can influence students' EMI learning experiences, other factors can influence its predictive power.

2.5.2 Discipline's Relationship with EMI Learning Experience

While limited studies directly look into discipline's influence on students' EMI experience and speaking, much literature indirectly suggests an unequal dependence on language use among different majors. For instance, Macaro et al. (2017) argue that, since mathematics and physics depend more on codes and numbers, language is seen as less needed within lessons. By contrast, in the humanities and social sciences, where language is the main vehicle of meaning and key ideas, language use plays an important role in constructing ideas (Hu & Lei, 2012; Lo, 2014). This is echoed by Dafouz and García (2013), arguing that humanities studies to ask short description questions more frequently than natural science and engineering studies, who replace it with confirmation checks. Yuksel et al. (2023) argue further that EMI lessons demand different abilities across different

disciplines, implying that the importance of language use in EMI lessons can vary. Hu and Duan (2019) separated students into hard-discipline (including science and engineering) and soft-discipline (including social sciences and humanities) and found a statistically significant difference between the syntax complexity of a given sentence they produce. For soft-discipline students, the minimal terminable unit length was 3.83 words and the number of clauses in a produced sentence was 1.01, while hard-discipline students correspondingly showed 1.93 words and 0.80 clauses on average. Such varying emphasis on language in EMI lessons and how language is used differently within them demonstrated here could directly influence students' speaking literacy, making this an interesting factor to explore in the present study.

2.5.3 EAP Experience's Relationship with EMI Learning Experience

EAP is widely believed to facilitate better EMI engagement, which many universities provides pre-sessional and in-sessional EAP support (see e.g. Macaro et al., 2018; Tran & Phuong, 2019). Galloway and Ruegg (2020) investigated the usefulness of EAP lessons, as perceived by students, and found that 37% of them hoped to continue receiving language support classes. Most students expressed its usefulness on writing academic essays, and one student expressed that EAP lessons helped them to raise their TOEFL score from 470 to 570.

Besides writing skills, Tunç (2021) also found that language preparatory programmes helped students to develop confidence in speaking, which many studies (e.g. Allo & Priawan, 2019; Hasan et al., 2020; Sudirman et al., 2020) argue to have a positive correlation with students' speaking skills. Moreover, Thompson et al. (2022) found that all the students they interviewed (n=7) agreed that EAP lessons contributed to their EMI learning outcomes, especially to better engage in discussions and ask questions. This demonstrates that EAP experience can assist students with their speaking skills. However, Bayram et al. (2022) suggested the opposite, reporting the lack of emphasis put on speaking skills in their EAP courses. Brown et al. (2021) also found in a Japanese University that although students highlighted speaking to be a crucial skill in EMI lessons, it was not focus in the EAP lessons provided on the side. Thompson et al. (2022) further pointed out that the improvements in general language skills from EAP lessons do not guarantee better EMI learning. Many studies criticise the general content most current EAP lessons

provide, calling for more discipline-specific curriculums (Kahyalar, 2018; McKinley & Rose, 2022; Wang, 2020). This suggests that there are still limitations to existing EAP lessons, and as the emphasis of each EAP course can be different, how much they aid students' speaking literacy for EMI lessons in Taiwan is uncertain. This shows the usefulness to form a deeper understanding of the effectiveness of EAP experience in this specific context.

2.5.4 Past EMI Experience's Relationship with EMI Learning Experience

The amount of EMI experience is expected to lead to improvements, as students gradually become accustomed to using English as the medium of learning. For instance, Lin and Morrison (2010) examined the learning outcomes of 762 first-year students in a Hong Kong university. They found that those who received English-medium education in secondary school outperformed those who had Chinese-medium instruction. Kohnke's and Jarvis's (2023) also found students with EMI experience in secondary school perceived fewer difficulties in their EMI lessons. Although only writing skills show a statistically significant difference within the inferential statistics, more research suggested the same trend. Wong (2010) found that past EMI learning experience positively correlated with how comfortable students were at engaging in English communication in EMI lessons. Aizawa's (2024) interviewed students with different learning backgrounds, and one student who performed especially well suggested that her previous EMI experiences had helped her to adapt quickly and successfully fit into the course. These examples above convincingly suggest past EMI experience to enhance students' adaptation to and performance in EMI lessons. However, previous EMI experience does not always guarantee success. Another student interviewed by Aizawa (2024), who also had significant EMI experience in the past, did not show as strong improvement by the end of the course. It was found that the student's IELTS score was 7 while the previously mentioned student's score was 8, showing that EMI experience can be a good predictor, but that it can still be influenced by other factors. This points us to the last factor that can play an important role in predicting students' EMI success: students' overall English proficiency level.

2.5.5 Overall English Proficiency's Relationship with EMI Learning Experience

Much current literature has found a close relationship between English proficiency levels and students' academic success in EMI lessons, among different disciplines. Xie and Curle (2022) investigated 106 second-year business and management students in a Chinese university and found a significant correlation between their English proficiency scores and their final marks for the content exam. Similarly, Rose et al. (2020) studied international business students in Japan and found English proficiency to be a significant predictor of their EMI learning outcomes. Besides business studies, Yuksel et al. (2023) investigated 705 students majoring in social sciences and engineering in a Turkish university. A correlation was again found between proficiency level and EMI course score obtained from the university for both engineering students ($p < 0.01$, $r = 0.31$) and social science students ($p < 0.01$, $r = 0.33$). This literature suggests a close relationship between students' language abilities and learning outcomes in EMI lessons. However, it is crucial to note that different assessment methods exist among higher education systems, meaning that the content learning outcomes that the literature discusses here may include language skills other than speaking. As such, whether students' overall proficiency levels influence their speaking literacy in EMI lessons is worth exploring.

2.6 Academic Hardship Related to Speaking in EMI Lessons

As Hoang Oanh (2007) argued, support for EMI should be based on students' needs rather than teachers' assumption of what they might find challenging. That is, direct investigation into students' academic speaking challenges is the most effective to understand how to assist students in the EMI lesson. This review of the literature will help lay the foundation for exploring the RQ2 on the speaking challenges students hope to improve with the university's support.

Among existing literature, scholars have suggested students in Asian countries to be generally shy to speak in EMI lessons (Lin, 2018). While their habit of learning in a receptive classroom is a major reason for this (Ma & Lilliat, 2022), the language barrier exacerbates and intensifies the situation. The students Chien and Valcke (2020) interviewed tended to talk as little as possible, as they were not confident in their language skills. Similarly, Siregar (2023) suggested that students' low levels of English proficiency make them hesitate to express themselves in class. A high level

of speaking anxiety is found in many EMI classrooms, which much literature (Kusmayanti et al., 2024; McCroskey, 2015; Mohtasham & Farnia, 2017) suggests also stems from students' beliefs that they cannot speak English. Kudo et al. (2017) also suggested students' lack of confidence to be the strongest variable leading to students' silence in class. This shows that the language barrier poses a great challenge and decreases the confidence for students to speak in EMI lessons. This obstacle is detrimental as it stops students from improving their speaking skills through practice, as discussed in section 2.3. This indicates the importance of helping students build confidence in speaking; Kang (2005) has suggested tutors to provide support to reduce students' speaking anxiety in lessons.

Interestingly, while lack of confidence is a hardship seen among students, it often arises from other language challenges such as grammar, vocabulary, and fluency. Akhtar (2021) interviewed 6 students in Pakistan and found that almost every student struggled to speak due to difficulty using standard grammatical structures on the spot. In Chaiyasat and Intakaew's (2023) study in a Thai university, students further expressed their limited vocabulary knowledge as an obstacle to express themselves in lessons. This idea is confirmed in a larger population when Phuong and Nguyen (2019) investigated 136 Vietnamese students using questionnaires. The results showed that 44.1% of the students had difficulty expressing ideas due to their lack of vocabulary knowledge, making vocabulary the most reported speaking challenge among students. Additionally, Chou (2018) examined 638 Taiwanese EMI students' and found fluency was considered difficult by the most students (58.5%), which is slightly more than those choosing grammar (56.4%). This major difficulty found in fluency can be explained by its complexity, which demands vocabulary and grammar knowledge, and the confidence to deliver ideas with a well-controlled flow and smoothness (Afna, 2018; Evans & Morrison, 2011; Magne et al., 2019; Salem & Al Dyar, 2014). Moreover, Moore (2017) and Zou and Jiang (2021) found that students in Japanese and Chinese contexts try to translate sentences from their L1 into English in their heads before speaking, which can also lower the fluently. This example suggests that the speaking skill elements are all interconnected to a certain extent, showing the complexity for institutions to provide adequate support.

Although falling outside the scope of this study, it is worth mentioning that students may resist speaking in EMI lessons due to reasons other than their speaking

challenges, for instance teachers' teaching styles (Cao, 2011; Engels et al., 2021; Zarrinabadi, 2014) and whether the approach of the curriculum is interactive (Kaur, 2020; Querol-Julián, 2023). As discussed in section 2.3, speaking in EMI lessons can significantly improve students' content and language development. It is important to be aware of these other factors here to better facilitate speaking in EMI lessons.

2.7 Conclusion

This literature review has explained key characteristics of EMI and the importance of speaking in it. The overview of speaking-skill research in Taiwanese EMI context has justified this research's topic and informed the questions to look into, elucidating how this can help to fill the research gap. The review of different elements' relationship with EMI and the common speaking challenges students can face are directly related to the two RQs: "Which factors best predict Taiwanese undergraduate students' academic speaking literacy?" and "What are the perceived speaking challenges students hope to improve on with the university's support?" This review has helped explain the potential predictive power of the variables on students' speaking literacy and shed light on some close connections between different speaking challenges.

Section 3: Methodology and Methods

3.1 Introduction

To fulfil the aim of exploring the factors that influence Taiwanese undergraduate students' academic speaking literacy in EMI lessons, and students' speaking challenges, this section will provide detailed information on the research's methodology and sampling, data-collection, and analysis methods, as well as considerations about positionality and ethics. This comprehensive approach will address the two research questions, 'What factors best predict Taiwanese undergraduate students' academic speaking literacy?' and 'What are the perceived speaking challenges students hope to improve on with the university's support?'

3.2 Methodology

This research adopts a constructivist ontology, i.e., it does not take valid and stable 'facts' to exist, contrary to positivists and realists (Ma & Ma, 2022). That is, reality is a process of continual transformation through construction and reconstruction (Guarino et al., 2009). While having a strong epistemological orientation towards interpretivism, on which people can only discover socially constructed knowledge that represents individual's viewpoints at a particular time (Putnam & Banghart, 2017), this research decided to substitute with pragmatism due to how this is an educational research in nature. The researcher believes pragmatism, as an approach that seeks to deal with problems practically (King, 2022), is the most useful in educational research that aims to offer pedagogical implications. Specifically, this approach acknowledges that, while all people can have different perspectives and needs, it is impossible to fulfil them spontaneously. That is, education practitioners must seek solutions that can benefit the most target students while considering their individual differences, which makes it more practical than interpretivists. Furthermore, Badley (2003) also criticised the domination of positivists in the educational system, which governments tended to demand evidence-based research as solutions to educational problems. In contrast, pragmatists incorporate both perspectives and diverse tools from the two extreme methodologies, and see inquiries as offering useful suggestions for meeting current needs, rather than identifying universal 'facts'. With this in mind, mixed methods were chosen for this study to provide a relatively general idea using quantitative data, but also avoid overlooking valuable perspectives through qualitative data (Berkowitz, 2013; Taherdoost, 2022). The proportion of qualitative and quantitative data will be decided later based on what best helped answer the research questions.

3.3 Study Design

Besides the methodology's pragmatist orientation, the research questions also suggest the suitability of mixed methods. That is, quantitative analysis primarily helps evaluate which factors best predict learners' speaking proficiency in EMI lessons (RQ1), while qualitative measures illuminate students' challenges and the support they need (RQ2). While the quantitative and qualitative approaches mainly answer different research questions, some qualitative data will also be used to form deeper

understanding of the quantitative data collected. As Fielding (2012) argued, quantitative techniques provide relatively objective data, while adding the qualitative phase offers a deeper understanding of the reasons behind numbers. Dornyei (2007) also echoes this view, suggesting that one method's strength can help compromise the weakness of the other.

3.4 Population

To avoid institutional variation, this research only targeted students from the National Taiwan University (NTU). This institution is considered the top one university in Taiwan. NTU is one of the 'beacon universities' selected by the Taiwanese government. This means they will receive the most resources for EMI development in the first few years of policy, but are expected to work as models and develop experience that can be drawn on by other Taiwanese universities' for future implementation (Ministry of Education, 2021; National Development Council, 2021). This research chose NTU among the four beacon universities, as it could shed light on the best situation in Taiwan: students need the strongest academic abilities in Taiwan to be admitted to this university, which means they have stronger content knowledge to aid their EMI learning. Moreover, since almost every course looks at students' English scores in the entry exam, this ensures that students' English proficiency levels are relatively strong, leading to better learning in EMI lessons, as much literature has argued (e.g. Baltabayev, 2020; Lin & Lei, 2021; Zumor & Qasem, 2019).

3.4.1 Selection Criteria

Within all students at the NTU, two inclusion criteria were added to narrow down the target participants. First, this research only looked at local rather than international students. According to QS ranking statistics, around 17% of the students in NTU are international students (QS International, 2024). These international students exhibit a strong preference towards EMI lessons due to the global prevalence of English language instruction. This research decided to exclude international students, considering the ultimate goal of 'Bilingual 2030', to set up a thorough English-oriented education system from school level to higher education (National Development Council, 2021). According to the report by the Department of Statistics

in the Taiwanese Ministry of Education (2019), local students make up the vast majority of Taiwanese high school students (with only around 0.5% foreign students). This means that, by excluding international students, this study's findings can support beyond university students to supplying clues on adjusting schools' curriculums, which future policy-makers can refer to.

The second criterion was to include only undergraduate, and not postgraduate, students. Undergraduate students were selected because they are the first group of students in the whole nation to experience the implementation of EMI lessons as part of Bilingual 2030. This means that they have had more experience of these lessons, and could therefore share more profound insights, and discuss the huge transition they faced, having had no prior practice in school. As the first group of 'end-users' of this policy, they have a great chance to face difficulties in their study, making their thoughts crucial to investigate.

3.4.2 Sampling and Participants

In total, 57 students were recruited using volunteer sampling to collect quantitative data. Specifically, there was a Facebook group that only NTU students could join. A friend of the researcher, who is currently studying there, helped post the questionnaire link in the group to ensure only NTU students can access it. This approach increased the likelihood of reaching students from various year groups and disciplines, thereby reducing the obvious bias associated with direct snowball sampling (Naderifar et al., 2017). That is, it improves data's representativeness by including students beyond the connections of the researcher's friend – who may have more similar learning experiences and shared disciplines (Parker et al., 2019). However, volunteer sampling, which relies on students to participate on their own accord (Murairwa, 2015), remains a non-probability sampling method with limitations. In particular, given the distribution method of the questionnaire, students without habit to use social media could have been excluded. Although no current research shows direct influences on students' perspectives on EMI lessons and their usage of social media, it is crucial to acknowledge the potential for bias here. For instance, since those who enjoy using social media may be more likely to be exposed to foreign content, as there are no 'borders' on the internet, they could be more open-

mind to EMI lessons. This limitation should, therefore, be pointed out for the reader to acknowledge.

In addition to the questionnaire, eight students took part in the two follow-up focus groups for qualitative data collection, with four students in each group. This research adopted variation sampling, which refers to selecting a wide range of participants who vary significantly across key characteristics (Suri, 2011). Two focus group discussions were carried out, with one group consisting of higher proficiency-level students, and one of lower proficiency-level students. The sampling method was chosen to create a comfortable environment for all students to express themselves. For instance, students with lower proficiency-levels may hesitate to speak up if they perceive a significant gap in language skills compared to others in the group. The sum of the EMI challenge scores collected from the questionnaire was used as the determiner of students' language ability for assigning students into groups. Students who scored over 40 were invited to join the higher attainment group while those who scored below 30 were invited to contribute to the lower attainment group. Eventually, eight participants agreed to take part after receiving invitations, resulting in a balanced representation with four students in each group.

3.5 Quantitative Data Collection and Analysis: Questionnaire

3.5.1 Method of Data Collection

Questionnaires are a dominant tool for quantitative data collection, particularly in educational research (Anderson & Arsenault, 2005; Chilisa, 2005). This paper has also chosen questionnaires to collect quantitative data, not only for their convenience but also because they represent a suitable method. It is important to justify its suitability, as Bihu (2021) noted that, many researchers tend to simply select questionnaire for its efficiency and its dominance of the field without clearly consider whether it fits their research. As Aithal and Aithal (2020) argue, one key use of questionnaires is to determine factors that affect an outcome and understand their relationships. Since the main goal of RQ1 is to discover how different variables can help predict students' speaking proficiency, this data collection method fits perfectly with the aim of the study.

Although under the title of quantitative data collection, this questionnaire also included four open questions for qualitative data. This was not only to increase the representativeness of the qualitative data, with limited number of participants in the focus groups, but also for students to express their challenges more freely, as this was anonymous. Most questions here focused on students' current EMI learning experiences and the support they hoped to receive, will help address RQ2, 'What are the perceived speaking challenges students hope to improve on with the university's support?' While this does not fit the specific use of questionnaires for measuring the relationship between factors and outcome, Harland and Holey (2011) argued that open-ended questions are a valuable adjunct to quantitative self-reported questionnaires. That is, adding qualitative questions does not lower the suitability of choosing questionnaires as the research tool. Overall, the use of a questionnaire in this research aligns well with the study's objectives.

3.5.2 Research Instrument

Having justified the suitability of the questionnaire, this paper now introduces the detail of the research instrument. The questionnaire (see Appendix 1) was developed using Qualtrics, and included both an English and Chinese version for students to choose from. Its content was mainly adapted from current research with similar research topics and aims (e.g. Rose et al., 2020; Vu, 2023). This section begins by providing a brief outline of the questionnaire's four sections.

- Section one explored students' background information, including their year of study and discipline. The number of EMI lessons they had taken in the university was also asked here, which all three of them served as independent variables in RQ1.
- Section two discovered students' EMI and EAP learning experiences. To understand this, the researcher developed its own questions to understand these ideas, which the reliability of them was checked in the results section before the analysis. The two constructs here also served as independent variables for predicting speaking literacy in RQ1.
- Section three employed the widely-used framework of the EMI challenge scale (Evans & Morrison, 2011). While much research uses this to look at all four language skills (e.g. Aizawa et al., 2023; Moorhouse & Wan, 2023; Soruc

et al., 2021), this research only included speaking skills, as that was the emphasis of the study. Its result served as the dependent variable in the analysis. That is, it worked as the outcome that represented students' speaking proficiency in RQ1.

- Section four consisted of four open-ended questions for collecting qualitative data, as mentioned previously. This would be used to contribute to RQ2.

While details of the instruments mentioned mostly derived from existing questionnaires, two decisions were made uniquely to this research. First, the variables for RQ1 were selected for their great potential to correlate with students' speaking literacy and widespread mention in the literature. As demonstrated in the literature review section, these originally included students' year group (Mahawattha & Rassool, 2023), discipline (Altay, et al., 2022), EMI and EAP learning experience (Xie & Curle, 2022), and overall English proficiency levels (Soruç et al., 2022). However, proficiency was ultimately excluded due to the homogenous level among students. While the only indicator of English proficiency level that could be accessed was students' university entry exam, the way these scores were calculated was by tier rather than specific numerical score. As mentioned, NTU is the top one university in Taiwan, meaning that almost all students scored within the highest tier (ranging from one to fifteen) in all subjects. This made the inclusion of English proficiency unnecessary, as it could not provide meaningful differentiation among participants.

Second, based on the nature of the data, a variety of question-types were used in the questionnaire. These included close-ended questions, multiple choice, Likert scale, and open-ended questions. One specific decision was made regarding Likert scales as a question type. In the questionnaire, seven, rather than five, points were included in all Likert scales. This was done because Likert-scale data are often treated as scale data in analysis, although it is ordinal in nature; that is, the gap between each point is unequal (Awan & Dako, 2018). Wu and Leung (2017) argued that a 'normal distribution' normally does not exist with ordinal data but that increasing the number of points could more closely approximate the underlying distribution, justifying this research's decision to include seven points. Another decision was to leave the open-ended questions in the last section as optional to answer. As Reja et al. (2003) observe, open-ended questions can create frustration

in participants, leading them to abandon the questionnaire. While it was crucial to keep these questions to enrich the qualitative data, considering the limited participants in the focus groups, these questions were left optional to lower the risk of participants giving up altogether. The number of open-end questions was also kept as few as possible to avoid participant fatigue (Rolstad et al., 2011).

3.5.3 Pilot Study

Pilot studies are crucial for predicting potential problems with the research process and instruments, which sheds light on improvements that can be made beforehand (Morin, 2013). Six participants were invited to test out the questionnaire before distributing them to the actual participants, as Lackey and Wingate (1997) argue that pilot study should include approximately 10% of the number of participants in the actual research. As mentioned previously, besides NTU, there are still three other beacon universities that received government's resources to develop EMI courses. The participants were recruited from these universities, as In (2017) argues a similar selection process and requirements of pilot study participant to better reflect on the instrument's suitability. Through this testing process, a few amendments were made so that the translated version in Mandarin Chinese sounded more precise and natural, but no change to the English-language questionnaire was made.

3.5.4 Method of Analysis

To analyse different kinds of data, two types of analysis methods were used in unpacking the quantitative result for RQ1.

ANOVA has long been an essential tool of researchers to compare and check whether there are significant differences between the mean of more than three groups (Armstrong et al., 2000). It is an important tool for avoiding the multiplied chance of error when conducting t-tests repeatedly (Kim, 2014). To analyse sub-questions 1 and 2 for RQ1, one-way between-group ANOVA tests were conducted. One-way ANOVA tests (Ross et al., 2017) were used because each sub-question was analysed separately, meaning there was only one independent variable (e.g. year group) with several levels (e.g. year 1, 2, 3, and 4) and one dependent variable (e.g. speaking proficiency) to analyse. That is, the interaction between different independent variables was not investigated. For the levels used to analyse each

independent variable, four year groups were compared by themselves, and disciplines were grouped into social sciences, natural sciences, business and marketing, and engineering. Although ANOVA could not provide details about subgroup or 'pairwise' differences (McHugh, 2011), this was not an aspect required to answer the RQ, making ANOVA an adequate analysis method.

Simple linear regression is a statistical analysis method that explores the relationship between one independent variable and one dependent outcome variable (Marill, 2004). As Hope (2020) puts it, it is useful to understand how much one factor can be used to predict an outcome. Although it is the simplest form of regression analysis, Lichtenberg and Şimşek (2017) attest to its effectiveness in particularly small-sample-size research. They looked into 60 sets of regression samples with small training sets and found that simple linear regression almost always outperformed more complex models such as state-of-the-art regression and multiple regression. Regarding the small scale of this research, and that the sub-questions 3, 4, and 5 of RQ1 ask how much these specific scale variables (independent variables) could predict students' speaking literacy (dependent variable), simple linear regression was the most suitable analysis method. Although Çankaya and Abacı (2015) have pointed out the sensitivity of outliers as a limitation of simple linear regression, the use of Likert scales in collecting data helped avoid this drawback, as the variation of the result given was controlled within 7 points. This again suggested simple linear regression as an adequate method for answering the RQ.

3.6 Qualitative Data Collection and Analysis

3.6.1 Method of Data Collection and Research Instrument

With little research looking into speaking in the Taiwan's EMI context, focus groups were chosen in this research for their ability to generate novel ideas (Litosseliti, 2003) and find ideas in common, or differences in opinion (Rabiee, 2004). Qualitative data is important for eliciting detailed information or reasons behind an answer (Ruona, 2005), making focus groups ideal for brainstorming ways to enhance student support. To facilitate participants' precise expression, Chinese was chosen as the language used in the focus group discussion. The design of the focus group was mainly topic-based. That is, only some main questions were given as guidelines

for students to follow (see Appendix 2), but no specific questions were listed out for students to answer one by one. While the lack of specific restrictions on what to discuss increased the chance for students to generate new ideas, it also risked leading to off-topic sometimes. Another limitation of focus groups is the domination of individuals in groups and participants' reluctance to bring up ideas that dissent from the majority (Smithson, 2000). This could lead to a lower diversity of opinions being captured. To mitigate this, the study employed variation sampling, which was discussed in the sampling and participants section (section 3.4.2). It was hoped that, by separating students with higher- and lower-English proficiency, they would have more common ideas to discuss without hindering the minority's voice.

3.6.2 Focus Group Procedure

The two focus groups were both conducted in an NTU classroom, booked in advance. Students were advised to arrive 10 minutes earlier to read the participant information sheet again and sign the research consent form. Both groups underwent a discussion of around 30 to 40 minutes on the same day, respectively. The whole discussion was audio recorded (Al-Yateem, 2012), which participants agreed in the consent form, and when the researcher confirmed again before the discussion started.

In both the discussions for higher- and lower-attaining students, the researcher invited participants to start with discussion that was relatively general (e.g. when speaking was expected to be used in their lessons) rather than personal (e.g. sharing their own challenges), to help them open up and get more comfortable chatting with other participants. To avoid participants hesitating to talk (Krueger, 1998), the questions in the guide were designed to be activities for students to solve together. More specifically, participants were asked to sort the order of speaking skills from easy to difficult, and discuss the skills they wanted to improve with the university's support. Each speaking sub-skill of the challenge scale was printed out as cards and placed on the table for them to refer to when sorting in order.

3.6.3 Method of Analysis

The audio recording of the two focus groups was transcribed into scripts for better interpretation (Stuckey, 2014). It can also be found in Appendix 3 for readers to

access and verify that the intended meaning of the participants was not twisted. This research conducted thematic analysis, which identified ideas and patterns that were brought up in common by the participants (Braun & Clarke, 2012; Peel, 2020). The analysis used hybrid coding, which combined inductive and deductive analysis (Minero et al., 2015). Although the nature of this paper tends more towards the inductive (Newman, 2000), i.e., towards exploring the topic without a hypothesis as the basis to test upon, with the review of studies in the literature review section, it is difficult to stay purely objective when coding. To minimise this effect, this research included a member-checking stage, where participants could review the interpretation of the paper and ensure their contribution was not misinterpreted (Birt et al., 2016).

3.7 Positionality

Although trying to avoid subjectivity, it is inevitable for one's personal beliefs to unconsciously affect the approach during the interpretation of the data (Küçüksu & Shelton, 2021). This makes it crucial to state one's positionality, so readers can be conscious of the potential bias that could occur in this paper (Bourke, 2014). The researcher's undergraduate and postgraduate study in the UK helps avoid prejudice towards EMI in the Taiwanese higher education system, and the absence of personal experience within Taiwanese universities allows the researcher to examine them from a relatively detached lens. However, the understanding of academic support provided in Anglophone countries may involve another type of bias. As mentioned in the literature review section, the needs of students from anglophone and non-anglophone countries can vary, even while both trying to learn content knowledge in English (Abdullah, 2005; Cai, 2017). Although striving to not apply this understanding in such a different context, it may be difficult to exclude all preconceptions about how English-taught lessons and EAP support should be during data interpretation.

3.8 Ethical Considerations

All research involving human beings carries the risk to influence them, making ethical consideration extremely crucial (Xu et al., 2020). This research paper considered macro- and micro-ethics to avoid the potential risk of harming

participants in the research (Dooly et al., 2017). The former refers to ethics of justice and the latter refers to ethics of care (Botes, 2000; Kubanyiova, 2008). Ethics of justice for this research paper is ensured through the institutional ethics approval. The university's ethics committee has reviewed and approved the research protocol (see Appendix 4), including the information about the study, methods for data storage, and all documents provided to participants. Prior to the data collection, the participant information sheet and consent form (see Appendices 5 and 6) were provided to the participants. Specifically, the documents were put on the first page of the questionnaire for quantitative data collection, ensuring participants read and agreed to the terms before proceeding to the survey (Nayak & Narayan, 2019). In the case of the focus group, the information sheet was attached to the email that invited them to take part in the focus group. Participants signed consent forms in person before the start of the discussion. Providing participants information sheets and informed consents allows them to acknowledge the purpose of this study and the potential benefits and risks they could face before voluntarily deciding whether to participate (Nijhawan et al., 2013). Xu et al. (2020) echo this point but point out the concern that participants may not read the information sheet thoroughly. To mitigate this condition, simple language was used in the content of the participants information sheet and informed consent for participants to read easily.

While institutional ethics serves as a guideline about what to be aware of, this should not be the endpoint of ethical consideration (Mortari & Harcourt, 2012), making micro-ethics essential. Although the topic being researched is not sensitive, some participants may not feel comfortable sharing the perceived challenges they face related to speaking. To overcome this, this research has carefully selected the wording in data collecting instrument to make it feel less personal (Tourangeau & Yan, 2007), for instance asking 'How do you think students will feel?' rather than 'How do you feel?' Moreover, the more personal questions for qualitative data were included in the anonymous questionnaire rather than focus groups so that students could express themselves more freely. Further, to mitigate the chance of harming participants' privacy, all identifying information that was not related to the research questions was removed. Pseudonyms were also used throughout the transcription and analysis process (Lahman et al., 2023).

Section 4: Results

4.1 Introduction

This results section will first present quantitative data, which addresses RQ1, “What factors best predict Taiwanese undergraduate students’ academic speaking literacy?” It will later analyse the qualitative data to answer RQ2, “What are the perceived speaking challenges students hope to improve on with the university’s support?”

4.2 Quantitative Phase: Assumption Check

4.2.1 Reliability

The reliability of students’ EAP experience (RQ1 sub-question 3), EMI experience (RQ1 sub-question 4), and speaking literacy (dependent variable of all sub-questions in RQ1) was first checked to ensure the internal consistency of the constructs. These specific variables are composite measures that use multi-item scales to measure a single construct. That is, unlike straightforward single item measures, we need to ensure that they are psychometrically justifiable.

Table 1 reveals a very high level of reliability (>0.8) for all three constructs (Schiphof et al., 2008) in Cronbach's alpha analysis. However, the EAP experience construct was adjusted because its items 5 and 6 were poor distributed, due to their specific focus on students’ experience engaging in the NTU EMI centre’s activities. This specificity might be too narrow for inclusion in a general construct, leading to a poor distribution of responses at the extremes – for example by being insensitive to whether participants had or had not used the university facilities – thus influencing the overall construct’s reliability. Since deleting Items 5 and 6 can increase the Cronbach’s alpha to 8.43 and 8.47 respectively, it shows the suitability to remove these items to improve the reliability of the data, while staying true to the general construct of EAP experience. After making this adjustment, the alpha reached 0.904, as can be seen in the table. This adjusted construct will be used in the subsequent analysis.

Construct	Number of items	Alpha
EAP experience	6	0.827
EAP experience (adjusted)	4	0.904
EMI experience	4	0.819
Speaking literacy	10	0.947

Table 1: Reliability check

4.2.2 Descriptive Data

Tables 2 and 3 present the descriptive statistics of nominal data variables. These provide general information about the number and percentage of participants who filled in the questionnaire.

Among the 57 students that participated in this research, the distribution within the year of study is as follows: 22.8% (n=13) were first-year students, 24.6% (n=14) were second-year students, 19.3% (n=19) were third-year students, and 33.3% (n=19) were fourth-year students. The data indicates a relatively balanced distribution, although with slightly more fourth-year students than others.

Year group	Frequency (n)	Percentage
Year one	13	22.8%
Year two	14	24.6%
Year three	11	19.3%
Year four	19	33.3%
Total	57	100.0%

Table 2: Descriptive data of participants' year of study

With respect to discipline, the sample was made up of 24.6% (n=14) social science students, 45.6% (n=26) natural science students, 19.3% (n=11) business and marketing students, and 10.5% (n=6) engineering students. Natural science represented the highest proportion, comprising nearly half of the data, followed by social science, business and marketing, and engineering. This unbalance sample, which could affect the robustness of later analysis, is acknowledged as a limitation of this paper. Moreover, as the number of engineering students is too low for ANOVA analysis, this category will be removed in the later statistical analysis.

Discipline	Frequency (n)	Percentage
Social science	14	24.6%
Natural science	26	45.6%
Business and marketing	11	19.3%
Engineering	6	10.5%
Total	57	100.0%

Table 3: Descriptive data of participants' disciplines

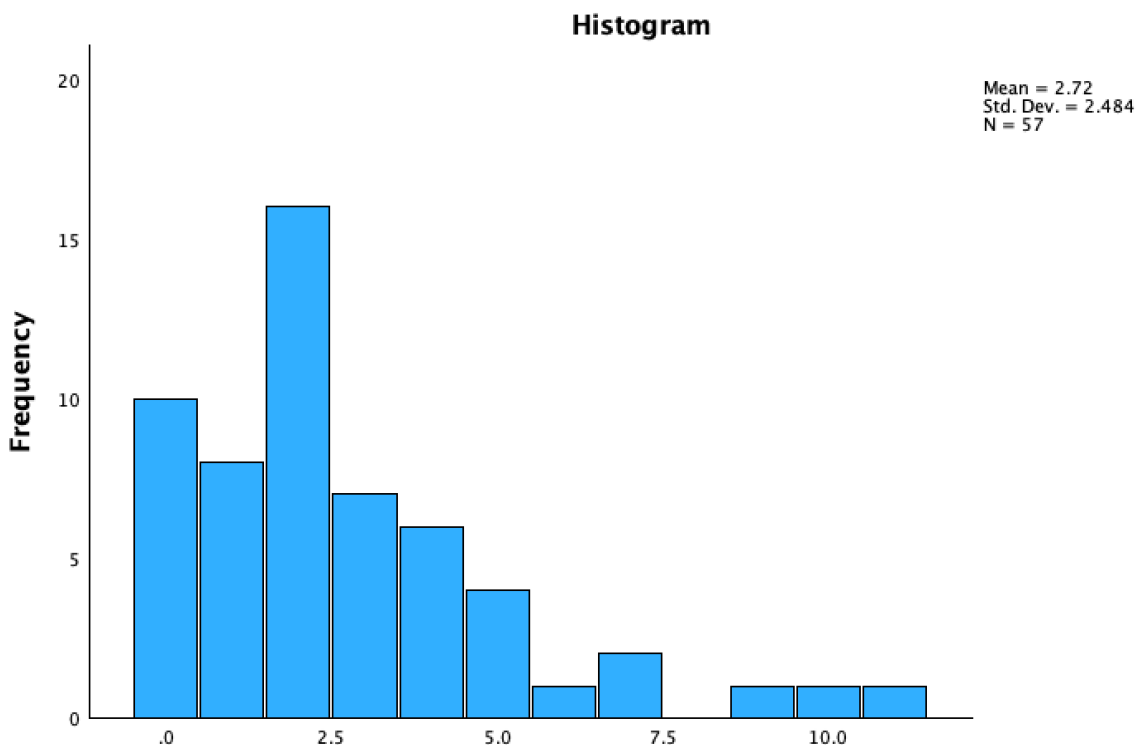
Table 4 presents the descriptive statistics of scale variables, including students' EAP experience (independent variable for sub-question 3), EMI experience (independent variable for sub-question 4), number of EMI lessons taken (independent variable for sub-question 5), and English speaking literacy (dependent variable). It provides the mean, median, mode, standard deviation, interquartile range, skewness, and kurtosis of each variable.

Variance	Mean	Median	Mode	S.D.	Range	Skew	Kurtosis
EAP (adjusted)	4.5921	4.75	6	1.79697	2.63	-.518	-.809
EMI outside of university	4.3553	4.75	5	1.76710	3.00	.154	1.020
EMI lessons taken	2.72	2	2	2.484	3	1.457	2.368

Speaking literacy	3.5053	3.4	3	1.43059	1.95	.376	-.418
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Table 4: Descriptive data for each scale variable

Skewness and kurtosis are particularly crucial to ensure a normal distribution. Since the analysis methods used in this paper, including ANOVA and linear regression, both rest on the assumption that the data is normally distributed, this was tested before moving on to the inferential analysis. According to Hair et al. (2010), the acceptable range of skewness and kurtosis is within +1 to -1. While most variables' skewness and kurtosis are acceptable, the data on EMI lessons students taken in the university is particularly high in skewness and kurtosis. In the histogram (Graph 1) created to look closer into the data, it still shows a strong skewness, suggesting that more students had less experience taking EMIs lessons within the university. Due to the poor distribution of this construct, even after transformation attempts were made, the paper will look for alternative analysis methods to deal with this specific data set.



Graph 1: Histogram of the number of EMI lessons participants had taken within the university

4.3 Quantitative Phase: Inferential Statistics

4.3.1 Sub-question 1: Does year of study successfully predict students' English-speaking literacy?

To answer this research question, one-way between-groups ANOVA was utilised. Table 5 presents the descriptive statistics of the data for all year groups and students' English proficiency. While fourth-year students had the highest mean speaking skills (4.0684), second-year students had the lowest mean (2.9429).

Year group	Participants (n)	Mean speaking skill	Standard deviation
Year 1	13	3.5231	1.38573
Year 2	14	2.9429	1.14470
Year 3	11	3.2237	1.36315
Year 4	19	4.0684	1.57482
Total	57	3.5053	1.43059

Table 5: Descriptive statistics of participants' year of study and speaking literacy

To meet the assumption of the ANOVA, the data's normality and homogeneity of variance were tested. In the Shapiro-Wilks test, no significance was found ($> .05$) for any year group, meaning they were all normally distributed (see Appendix 7a). Specifically, from year 1 to year 4, the p-values were as follows, respectively: 0.950, 0.733, 0.539, and 0.801. Levene's test also showed no significance (.655), indicating that the variance across the year groups was equal (see Appendix 7b). This means that both assumptions required for the validity of an ANOVA analysis were met.

The results of the one-way between-groups ANOVA testing among students from years one to four are listed below (Table 6). With 0.135 as the result of significance ($p > .05$, $F = 1.934$), this shows that there is no statistically significant difference in speaking skill scores between the year groups.

Source	Sum of squares	df	Mean square	F	Sig.
Between groups	11.308	3	3.769	1.934	.135
Within groups	103.300	53	1.949		
Total	114.608	56			

Table 6: ANOVA summary of participants' year of study and speaking literacy

4.3.2 Sub-question 2: Does discipline successfully predict students' English-speaking literacy?

A between-groups ANOVA was again used to investigate sub-question 2. Table 7 shows the descriptive data, indicating the mean score for speaking skills across different disciplines, with engineering students excluded as noted. Overall, social science students had the highest mean of speaking skills, followed by natural science students, and then business and management students. The standard deviation also suggests variability within each discipline.

Discipline	Participants (n)	Mean of speaking skill	Standard deviation
Social science	14	3.9786	1.55226
Natural science	26	3.3962	1.36161
Business and management	11	3.1091	1.74840
Total	51	3.5053	1.43059

Table 7: Descriptive statistics of participants' disciplines and speaking literacy

Normality tests and homogeneity of variances were again tested (see Appendix 7c), to ensure the validity of the ANOVA results. The result of the Shapiro-Wilks test

shows that the p-values were all $>.05$, meaning students' speaking literacy within each discipline were all normally distributed. The result of the Levene's test's p-value is 0.484 (see Appendix 7d), indicating that the assumption of equal variances was not violated. This makes ANOVA robust to use, as its justifying assumptions are met.

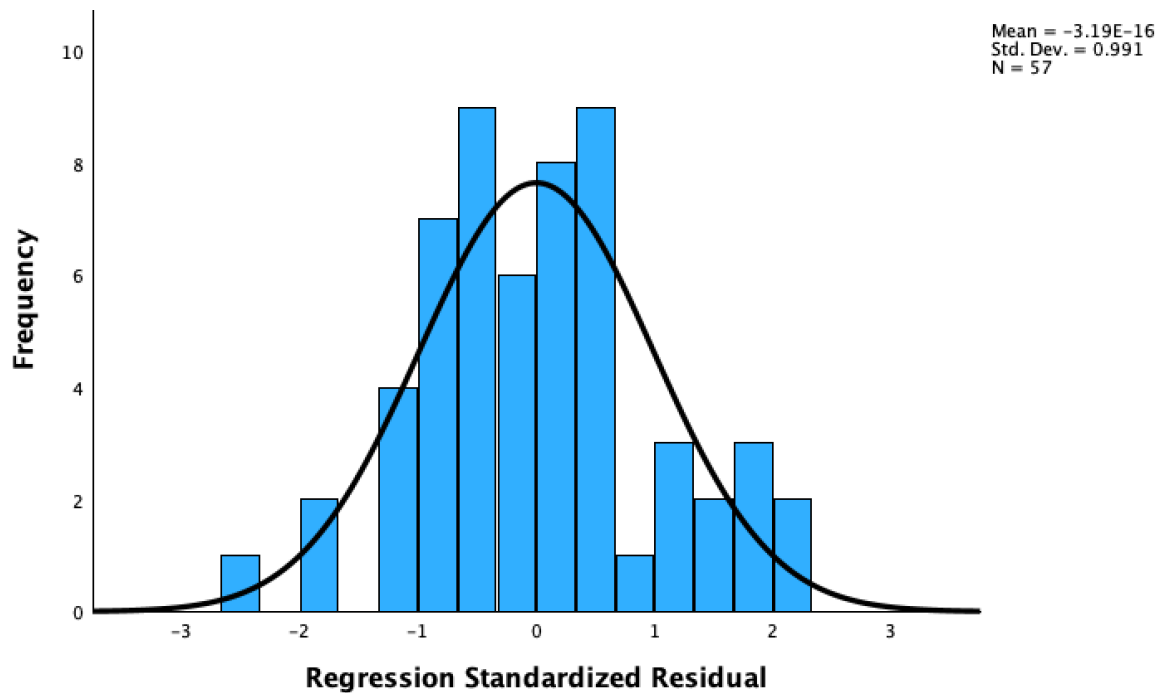
The results of the one-way ANOVA, presented in Table 8, show no significant difference across disciplines ($p=0.327$, $F=1.145$). However, it is important to note that the unbalanced sample (n) in each discipline, as mentioned in the descriptive data section, may affect the robustness of ANOVA analysis. Future studies should aim for more balanced group sizes to confirm these results.

Source	Sum of squares	df	Mean square	F	Sig.
Between groups	5.166	2	2.583	1.145	.327
Within groups	108.242	48	2.255		
Total	113.408	50			

Table 8: ANOVA summary of participants' disciplines and speaking literacy

4.3.3 Sub-question 3: Does EAP learning experience successfully predict students' English-speaking literacy?

A simple linear regression was conducted to address this sub-question, with students' EAP learning experience as the independent variable and their speaking literacy as the dependent variable. Since one of the assumptions of linear regression is that the residuals are normally distributed, it is crucial to verify this assumption, as the findings could otherwise be invalidated. Inspecting the histogram below (Graph 2) suggests that the residuals are normally distributed, therefore allowing the analysis to proceed.



Graph 2: Standardised residuals histogram for participants' EAP learning experience

Table 9 provides the R value, R-squared, adjusted R-squared, and the standard error of the estimate. The R value in the table indicates that the two variables are related, with a Pearson's correlation coefficient of 0.480. That is, the data displays a moderate correlation between EAP experience and English-speaking literacy (Akoglu, 2018). The R-squared result (.230) suggests that approximately 23% of variation in speaking literacy can be explained by students' EAP learning experience. The adjusted R-squared value, which takes into account the number of predictors in the model, suggests that EAP experience can predict 21.6% of students' speaking literacy, which may be a more accurate prediction.

R	R-squared	Adjusted R-squared	Standard error of estimation
.480	.230	.216	1.26652

Table 9: Regression summary for participants' EAP experience and speaking literacy

The ANOVA table (Table 10) suggests the overall significance for this regression model. The result being statistically significant, $F(1, 55) = 16.448$, $p < .001$, shows that EAP experience is a significant predictor of English speaking literacy. It also

suggests this model with the independent variable adds significant explanatory and predictive power over the baseline model, which only uses the mean of the dependent variable.

	Sum of square	df	Mean square	F	Sig.
Regression	26.384	1	26.384	16.448	<.001
Residual	88.224	55	1.604		
Total	114.608	56			

Table 10: ANOVA for regression analysis of participants' EAP experience and speaking literacy

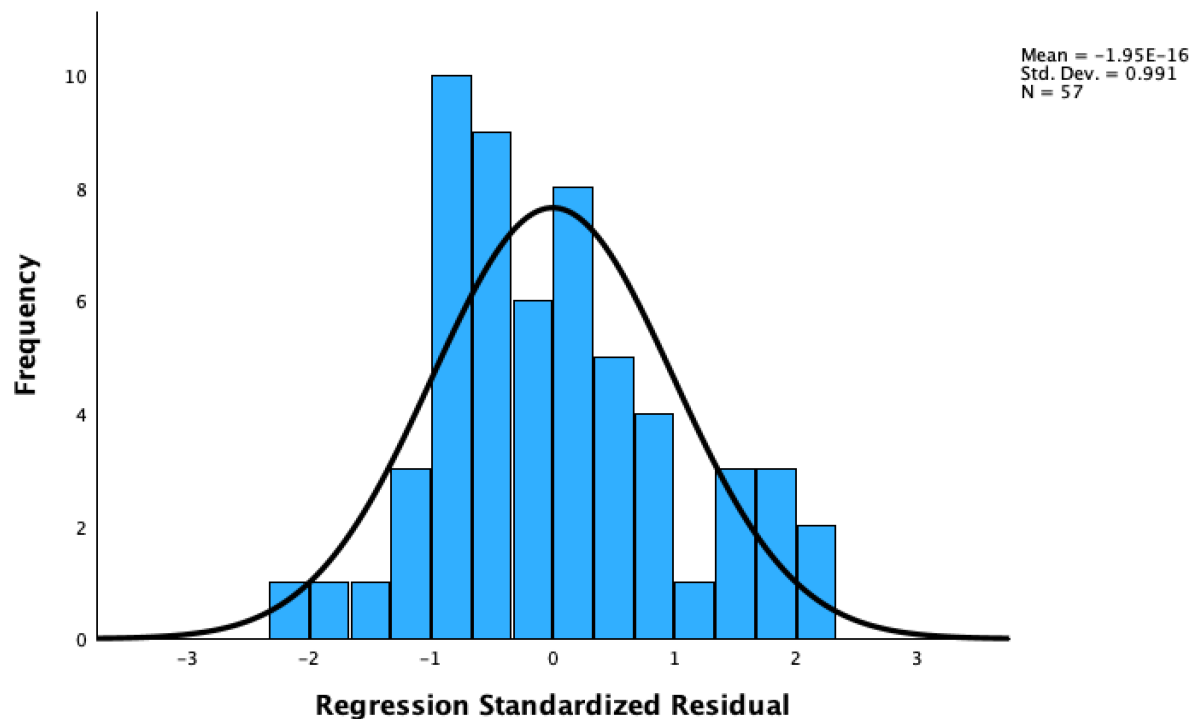
Table 11 highlights both the unstandardised coefficient and the standardised coefficient (beta). The unstandardized coefficient of .382 indicates that for each unit increase in EAP experience, speaking literacy is expected to increase by 0.382 units. Furthermore, the standardised coefficient (beta) of 0.480 suggests that, for each standard deviation increase by 1 in students' EAP experience, their speaking literacy will go up .480 standard deviations. Both measures reflect the strength of the relationship between EAP experience and English-speaking literacy. Additionally, since the significance level for EAP experience is $p < .001$, this predictor is statistically significant.

Coefficients	Unstandardised coefficient	Standard error	Standardised coefficient (beta)	t	Sig.
(Constant)	1.751	.464		3.775	<.001
EAP experience	.382	.094	.480	4.056	<.001

Table 11: Coefficients from regression analysis of EAP experience and speaking literacy

4.3.4 Sub-question 4: Does EMI learning experience outside the university successfully predict students' English-speaking literacy?

Again, a simple linear regression was used to explore whether students' English-speaking literacy can be predicted through students' EMI learning experience outside the university. Graph 3 suggests that the residual forms a normal distribution, and is therefore adequate for conducting a linear regression analysis.



Graph 3: Standardised residuals histogram for EMI learning experience

The R value in Table 12 indicates a weak correlation ($r = 0.301$) between EMI experience outside the university and speaking literacy. The R-squared value (0.091) suggests that only 9.1% of the variance in speaking literacy can be explained by a model containing only EMI experience outside the university.

R	R-squared	Adjusted r square	Standard error of estimation
.301	.091	.074	1.37641

Table 12: Regression summary for EMI experience and speaking literacy

Despite the correlation not being particularly strong, Table 13 shows that the regression model is statistically significant ($F(1, 55) = 5.496, p = .023$), indicating the usefulness of this model for predicting students' English speaking literacy.

	Sum of square	df	Mean square	F	Sig.
Regression	10.411	1	10.411	5.496	.023
Residual	104.197	55	1.894		
Total	114.608	56			

Table 13: ANOVA for regression analysis of EMI experience and speaking literacy

The unstandardised coefficient (B) for EMI experience outside the university is 0.244. This suggests that every unit increase in EMI experience will result in an increase of 0.244 units in speaking literacy. The standardised coefficient (beta) is 0.310, meaning that speaking literacy will increase by 0.310 standard deviations for each standard deviation increase in EMI experience. The predictor is statistically significant ($p = .023$), meaning that this result is unlikely to be due to chance.

Coefficients	Unstandardised coefficient	Standard error	Standardised coefficient (beta)	t	Sig.
(Constant)	2.443	.489		4.999	<0.01
EMI experience outside	.244	.104	.310	2.344	.023

Table 14: Coefficients from regression analysis of EMI experience and speaking literacy

4.3.5 Sub-question 5: Does the number of EMI lessons students take at the university successfully predict their English-speaking literacy?

The final sub-question in RQ1 explores the relationship between the number of EMI lessons students take in the university and their English-speaking literacy. Unlike the two previous sub-questions, this specific variable's skewness (1.457) and kurtosis

(2.368) are not acceptable for conducting a simple linear regression, as planned. Spearman's Rank Correlation, which is a nonparametric measure without a normality assumption, was therefore chosen to replace simple linear regression here. The result shows a weak to moderate, positive correlation between the number of EMI lessons students take within the university and their speaking literacy, which was statistically significant ($\rho = 0.262$, $p = 0.049$).

4.4 Qualitative Phase

This section aims to address RQ2, "What are the perceived speaking challenges students hope to improve on with the university's support?" As mentioned in the methodology section, the qualitative data of this research paper was collected via both questionnaires and focus groups. In analysing the themes from the two data collection methods, both commonalities and unique aspects emerged from the two methods. This paper therefore separates these themes into two sections. The former discusses themes that emerged in both types of data, while the latter presents unique themes that emerged from each method. This decision was made because the survey responses, which were collected from a larger sample size, naturally provided a higher frequency of data points compared to the focus groups, which consisted of a smaller number of participants. As themes are formed based on the number of counts being mentioned, the ideas expressed in the focus groups were less likely to form themes than the questionnaires. Since different methods of data collection can yield different insights due to reasons such as anonymity and depth of discussion, separating the result into themes in common and unique themes from each data type ensures that the survey responses do not overshadow the ideas from the focus groups.

4.4.1 Themes in Common

Table 15 presents the themes that emerged consistently across questionnaire responses and focus group discussions.

Themes	Number of times theme was mentioned	Number of people who mentioned the theme
Confidence at speaking	17	12
Presenting ideas and information	13	12

Table 15: Themes in common

Theme 1: Confidence at Speaking

Participants frequently expressed their confidence of speaking as a challenge they hope to overcome for their speaking literacy development. One of the respondents in the questionnaire said: “I would like to learn more about communicating confidently in English. This is because a lot of the time when I express ideas, I will suddenly feel insecure and less confident due to the language, even though I know the answer.” This idea was also echoed by Participant B from the higher attainment focus group, who stated, “I’m afraid that people won’t be able to understand me, so I might just mumble through it.”

One interesting finding about confidence in speaking is that, while many students expressed their lack of confidence in speaking English, they also seemed to understand it as the most important element. For instance, Participant A from the higher attainment focus group suggested that, “Even with errors related to grammar, pronunciation, and wording, as long as you dare to express yourself, your ideas can be conveyed.” Participant A from the lower attainment group also contributed similar ideas: “Those minor errors don’t really seem so important, as long as everyone can understand you roughly and you have the courage to speak English.” This also seems to be the belief of the EMI Centre in NTU: Participant C, who has regularly participated in their events, noted that “they wouldn’t really mind if you say something wrong, as long as you are willing to speak.” The NTU EMI Centre appears to actively focus on enhancing students’ speaking confidence by fostering a supportive environment. Participant B from the higher attainment group, who also participated in their EAP course, opined: “I think it’s mainly because everyone there would speak English, so you get more courage to speak English too. Even though I’m still really bad at speaking English, it does make me more courageous to speak.”

Theme 2: Presenting Ideas and Information

Another speaking sub-skill that participants expressed a desire to develop was presenting ideas and information. Many focus group members noted the importance of final presentations, as illustrated by Participant C from the lower attainment group, who said: “At the end of the term, we'll have to do a group presentation.” The questionnaire responses also confirmed the prevalence of the theme across a larger sample; 18 students' questionnaire responses mentioned final oral presentations as the time when they would have to use English speaking skills the most.

Additionally, presenting ideas extends beyond formal presentation to sharing thoughts in lectures. As Participant B in the higher attainment group put it directly: “I would like to learn more about presenting final presentations and simply ideas in the class.” Participant D in the lower attainment group added to this idea, expressing: “I think we use this one [expressing information and ideas in English] more often. Unlike presentations that we often only do during finals, this seems more common in the lessons throughout the module.” Other participants' contributions suggested that being asked to present ideas is a common practice in NTU EMI lessons. Participant A from the higher attainment group explained: “You have to go up to the stage and report the results of your group's calculations. The teacher might ask you a little bit about the theories you used or the process of calculation.” Similarly, Participant A in the lower attainment group expressed that “sometimes, after group discussions, the teacher would ask each group to share their thoughts. If no one in your group speaks up, you might have to talk more.” One extra finding worth noting relates to the questionnaire asking whether participants thought that speaking skills could influence GPA. For most students who answered yes, the explanations tended to fall into two categories: final presentations as assessment and participation scores to gain by presenting ideas in lectures, which happens to align with their hopes to develop their skills at “presenting ideas and information.”

With the hope to develop ability to present ideas, some students further suggested specific methods that could help them. Participant C in the lower attainment group expressed that “it would be helpful to have some sentence structures and expressions that sound natural in English, rather than Chinglish, for us to learn about how to speak more fluently and coherently.” Participant A in the higher attainment

group also suggested similar ideas, and elaborated on this: “I think it's quite useful if the teacher can provide some sort of template for us because you can start learning and practising to express yourself with the sample being provided with. Every time you use that structure, speaking it yourself can surely deepen the impression a little bit. I think that kind of immersion can definitely help us gradually become familiar with the sentences for presenting ideas, until we can use them naturally.”

4.4.2 Themes that Are Unique to Each Type of Data

Having discussed themes in common, Table 16 presents the ideas that emerged uniquely in each dataset. Of these five themes, two were drawn from the questionnaire data, and three were drawn from the focus group.

Themes	Dataset of origin	Frequency theme was mentioned	Number of people who mentioned theme
Communicating ideas fluently	Questionnaire	15	15
Speaking accurately (grammar)	Questionnaire	10	10
Asking questions	Focus group	11	6
Vocabulary	Focus group	7	4
The mix of language use in class to understand content knowledge	Focus group	6	5

Table 16: Themes unique to different data type

Theme 3: Communicating Ideas Fluently

While fluency is classified as a unique theme that emerged from the questionnaire, this is not to say that this theme was entirely absent from the focus group discussions. Rather, the questionnaire highlighted fluency as a key challenge where students sought the university’s support, in contrast to the focus groups’ recommendations, which did not emphasise fluency to the same extent. The ability to communicate ideas fluently was the most frequently raised speaking skills that

participants desire to improve in questionnaire. Examples include: “I want to be able to communicate fluently in English, so I can participate in discussions and communicate with my classmates about various things inside and outside the classroom,” and “I will choose communicating fluently as the skill that I want to learn. A lot of the time I would get stuck in the middle of expressing myself and I find it difficult to talk fluently.”

In contrast, the focus groups did not raise fluency as a challenge they hoped to improve on with the university’s support. Many participants suggested the impracticality of the university assisting them with fluency as a speaking challenge, making them not mention it enough to form a theme. “I think fluent communication for example will at least lie on skills such as confidence to talk, ability to answer other people’s questions, and to ask questions”; “To be honest, I think if we could successfully communicate [fluently], that basically means we are capable of the rest of the skills” (Participant B, lower attainment focus group). Participant A in the same group agreed, summing up the idea nicely: “That’s true, even if we want to prioritise learning it, it’s not going to be easy to develop without considering the rest of the skills.”

Theme 4: Speaking Accurately (Grammar)

Grammar is another hugely mentioned aspect in the questionnaire. One respondent expressed: “[I want to develop] speaking accuracy, because I don’t want to keep producing sentences that contain grammatical errors.” Another respondent expressed concern with not being able to deliver their meaning precisely due to incorrect grammar: “I want to learn about grammar in spoken English to ensure what I want to say is conveyed to the others correctly.”

Focus group participants again opposed the idea of prioritising spoken grammar in the university support. As discussed with Theme 1, focus group students understand the confidence of speaking to be more important than emphasising on minor errors. As Participant C in the higher attainment group put it: “Having incorrect grammar is not something detrimental.” Another reason why focus group participants did not take grammar to be a teaching priority is again due to the practicality of its development and its difficulty to use correctly on the spot. “For grammar, even though you might know it, you can’t always use it on the spot. After learning more

about the rest of the subskills, you might naturally start using the grammar you know. I mean if you can't speak fluently, you can't focus on the grammar" (Participant A, lower attainment group).

One interesting finding was that one respondent to the questionnaire proposed a similar idea to that of the focus group participants, but presented with a positive attitude. While expressing similar ideas as the focus group participants, saying: "It's difficult to pay attention to grammar while speaking" (Participant D, lower attainment group), this respondent still identified grammar as the speaking skill they wished to develop. "I want to learn about speaking accuracy (grammar). A lot of the time you don't think about it when you speak, so it's easy to ignore it." This shows that some students still hope to receive support with grammar, despite acknowledging its difficulty, adding an extra layer of controversy to whether grammar should be included in the university's support offerings.

Theme 5: Asking Questions

While not being mentioned at all in the questionnaire, asking questions was pointed out as one skill that students in the focus group hoped to prioritise. As Participant C in the lower attainment group expressed straightforwardly, "I would like to focus on learning about asking questions." Participant D in the lower attainment group mentioned language as a barrier that prevents her from asking questions in class: "I normally would ask questions in the lectures conducted in Chinese. However, due to the EMI lesson, I don't really do it as much now." This is echoed by Participant A in the higher attainment group who suggests that "We don't even know how to ask questions in class because what we are learning is very academic and abstract ideas. Adding a foreign language as an extra barrier made us barely want to speak in the lesson."

When it comes to the specifics of why they find asking questions difficult, students pointed to their inability to independently construct questions. As Participant A in the higher attainment group put it: "If someone asks you a question or a teacher asks you a question, you can basically make up a sentence from the question and change it into a new sentence. However, if you really want to ask a question, it will be a little bit more difficult to do so." Participants B and C from the same group agreed, with Participant B further elaborating on the idea: "Right! You have to have your own ideas and the ability to construct the sentence by yourself. As you're the person

asking the question, you have to let people know exactly what you want to express and what you really want to ask, meaning your sentence organisation, structure and wording all have to be more precise than when you're answering." Participant D further highlighted the pressure of asking questions; its involving interactions with a teacher posing a further barrier: "Asking questions may be a bit more difficult as those involve talking to teachers. You could have greater pressure doing it than having a discussion with your classmates." This idea was later supported by all of the other participants, leading them to suggest asking questions as the skill they hope to develop through support from the university.

Theme 6: Vocabulary

During the focus group discussion, participants were provided with the list of academic speaking challenges brought out by Evans and Morrison (2011) as a basis for discussing the challenges that they face. However, Participant C in the higher attainment group offered a different perspective: "I think the most difficult part is not listed out here. In my opinion, the hardest thing is to decide which specific vocabulary to use." Participant D added: "Sometimes, even if it's just slightly different words, the meaning can change totally." Difficulties with vocabulary also extends to technical terms. Participant A in the lower attainment group expressed that "[In the case of] more specialised vocabulary, it might make you become unsure about what to say." Participant A in the higher attainment group likewise expressed: "I have to turn all the words I learned in high school into English and memorise everything again." It is worth noting that students' own perceptions of having insufficient vocabulary knowledge can further influence their confidence in speaking. For instance, Participant A from the higher attainment group argued that "[being] scared of using the wrong vocabulary, for example, will stop you from being confident." In light of discussing these difficulties, they also suggested some possible support they hoped to receive: "Maybe they could provide a list of terms before the class, so we have time to familiarise ourselves with them." (Participant A, lower attainment group).

Theme 7: Mixed Language Use in Class to Aid Understanding of Content Knowledge

Despite not being an element of the EMI speaking challenge scale, both focus groups mentioned the idea that teachers should sometimes using Chinese during

teaching. While this does not seem to relate directly to students' speaking literacy, this theme is included here because Participant A in the lower attainment group expressed: "I think sometimes what stop me from engaging and talking in the EMI lesson is because I do not understand the content well enough that I can start contributing or expressing my thoughts in the lesson." As Chien and Valcke (2020) suggest, a lack of understanding of the academic content can be a significant restriction to students' spoken interactions, justifying this research paper's including this theme for its potential ability to support students' speaking skills development.

Participant A in the lower attainment group shared his positive experience of teachers mixing language use in lectures: "When the teacher sees the Taiwanese students looking confused, they'll just quickly use Chinese to explain, and everyone would go, 'Oh!' I think in that specific lesson, I'm more willing to express ideas because I am more confident about how I have the correct understanding of the knowledge." Participants D from the higher attainment group and the lower attainment group added to this idea, respectively: "At least suggest teachers to use a little bit of Chinese to explain things sometimes"; "Yes, just not insisting on using English all the time during class."

Participants specifically pointed out two moments when Chinese can be used more frequently. Participant B in the lower attainment group suggested that "for technical terms, they could quickly translate them, so we can know what they mean right away." Participant D in the same group also echoed this: "You might have a rough idea of what they're trying to say, but you can't quite grasp what are those terms' meanings in Chinese." Besides technical terms, explanations of key ideas in Chinese are also useful: "When it comes to the explanation of concepts, Chinese can be used quickly to provide us a brief idea about what is going on" (Participant B, higher attainment group).

4.5 Conclusion of Results

This chapter indicated that Taiwanese undergraduate students' academic speaking literacy is influenced by their EAP experience, EMI experience, and the number of EMI lessons they have taken. It also highlighted various speaking challenges that students hoped to address with the university's support, including some suggestions

on how to partly address these challenges. In the following chapter, these results will be further unpacked.

Section 5: Discussion

5.1 Introduction

This section will interpret the data from the results section and address the research questions. RQ1: “Which factors best predict Taiwanese undergraduate students’ academic speaking literacy?” will be mainly addressed using the quantitative data, alongside some qualitative data to provide deeper insights. RQ2: “What are the perceived speaking challenges students hope to improve on with the university’s support?” will be discussed using qualitative data. This section will make links with existing literature to form a deeper understanding of the topic; this will shed light on how the findings can contribute to the wider literature in the field and provide implications for pedagogy and educational policy.

5.2 Research Question One

5.2.1 Elements Where Significant Results Were Found

RQ1 of this paper asked, “Which factors best predict Taiwanese undergraduate students’ academic speaking literacy?” focusing on five specific variables: students’ year of study, discipline, EAP learning experience, EMI learning experience outside the university, and number of EMI lessons taken at the university, each corresponding to one of the five sub-questions. The quantitative data presented in results section suggested statistical significance in EAP learning experience, EMI learning experience outside of the university, and number of EMI lessons taken within the university.

A. EAP Experience

While only displaying moderate predictive power, EAP learning experience was the strongest predictor of speaking literacy out of all variables tested in the paper. The usefulness of EAP learning experience found in this paper aligns with many current studies (Rohmah & Halim, 2023; Zou & Jiang, 2021). Tunç (2021) has argued that EAP lessons are key to helping students develop the confidence to speak English.

Similarly, Thompson et al. (2022) also found that EAP classes raised students' confidence in EMI lessons and predicted future achievement in EMI courses. This improvement in speaking confidence is particularly critical in supporting students' speaking literacy – Kudo et al. (2017) argue that lack of confidence is a major cause of students' silence in class. Our findings in the qualitative phase (theme 1) also suggested confidence to affect students' speaking, which again supports the significance of EAP lessons to improve students' speaking confidence.

One interesting pattern identified among this research's focus groups is that, almost all students attended EAP programmes reported their tutors to encourage them speak frequently. This supportive environment and the emphasis on speaking skills in EAP lessons could be a major reason for the positive correlation found between EAP experience and students' speaking skills in our research, as compared to studies which do not find the same results, such as Terraschke and Wahid (2011). Aizawa et al. (2020) suggest that, while writing skills are often perceived as difficult in EMI lessons, this trend did not emerge in their research, due to their pre-sessional EAP lesson's focus on developing writing skills. This indicates the importance of emphasising specific language skills in EAP lessons. That is, since the participants in this research receive much time developing speaking skills in EAP lessons, it stands to reason that they became better at speaking. This finding implies that future EMI implementations in Taiwanese universities should draw on the experience and continue implementing EAP courses to support students, and emphasise speaking in EAP lessons.

B. EMI Experience outside the University and EMI Lessons Taken within the University

As with EAP experience, the predictive power of previous EMI experience, both outside and inside the university, found in this research is supported by much existing literature. For instance, Kohnke and Jarvis (2023) and Lin and Morrison (2010) identified that students spoke more in EMI lessons if they had previous EMI learning experiences in secondary school. Terraschke and Wahid (2011) also found that even without previous EMI experience before entering university, students perceived their speaking skills to improve after a year of study. This indicates that

EMI experience can enhance students' speaking literacy to engage in university EMI lessons.

One crucial explanation for students with more EMI learning experience to show better speaking literacy may stem from their greater understanding of content knowledge in English. As Chien and Valcke (2020) highlighted, not understanding the relevant content knowledge well enough can make students resist speaking in class. Echoing Chaiyasat and Intakaew (2023), who suggested EMI students' difficulties in understanding content knowledge, our result section found students expressing: "I have to turn all the words I learned in high school into English and memorise everything again." This quote suggests that, compared with students who have learned the relevant terms in English through previous EMI learning experience, students who have not encountered these terms in similar settings can struggle to understand the content, leading to lower speaking literacy. Another key factor is how comfortable students are at speaking in lessons. As mentioned in the literature review, many Asian students are shy to express their ideas in the classroom (Ma & Lilliati, 2022). Morell (2020) has argued that many EMI classrooms incorporate student-centred learning, which allows students to become more accustomed to contributing in class. This continual practice of speaking can help them become more confident doing so and authentically improve their speaking literacy (Rao, 2019). The correlation found here between EMI experience and speaking literacy helps strengthen our understanding of EMI experience's importance in predicting students' speaking literacy in EMI lessons. This result's consistency with the literature also provides important implications; in particular, the Taiwanese government's current efforts to already implement EMI learning at the school level could bring about a positive impact on students' speaking literacy in the long-term, and therefore allow them to better actively participate in EMI lessons.

5.2.2 Elements Where No Significant Result Was Found

Unlike the positive findings above, the results show that year of study and discipline are not good predictors of students' academic speaking literacy (RQ 1.1 and 1.2). This finding aligns with Kym and Kym (2014), who investigated 364 students enrolled in EMI lessons in a Korean university, and found the same result for students' year of

study and their major. Although they did not deeply explore the reasons behind this result, other studies have shed light on potential explanations.

A. Year of Study

This research found year of study to have no significant impact on students' speaking skills, unlike literature such as Kırkgöz (2013). This finding may stem from how results can be easily influenced by teachers' teaching styles, as mentioned in the literature review section. As Bolton et al. (2023) suggest, many EMI lessons in Asia do not demand speaking skills. This is, if a first-year student has engaged with EMI modules that encouraged them to speak in almost every lesson, their improvement may be greater than a fourth-year student who attends modules that did not ask them to talk. In this sense, a student's year group does not necessarily determine the amount of speaking skills they use in EMI lessons, and therefore may not directly impact on perceived speaking literacy. The non-significant finding may also stem from the self-reported nature of the EMI challenge scale. This is suggested because although first-year students have a surprisingly favourable perception of their own speaking abilities, from year two to year four, there is a consistent, gradual improvement in the mean of students' measured speaking abilities, with 2.9429 as the mean speaking skills score for year two, 3.2237 for year three, and 4.0684 for year four. Zhou and Rose (2024) found similar results in their study of listening: students' perceived challenges rose from the beginning of their course to the midterm, and decreased from the midterm to the end of the course. This effect can be explained by suggesting that students did not fully understand the difficulty of certain skills at the beginning of the course, leading them to rate their speaking skills higher than expected. That is, through a year of learning, students discovered more difficulties in the EMI lessons, leading to a sharp decrease in perceived speaking literacy. This shows that the result may have been different if this research had been carried out using classroom observation or direct speaking tests, which do not rely on students' self-assessment of their academic literacy level. Future studies could employ different data-collecting methods to explore this further and validate these findings.

B. Discipline

The imbalance data in discipline of this research may have influenced the result, leading to non-significant findings. What's more, different teachers' teaching styles may also play a role here, as in the discussion of year of study above. As Ma and Lilliati (2022) suggest, EMI lessons in most Asian universities are still considerably teacher-centred. That is, while the emphasis on language may vary across disciplines, as argued in the literature review, if students are not encouraged to speak in lessons, their development will be limited, regardless of the discipline they are studying.

5.3 Research Question Two

RQ2, "What are the perceived speaking challenges students hope to improve on with the university's support?" includes not only "the speaking challenges students want to improve" but also "with the university's support". That is, the practicality of the university assisting students, and how they can do so, also play a significant role in answering this question. To most effectively address the question and provide implications in a more structural way, the results will be discussed in three parts: the areas of speaking challenges that EAP courses can support, the areas of speaking challenges that EMI courses can support, and the areas of speaking challenges that are more difficult to support. By the end of this section, this paper will have gone through students' speaking challenges and the extent to which the university can support them. These discussions, combined with the existing literature, will help address RQ2 and provide insightful pedagogical implications.

5.3.1 Speaking Challenges that EAP Course Can Support

EAP courses can provide relatively straightforward support with speaking challenges, including confidence in speaking (theme 1), presenting ideas and information (theme 2), asking questions (theme 5), and vocabulary (theme 6).

A. Confidence in Speaking

Confidence in speaking is the most frequently mentioned challenge for students in both questionnaires and focus group discussions. Participants reported a great fear of making errors, which undermined their confidence to express ideas in class. This

finding is in line with Boivin and Razali (2013) who suggest that speaking anxiety largely exists in EMI lesson due to a lack of speaking confidence. Studies have also pointed out that grammar (Akhtar, 2021) and vocabulary challenges (Chaiyasat & Intakaew, 2023; Phuong & Nguyen, 2019) can contribute to students' fear of making errors, which further influences their confidence. This suggests a multifaceted nature to speaking confidence, as it can be influenced by other speaking elements. This finding also reinforces the role seen in the literature of speaking confidence as a challenge in EMI lessons, and the relationship between language accuracy and speaking confidence.

One notable finding is that most students do acknowledge minor language errors to be unimportant as long as they are confident enough to deliver their ideas, although emotionally it does inhibit their willingness to speak. This suggests that while students describe confidence as a speaking skill they hoped to develop, what might support them best is simply a push and an encouraging environment. Literature has highlighted different aspects EAP teachers can consider to create an encouraging environment and facilitate students' speaking. For instance, although Lai's (2023) research suggested that students hoped to receive language error correction from their teachers, Weekly et al. (2022) interviewed three EAP teachers who argued that sometimes *not* correcting students' errors in pronunciation and grammar, especially those who are shy, can avoid discouraging them from speaking. Both Rohmah and Halim (2023) and Farrell and Yang (2019) echoed this perspective of being selective in correcting errors and further argued for the importance of providing students with significant time to speak, to make students become more confident in doing so. The findings from the focus group of our research also build on this perspective. As shown in section 4.4.1, one student mentioned: "I think it's mainly because everyone there would speak English, so you get more courage to speak English too. Even though I'm still really bad at speaking English, it does make me more courageous to speak". This comment implies that the suggestions found in the current literature also fit into the setting of this research paper. That is, EAP teachers in Taiwanese universities should strive to create more chances for students to talk, and provide encouragement to help students to develop their speaking confidence.

B. Presenting Ideas and Information

Presenting ideas and information was also a speaking challenge that was pointed out within both the questionnaire and focus group data. As discussed in the results section, students expressed this skill as the most frequently demanded speaking skill in class. The frequent required use of this skill is supported by Yuan and Yang (2023), who found that students were consistently asked to share and report their thoughts after conducting group discussions. Lai (2023) also investigated 42 local Taiwanese undergraduate students and found that they often needed to present their ideas in class. This shows that the needs of presenting ideas discovered in our findings also appear in many other EMI contexts, so our findings further support the existing literature.

While presenting ideas is frequently required, our quote presented in the result section suggests many students nonetheless find it challenging and tend to resist it: “Sometimes, after group discussions, the teacher would ask each group to share their thoughts. If no one in your group speaks up, you might have to talk more”. Olejarczuk (2023) also reported students describing oral presentations as stressful, with some emphasising their worries about making mistakes. Although Olejarczuk (2023) adopted a mixed method, only qualitative results were used to support the point here because many of their results’ means were over four points, suggesting errors made in processing data, since the author claims to have used a four-point Likert scale. Since the present research suggests that presenting ideas and information is a critical skill that influences NTU students’ GPAs, which aligns with many studies investigating different contexts (e.g. Chien & Valcke, 2020; Fujimoto-Adamson & Adamson, 2018; Li & Wu, 2017), students would hugely benefit from learning these skills through EAP courses (Bankowski, 2010). This point is echoed by Zabrovskaya and Rubleva (2019), who have also pointed out the importance of teaching presentation skills to students.

Interestingly, presenting ideas is one of the few challenges for which participants suggested a specific way they hoped to be supported: students suggested that teachers can provide them with a list of example sentence structures as guidelines. This could be useful, as the British Council suggests the importance of providing example presentations for students to learn from (Hayton, n.d.). Similarly, Mak

(2021) points out the importance of providing input related to the typical features of academic presentation. Asadnia and Atai (2022) have further found that by introducing examples of questions and responses that can occur in the question-and-answer section at the end of the presentation, students become better at dealing with them. These examples help to justify the possible benefits that the NTU students' suggestions could bring, and provide a valuable insight from direct end-users on how EAP courses can support them.

C. Asking Questions

While asking questions can be crucial for getting further information or clarification on a topic (Gillett, 1996), our qualitative data suggests that it poses a great challenge to participants in EMI lessons. This phenomenon is also found in existing literature; for example, Zumor and Qasem (2019) found that approximately 72% of students avoided asking questions in EMI classes due to the language barrier. Macaro and Tian (2023) also investigated two EMI classes in China and found that, while very few students asked questions in the lesson, many students would approach the teachers afterwards to ask questions in Chinese. Sahan et al. (2021) even noted students use Turkish to ask questions during EMI lessons. While much literature identifies asking questions as a great challenge in EMI lessons, almost no research specifically looks into how this can be supported. From the data collected here, the main reasons participants suggested this skill to be difficult included not knowing how to structure the sentence and not understanding the content well enough to ask further questions about it. Similarly to Asadnia's and Atai's (2022) suggestion of teaching students to cope with the question-and-answer section at the end of oral presentations mentioned above, introducing the question types using examples to teach common sentence structures when asking questions could be useful. While asking questions may also be affected by individuals' understanding of the content knowledge and vocabulary, how these can be supported will be discussed further below.

D. Vocabulary

The qualitative results from the focus group discussions demonstrate that students are often unsure about how to use vocabulary "on point". As mentioned in the results section, students expressed worries about producing vocabulary that is not precise

enough to deliver a particular meaning in an academic context. This idea is also found in Generoso and Arbon's (2020) research, in which students expressed difficulties finding appropriate vocabulary when reporting ideas. Chien and Valcke's (2020) interview with Taiwanese students also asserted that students were eager to learn academic vocabulary due to their great difficulty in finding the precise words to use without learning academic spoken English. Using the academic spoken word list (ASWL) proposed by Dang et al. (2017) could be particularly useful in supporting this condition. Although this was originally developed for students to better comprehend teachers' spoken lectures, those words can also be useful for students in learning how to express themselves more effectively in class. Some literature has pointed out that, besides its consideration for various disciplines, which many other academic word lists also possess, ASWL's specific aim to aid in spoken language use (e.g. Skoufaki & Petrić, 2021) and its adaptability to learners' levels (e.g. Laufer, 2024) are particularly outstanding. Empirically, Dang (2022) also discovered levels 1 to 3 vocabulary in the list to be a "fast pass" for students to successfully participate in the EMI lessons, showing the possible benefits it can bring about if added into EAP courses. Since empirical studies to test its validity are still relatively limited, possibly due to the limited focus put on only spoken vocabulary more broadly, this paper calls for more research to validate its actual effectiveness in supporting students' spoken vocabulary development.

The suggestions provided above mostly focus on general academic vocabulary rather than professional terminology. While our findings suggest that students also hope to receive support with professional terminology, this can be difficult to achieve, since most current EAP lessons are not discipline-specific. This is a major topic being discussed in the EAP research, with Brown et al. (2021) suggesting that students think that EAP lessons have not provided direct help on EMI lessons without considering their subject knowledge. Specifically, Brown (2015) argues that only 8 percent of EAP lessons investigated were closely linked with the corresponding EMI lessons. To make changes, as literature such as Yıldız et al. (2017) calls for, McKinley and Rose (2022) have suggested that content teachers should collaborate with EAP language teachers as an important step to improving the current situation in many EMI implementation contexts. Besides difficulties faced in training teachers, Bhowmik and Kim (2018) point out that delivering an EAP

lesson with a coherent focus for pathways to be another type of challenge which could happen when some courses do not have enough students to form a class on their own. This indicates that current EAP courses have a greater chance to support general academic vocabulary over professional terminologies regarding vocabulary as a speaking challenge. It would be useful for future research to look into the extent to which learning professional terminology can be supported in EAP lessons after more EAP courses successfully adapt to becoming more discipline-focused.

5.4.2 Speaking Challenges that EMI Courses Can Support

Since EMI lessons' focus is on content teaching and not to directly develop language skills, it is not practical to expect them to devote as much effort to supporting students with their speaking challenges as EAP courses. On this assumption, this research has suggested how it is possible to assist with students' confidence of speaking (theme 1), vocabulary (theme 6), and adopting mixed use of language in lectures (theme 7), while ensuring teaching itself is not affected.

A. Confidence in Speaking

Confidence in speaking, as the speaking challenge mentioned by most students in our research, has a great chance to be supported in EMI lessons. As previously mentioned in the section on support that EAP courses can provide, a supportive environment that makes students feel safe to speak is the key to building students' speaking confidence (Farrell & Yang, 2019). EMI teachers can easily incorporate this into EMI lessons by showing their willingness to create a welcoming atmosphere, without spending extra time teaching language-related knowledge. This method could be particularly useful, as it builds on existing literature; for example, Kang (2005) asserts the importance of teachers being supportive and providing students with a feeling of security for L2 interaction to happen. Besides, adopting a more student-centred classroom, which many EMI classrooms do (Morell, 2020), can also be useful for students to become more comfortable and confident in speaking gradually. Huang and Jhuang (2015) found that students become used to speaking in the EMI lessons in environments that encourages them to speak more. In our findings, participants also expressed increased confidence to speak when seeing that most of their classmates also talk in class. As Mai (2023) puts it, one's desire to be incorporated into the language community can influence one's motivation to

speak and lower one's speaking anxiety. Since Chun et al. (2017) found speaking anxiety to have a negative relationship with students' speaking confidence, this means that interactive classrooms with a supportive environment can increase students' confidence to talk in sessions. This demonstrates the alignment of our findings with current literature, and suggests a relatively easy way to support students in most Taiwanese EMI classrooms.

B. Vocabulary and Mixed Use of Language

Similarly to the concern of participants in this study, much literature has reported technical terms as a major challenge that students face in EMI lessons. For instance, Yıldız et al. (2017) conducted a study on 83 Turkish students' challenges and needs in EMI lessons; participants argued for more support with technical terminology, as this was the basis for them to understand and engage with the lesson. Previously we discussed how professional terminology as a spoken vocabulary challenge can be difficult to support through current EAP courses. This concern with technical terms, however, has a greater chance of being addressed in actual EMI lessons, as this avoids the problem of EAP teachers not having the requisite subject knowledge (Brown et al., 2021) and the difficulty of deciding which technical terms to teach in lessons which students with different majors attend, but in the same pathways (Bhowmik & Kim, 2018). As mentioned in the results section (4.4.2), one participant in this research suggested: "Maybe they could provide a list of terms before the class, so we have time to familiarise ourselves with them". This suggestion could easily be incorporated into EMI lessons without requiring any extra time in lectures.

The last theme proposed by the participants, mixing of language in class, may be another effective method to address this problem, as a close link was found between these two topics. While the mix of language was included as a theme as Chien and Valcke (2020) argue that a lack of understanding of content knowledge can make students hesitant to speak, Chaiyasat and Intakaew (2023) further suggested students' incapability to understanding the content stem from their limited vocabulary knowledge. This point is echoed by our research findings, which students also called for mixed use of language, particularly when technical terms are being introduced or explained, as understanding the subject's content also involves challenges with understand technical terms in English. This idea is also found in Jiang et al. (2019),

who observed lecturers teaching EMI lessons. They found that one teacher would first explain technical concepts in English, but then switch to Chinese at the end of the explanation to provide a Chinese equivalent. This research suggests that code-switching is the safest way to prevent potential non-understanding and disturbance, which seems to align neatly with the participants' needs. Although debates about whether the spontaneous use of two languages can distract students and make it difficult to follow lessons still exist in the field (e.g. Arnbjörnsdóttir, 2017; Yıldız et al., 2017), both our findings and the literature offer useful implications for its possibility to address the vocabulary problem that hinders students to speak in EMI lessons.

5.43 Areas of Speaking Which Are More Difficult to Support

Last but not least, grammar and fluency were the only two themes identified by questionnaire participants but not focus group discussions. The challenges found among these two skills are supported by Evans and Green (2007). They investigated 4932 undergraduate students from 26 departments in the Hong Kong Polytechnic University, and found that spoken grammar (58%) and fluency (42%) were the two speaking skills most frequently highlighted as difficult by students. While literature supports the idea that they are significantly challenging, participants in our focus group discussion argued that they should not be the focus of the university's support. More specifically, they discussed the impracticality of hoping to have these two skills improved by the university. This idea is echoed by Iwashita et al. (2008), who suggest that fluency and grammar are difficult skills to develop, which will only be demanded from students with higher level of English competence. Alam et al. (2022) also argued that an overemphasis on grammar can negatively affect students' willingness to communicate and their development of speaking literacy, based on their classroom observation and semi-structured interviews.

These contradictory ideas found in questionnaires and focus groups on fluency and grammar was perhaps generated by the different methods' capacity to capture depth of ideas, with questionnaires asking short descriptive questions and focus groups allowing for in-depth discussion. This finding is significant, as it highlights that while many speaking challenges can exist, universities should consider the practicality of supporting students to develop certain skills, and to balance the time and effort they devote to these. This also prompts a further discussion about whether all speaking

sub-skills are equally important in EMI lessons. Farrell and Yang (2019) interviewed EAP teachers and found them to consider students' willingness to speak as the most important objective of teaching L2 speaking, regardless of grammar mistakes or level of fluency. This lower emphasis on the two skills is seen not only in the EAP context, but also EMI lectures. Fujimoto-Adamson and Adamson's (2018) research reveals that even during oral assessment, teachers mostly focus on marking content and dismiss language errors, as long as the language does not influence comprehension. Similarly, Lasagabaster and Doiz (2018) compare the number and type of errors identified by EMI content teachers and language teachers, although looking at written rather than oral assessments. They found that content teachers pointed out much fewer errors (mean= 17.85, SD= 10.60) than the two language teachers (mean= 91.25, SD= 59.25 / mean= 93.55, SD= 59.41). Moreover, the types of error EMI content teachers pointed out were mostly about students' content and arguments, although language did get flagged as a problem when it was nearly impossible for teachers to understand students' work. This shows that the nature of "English" as the medium of instruction may have inherently made students normalise the use of perfect grammar and spoken fluency, seeing them as standard expectations, even though they are not actually demanded by many teachers in practice. However, universities should still consider setting a baseline of general proficiency for students to undertake EMI lessons; this would at least ensure basic grammar and fluency to avoid comprehension difficulties for teachers, as mentioned above. This also allows universities to focus more on teaching targeted EAP. This discussion indicates the importance for EMI practitioners and researchers to reconsider which speaking challenges to focus on when supporting students. Further research could test the number of speaking sub-skills demanded in EMI lessons, as this may further illuminate which skills taught to students can directly contribute to their EMI learning.

Section 6: Conclusion

To conclude, this section will discuss the major findings of the research and point out some methodological implications. It will also list the limitations of this study and sum up its suggestions for future research.

6.1 Summary of Major Findings

This research paper has discovered the predictive power of a number of variables on Taiwanese local students' speaking literacy and the speaking challenges they hope to be supported with. Given the extremely limited research that specifically looked into speaking skills in the Taiwanese EMI context, this paper has helped bridging this gap and enrich the broader understanding of this topic. Through the questionnaire and focus group data collected from NTU students, EAP experience and EMI experience were found to be the strongest predictors of students' speaking literacy. Although correlation does not imply a causal effect, universities and government could consider implementing more EAP and EMI lessons for students to engage. Moreover, this paper has provided a clearer picture of students' speaking challenges, with the discussion suggesting that university teachers could first target speaking confidence, vocabulary, the ability to present ideas and information, and asking questions, as well as considering the use of a mix of languages, to support students.

6.2 Methodological Implications

While the design of this study have provided insightful findings, one important methodological implication found in this paper is that different data-collecting methods can generate distinct, and sometimes contradictory, ideas from participants. As briefly touched on in the discussion section, the different perspectives on grammar and fluency expressed between the questionnaire and focus groups could be attributed to the varying levels of discussion depth that each method allows. This sheds light on how the different findings among similar research may have stemmed from their methods of data collection, emphasising the importance of careful consideration about which research method to employ. While this implication has justified this methodological decision to look at unique themes emerging from each type of data, it also suggests that looking at the different data sets separately can sometimes be useful, and, in the case of this research, has helped spark an interesting debate on whether grammar and fluency should be taught. This shows the comparison and validation of the findings done for method triangulation can be not limited to quantitative data and qualitative data, but also qualitative data collected from different data-collecting methods. Given these findings, future research that include only open-ended questionnaire questions as qualitative data should consider

whether their findings are deep enough for the purpose of their studies, and decide whether to add an interview or focus group. Moreover, when collecting qualitative data from both a questionnaire and interviews or focus groups, researchers could consider separating and comparing data sets from different methods to identify unique themes and thereby generate more robust discussions.

Another important implication is that the results of this study have suggested that students' perceptions about the difficulties they face change as they progress through their first year of EMI teaching. To fully understand and verify this change in students' perceptions of their challenges, future research could adopt a longitudinal research design, which involves tracking the same group of students' perceptions across a period of time. This method would help build on this research's findings and offer further data on how consistent and meaningful the results found are.

6.3 Limitations and Future Research Suggestions

While this research provides an extensive understanding of speaking literacy's relationship with many variables and students' speaking challenges in EMI lessons, it also poses many more questions to be answered by future research. First, based on the methodological implications mentioned above, and their suggested explanations in the discussion section, the lack of correlation found between year of study and students' speaking literacy in this paper may stem from the data-collecting methods employed. That is, future research can validate this result by testing students' actual speaking literacy, rather than relying on self-reporting. While many pedagogical inferences were drawn in the discussion section, these further sparked the need for more future research to look into how teachers can teach students to ask questions in English, the usefulness of the academic spoken word list to assist students with general academic vocabulary, and the amount that each speaking sub-skill is demanded in EMI lessons, to confirm which speaking challenges to focus on when supporting students. In the long term, research could also investigate the extent to which the use of professional terminology can be supported in EAP lessons, once more EAP courses adapt to becoming discipline-specific. Due to practical constraints, this paper has adopted a non-probability sampling method and gathered an unequal number of participants when comparing how years of study and discipline can predict students' speaking literacy. These limitations may have led to

bias and so may have lowered the robustness of analysis in this respect, which should ideally be avoided in future research papers.

6.4 Concluding Remarks

Overall, this research has filled a gap in the otherwise limited research into speaking skills in Taiwanese EMI lessons by discussing the variables that predict students' speaking literacy, and by providing some practical recommendations for how the university can support students to address speaking challenges in EMI lessons. Despite the limitations pointed out above, this research has offered a significant contribution to understanding the Taiwanese context in particular. Moreover, with the suggested areas for future research provided, it paves a clearer direction on where to further research on to improve the development speaking skills among Taiwanese students for better implementation of the "Bilingual 2030" policy.

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Section 8: Appendices

8.1 Questionnaire

Consent form

Taiwanese undergraduate students' academic speaking literacy in English taught programs

We would like to invite you to participate in a research project about English as the medium of instruction, which aims to explore factors that could help predict Taiwanese undergraduate students' academic speaking literacy and better understand the potential support universities could provide.

You will be asked to fill in a questionnaire about your background, previous EMI (english as the medium of instruction) and EAP (english for academic purposes) learning expereince, and your English speaking proficiency. Please note, when we refer to EMI, we are not investigating the teaching of the English language, but rather the use of English to teach subjects such as sciences, mathematics, medicine, and social sciences. If you agree to participate, your input will form part of this research. You might also be contacted to participate in the follow-up focus group, which will invite you to discuss some of the ideas further. Participation is completely voluntary.

The research might also be published in academic journals and conference papers in the future, which may be publicly available. We would be happy to share with you any information that will be used in publications prior to their dissemination. The researcher will take steps ensure that any data from you that appears in a publication will not be identifiable.

This project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee. If you have any questions, please feel free to contact the lead investigator by e-mail:

Yours Sincerely,

Please note that you may only participate in this survey if you are 18 years of age or over.

- I certify that I am 18 years of age or over

If you have read the information above and agree to participate with the understanding that the data (including any personal data) you submit will be processed accordingly, please tick the box below to start.

- Yes, I agree to take part

Section one: Background

1. What is your year of study? (Year 1/ Year 2/ Year 3/ Year 4)
2. What faculty do you belong to?
3. How many EMI (English as the medium of instruction) lessons have you taken in your undergraduate programme?

Section two: EAP and EMI experience

Please answer the following questions about your previous EAP experience: (strongly agree-disagree scale)

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
I have taken EAP (English for Academic Purposes) lessons or learn about knowledge related to EAP in high school (e.g. experience doing English presentation, reading academic papers, writing English report, exchanging to another country)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have learned academic English speaking skills (such as giving a presentation) in the past	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have learned techniques to engage in academic discussions in English in the past	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have studied EAP (English for Academic Purposes) in the past	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have taken part in events the EMI teaching and learning centre such as 'Mastering Oral Presentations'/ 'academic reading workshop'/ 'academic writing workshop' in the past	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have read the electronic book produced by EMI teaching and learning centre in the past	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please answer the following questions about your previous EMI experience: (strongly agree-disagree scale)

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
Before entering university, I had taken EMI classes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In high school some of my lessons were taught in English	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have experienced learning some subjects in English outside of this university	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have not had EMI experience before coming to this university	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section three: Academic spoken literacy (EMI Challenges Scales)

Please answer how easy or difficult you find each academic speaking task. (Likert-scale)

	Very difficult	Difficult	Somewhat difficult	Neither easy or difficult	Somewhat easy	Easy	Very easy
Speaking accurately (grammar)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speaking clearly (pronunciation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Presenting information/ ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating actively in discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicating ideas fluently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speaking from notes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asking questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Answering questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicating ideas confidently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using visual aids (e.g. PowerPoint)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section four: Current learning experience

1. Which aspects of academic spoken English would you like to improve the most? Why?
2. How often are speaking skills needed in the EMI (English as the medium of instruction) lessons you participate in?
3. Do you think your academic speaking skills influence your final grade and GPA in any way? (Please explain how)
4. Have you received any support from the University for improving your EMI (English as the medium of instruction) learning experience?

Contact detail

Please if you could leave your email address for the researcher to contact you for the follow-up focus group: _____

8.2 Focus group guideline

Please read this information sheet carefully and fill in the consent form before we start.

1. How often are speaking skills needed in your EMI (English as the medium of instruction) lesson? Discuss your experience of oral production in EMI lessons (When will you need to speak? Discussion, presentation, etc.)

2. Think about the following identified elements of academic speaking literacy. Discuss with your group to put these in order of which tasks students find most challenging, and discuss why.
 - Speaking accurately (grammar)
 - Speaking clearly (pronunciation)
 - Presenting information/ ideas
 - Participating actively in discussion
 - Communicating ideas fluently
 - Speaking from notes
 - Asking questions
 - Answering questions
 - Communicating ideas confidently
 - Using visual aids (e.g. PowerPoint)

3. Have your teachers or university done anything to help students cope with the EMI environment here? (Do they offer students any support inside or outside of classroom)

4. Can you discuss with each other and come up with some ideas about what you would do to support students if you were the university staffs?

8.3 Focus group transcript

a. Higher attainment group

Host

Okay, let's now discuss the first question. Can you each briefly tell us when you would need to speak English in your EMI courses? Do you usually use it?

Participant A

We only use it to report because my modules are mostly related to physics and chemistry and the content the teacher delivers is quite difficult to understand. Obviously, for subjects that you would already struggle to understand in Chinese, when you have a foreign teacher who is teaching you would find it even harder. In fact, we don't even know how to ask questions in class because what we are learning is very academic and abstract ideas. Adding a foreign language as an extra barrier made us barely want to speak in the lesson. Therefore, except for reporting group discussion ideas, when we are forced to go up to the stage to talk, we wouldn't really speak English in class.

Participant C

Do you mean after group discussions, you'll need to go up to the stage to report ideas?

Participant A

Yes, you have to go up to the stage and report the results of your group's calculations. The teacher might ask you a little bit about the theories you used or the process of calculation.

Participant B

Besides that, as well as midterm and final report. How about daily lessons?

Participant A

Basically, no one would speak in class in normal lessons.

Participant B

Why do you choose to take EMI lessons then?

Participant A

Because the module is compulsory.

Participant C

Is there no option to learn the same content in Chinese?

Participant A

No, our department only offers English taught lessons for this module.

Participant B

I had four modules that were taught in English, one on insects and one on economics, and both of them were mainly teachers talking on the stage, and we didn't have to do any oral presentations. Therefore, in these two classes, I didn't speak in English at all, although I did write my written report

in English. For the third and fourth modules, they were both related to social media analysis. The first module for social media analysis, we had to do a proposal for midterm and a report for final. We also did two small tasks, which we had to make powerpoint and do presentations on stage. The four tasks that we had to do all required the use of spoken English. Besides that, our teacher usually asks us to conduct group discussions and that also needs to be in English because the international students would not be able to understand without us speaking English. For the fourth lesson that is oriented towards public opinion analysis, English is also hugely in need. In this module, the teacher would require us to read the text in English in every class, and then summarise and write down our thoughts before discussing with our classmates what we have found out. This makes us use English in every class. Moreover, every week, one of the students will be in charge of the guided reading, and they will need to help read out the reports which range from 20 to 40 minutes, all in English. Lastly, the final of this module is also a group presentation, which has to be done and presented in English.

Participant C

I took a module called EMI pp program as my freshman English module. They would take some articles from different fields and tell you to read them to teach you how to use English. Another EMI class that I took was from our department, which was actually not supposed to be an English taught lesson as it was not planned by the university. The only reason why it became an English taught lesson suddenly was because there were some international students in the class, so the teacher decided to just speak English. Going back to the first lesson that I talked about, the EMI pp programme, it is about teaching you how to engage in emi modules. One thing that it does a lot is to encourage you to speak. The teacher will keep telling you to share ideas, discuss with your classmates, ask each other questions, and sometimes they would also pick on people to present ideas. While this lesson is mainly in favour of speaking over writing, they wouldn't really mind if you say something wrong, as long as you are willing to speak.

Participant B

So it's not teaching subject knowledge, but only focuses on EMI? Is this a module that is compulsory now?

Participant C

It was year one English module, and then one of the lessons was like this. They said there were seven classes like this, and I just happened to be in this class.

Participant B

What about classes that are not like this?

Participant C

I heard that they just have normal English lessons using textbooks.

Host

Is English something compulsory?

Participant C

Yes, English is compulsory for all year one students to take unless you have a waiver.

Participant B

So they are now using English lessons to teach EMI?

Participant C

Yes, some of them are. They said that there are seven of them currently. However, I believe there are around fifty English classes in total, so it doesn't seem to be a lot.

Host

What about you?

Participant D

I've got three EMI modules. The first one is the introduction to Western Literature.

Participant A

This sounds very suitable to be taught in English.

Participant D

Yes, and the other two classes are "Approaches to Literary Works" and "Introduction to International Business" from the National Taiwan University of Science and Technology. In the case of Introduction to International Business, the teacher taught the class in English. He was expecting us to discuss in English, but then he realised that it was a bit

Participant B

Are people not willing to communicate?

Participant D

Students from National Taiwan University of Science and Technology are a bit difficult to communicate with.

Participant B

That's a good euphemism.

Participant D

That's why we use Chinese privately, and only when the teacher comes close to us will we switch into English.

Participant B

Is the teacher from Taiwan?

Participant D

Yes.

Host

By the way, where are most of the teachers in your EMI modules from?

Participant B

I only had one class with a Taiwanese teacher. He actually did modules in both Chinese and English versions, and the English version was opened for international students. The rest are all foreign teachers.

Participant A

We have foreign teachers too.

Participant D

My teachers for "Introduction to Western Literature" and "Approaches to Literary Works" are both foreign teachers.

Host

Oh, so most of the EMI courses are still taught by foreign teachers.

Participant A

Our teacher is not a native English speaker though. He's Spanish, so he speaks English with a little bit of an accent, and we just try our best to understand.

Participant B

I think Spanish people generally speak quite fast.

Participant A

Yes I thought so too, so we had to try our best.

Host

Let's discuss the second topic. On the table, there are some English academic oral skills listed out. I want you to take a look at them and rank them in your mind to see which one is the most difficult and which one is the easiest. After ranking, you can think about whether these are the help you hope to get. If someone teaches you these things while you are taking English courses, do you think you can take the EMI course more smoothly?

Participant B

Do we have to think about the most difficult and important thing at the same time?

Host

We will consider the most difficult ones first, and then after we finish, we will decide whether these difficult ones are really important or not necessary to focus on. So now we sort by the most difficult ones first and then the simple ones.

Participant D

I guess it would be easiest to speak from notes, and everyone would write down a note before speaking at the beginning when they are not that confident yet.

Participant B

I think using visual aids (e.g. PowerPoint) is a little bit more difficult than speaking from notes.

Participant A

Yes, it can be placed above the previous one. For the one that's difficult, I think probably grammar.

Participant B

Do you mean the hardest?

Participant A

Yes, I think it's the hardest.

Participant B

I think so too.

Participant A

Because basically as long as you dare to speak, you can just say whatever if the others can understand and guess what you were trying to express. Similar to the time when we go on to the stage to present ideas. When teachers ask us academic questions, we could produce answers that are actually a mess. Even with errors related to grammar, pronunciation, and word, as long as you dare to express yourself, your ideas can be conveyed. My point is that if we want to make sure what we say is extremely formal and 100% correct like what we usually aim for in our written exams, it would be quite difficult.

Participant C

I think the most difficult part is not listed out here. In my opinion, the hardest thing is to decide which specific vocabulary to use.

Participant A

Yes! Wording.

Participant D

Sometimes, even if it's just slightly different words, the meaning can change totally.

Participant C

Yeah, exactly!

Participant B

To me, I think it is quite difficult to communicate ideas confidently.

Participant A

I think so too!

Participant B

I think it's because I can't speak English with the confidence that I normally have in Chinese. What do you guys think?

Participant D

I think sometimes even if you speak it out, you will still feel that you are not good enough and then you lose your confidence.

Participant B

Yeah, I just feel less confident when speaking English than Chinese.

Participant D

I think the key word in this statement is actually “confidently”. It may not be so difficult to communicate your ideas in English, but it's not so easy to be confident.

Participant A

I honestly think if you want to communicate your ideas confidently, you have to solve all the other problems first because if you are afraid that people won't be able to understand you, or scared of using the wrong vocabulary for example, these will all stop you from being confident.

Participant C

Yeah it makes sense. I guess being fluent will give you confidence.

Participant B

As for pronunciation...

Participant D

Would you guys care about your pronunciation in class?

Participant A

Not really.

Participant B

Because foreigners also don't have standard pronunciation, right?

Participant A

And there are so many different accents. I mean there are countless accents around the world, so I think what really matters is being able to be understood.

Participant B

Would you guys mind?

Participant C

I don't mind the accent too much. However, I think when I pronounce words, I struggle to speak clearly. I mean my words would kind of stick together so it's not clear enough for people to understand me. Everytime this happens, I'll have to keep repeating what I was trying to say. Sometimes in order to avoid this kind of thing, I decide not to talk about it and not to speak at all.

Participant B

I can relate to what you're trying to say! When I speak English, I can't help but speak quieter than when I speak Chinese. I'm afraid that people won't be able to understand me, so I might just

mumble through it. When you realise that the other people can't understand, you'll know that you didn't express yourself well. However, I think it's actually not...

Participant A

Yeah I agree, it's not like...

Participant B

I mean it can be put at the back a little bit.

Participant D

How about participating actively in discussion?

Participant C

I think it's easier to present information or ideas than engaging in discussions because you get to prepare first.

Participant A

For the easier ones, I think answering questions might be another one. For example, if someone asks you a question or a teacher asks you a question, you can basically make up a sentence from the question and change it into a new sentence. However, if you really want to ask a question, it will be a little bit more difficult to do so.

Participant B

Yeah, asking a question requires coming up with your own ideas.

Participant C

Right! You have to have your own ideas and the ability to construct the sentence by yourself. As you're the person asking the question, you have to let people know exactly what you want to express and what you really want to ask, meaning your sentence organisation, structure and wording all have to be more precise than when you're answering. So I think that might need to be put at the front a little bit.

Participant D

I think there may be people who find it harder to answer questions too because you can't predict what people will ask and you will only have quite little reaction time. However, for asking questions, you can prepare what you want to say in advance.

Participant C

I guess it makes sense, but I still think it's harder to think of what to ask when you need to ask a question.

Participant A

Me too. For example, some professors would pick students to interact with them in classes, or they may ask you to ask a question. In these situations, you can get stuck really easily. But if he was simply asking you a question, you may be able to quickly look for the answer in your textbook or just answer whatever's on your mind, and you can still survive from that.

Participant B

Actually, I think both are quite challenging. And I'm also considering whether the content we need for discussion can be found from the textbook? For example, to me, presenting information and presenting ideas are quite different because information can be found in the text.

Participant A

Yeah, and you generate ideas from information.

Participant C

I think discussion is basically the combination of asking and answering questions.

Participant A

Discussions to me are more like chatting, which should be quite relaxing.

Participant C

I think it's a little more difficult than the two statements "asking questions" and "answering questions", because for discussions you need to know how to do both. You have to be able to ask and answer questions.

Participant B

And it was very timely, you won't have time to prepare in advance.

Participant D

But is it possible that the answering question and asking questions may be a bit more difficult as those involve talking to teachers. You could have greater pressure doing it than having a discussion with your classmates.

Participant A

If it's a discussion with your classmates, it seems like you can talk freely because you're all peers. Even if you gave a wrong answer, it's not going to be too bad...

Participant B

But I think I would still be afraid as my classmate could think I'm stupid for not being able to express what I wanted to say.

Participant D

Even classmates?

Participant B

Yes, it's probably because my classmate has really big eyes and when he looks at me, gives me a lot of pressure all the time.

Participant A

But what if your classmate's level of proficiency is similar to yours?

Participant B

I guess I wouldn't be so nervous if they were all Taiwanese. Yes, so it might have something to do with my classmates.

Participant C

But there are Taiwanese who speak English very well. Whenever I see those kinds of people, it gives me even stronger pressure because I'm also Taiwanese and I would wonder why I couldn't be as good as them.

Participant B

But they were Taiwanese, so I could at least go to them after class and speak to them in Chinese to explain a little bit about why my English is so bad. Anyway, coming back to the skills, I think these three are very similar, but a little bit different. But what we have now feels like the correct order to me.

Host

Okay, now that you've done sorting the order, which ones do you think are more important? If the university wants to support you to improve spoken English for you to better integrate into the EMI curriculum, what do you think you would like to learn about?

Participant B

I would like to learn more about presenting ideas and speaking for final presentation.

Participant A

I think it's quite useful if the teacher can provide some sort of template for us because you can start learning and practising to express yourself with the sample being provided with. Every time you use that structure, speaking it yourself can surely deepen the impression a little bit. I think that kind of immersion can definitely help you gradually become familiar with the sentences for presenting ideas, until you can use them naturally.

Participant D

So what you're saying is that, for example, if the teacher gives you something like a text at the beginning, you'll feel less pressure to present something orally.

Participant A

Yes, at least you have something to prepare for, rather than them giving you a topic and telling you to look for it randomly on the internet as it could be a total waste of time if you found something wrong and have been constantly practising something incorrect.

Participant B

I think the problem that I face in EMI lessons is that since the teacher was speaking English, it will take me a little bit of time to react to the English, I couldn't really take notes, which makes my learning a little bit more difficult than Chinese.

Participant D

I think the problem I encountered was that sometimes I didn't have that much background knowledge, and then I couldn't respond very quickly.

Participant B

Do you also think if the teacher provided a model of the text first, it would be better?

Participant D

Yes, I think.

Host

Can you please help me to make a mark on the academic speaking skills that you think you would like to improve on, which you think can really help you feel better in class?

Participant B

I would like to have this.

Participant A

This one too.

Host

Okay, let's move on to the next question. I would like to know about your current EMI learning situation at NTU, since NTU is actually one of the schools that the government has invested relatively more resources in under this policy. In total, there are four schools that have been receiving the most resources, and NTU is one of them. I would like to ask you, do you feel that the university has done anything that helps you on the side before you go directly to the EMI. Is any help provided for you to better participate in the EMI program?

Participant C

I think the EMI pp programme that I took would count because this English lesson will force you to speak English all the time. It gives you some articles that are not necessarily academic, but something like popular science related articles to help you become more familiar with reading in English. Asks you to listen to a lot of ted talk and force you to speak or think in English. As long as you have the courage to speak English, it doesn't matter if there are any tiny mistakes being made in the speaking. If you are talking to academics, they will be able to understand what you're trying to express as long as you have the correct vocabulary. Having incorrect grammar is not something detrimental.

Participant D

Is your course mainly focusing on speaking?

Participant C

Part of it is, but it also teaches us how to read graphs and charts and then present them in English. It was actually quite helpful if we want to report something academic in English.

Participant A

Is it like the kind of statistical tables in academic papers?

Participant C

Yes!

Participant B

For the two classes that I took three years ago, I think the assistance being provided was quite little. However, for the two classes that I took this year, maybe it was because of the invention of chatgpt, the teacher would say that you can use the chatgpt to help, as long as you have to write down clearly about how you have used it to help you. Every time I would ask it to help me translate all the English articles into Chinese. And I'll also put what I have written in Chinese into it to help me turn it back into English. It really helped me a lot in the translation. Also, I think the teachers have started using apps that allow us to ask him questions in a more timely manner, which we also get a more timely response. This is much faster than in the past, when you can only upload your homework and wait for the teacher to finish correcting everything.

Host

But they didn't actually, for example, teach you how to better integrate into the EMI program, inside or outside the class. They just suggest that you could use ChatGPT on your own, right?

Participant B

Yes.

Participant A

We have a TA in the class, so we can reach out to her if we really don't understand something directly.

Participant C

Is TA a foreigner?

Participant A

No, she is the lecturers' graduate students. So basically when we really have questions, we will go to the TA first. Our teacher would still, sometimes, come and ask if everything is ok. If he comes we will still try to interact with him, it's just it would be a little bit more pressure.

Participant B

Does TA help you when you don't know how to express yourself in English, for example?

Participant A

I don't think so. It's mainly to help us understand, but less to help us express ourselves verbally.

Participant D

I think in our sessions, there is more like peer-to-peer help.

Host

I was a little bit surprised when I was doing the research about EMI teaching in NTU online. It is mainly because although there is an EMI centre here, I didn't know about it at all, and I found that a lot of students here also didn't know about it.

Participant A

Yeah I did not know about this

Participant B

Me neither

Host

Yes, they seem to have set up an EMI centre to help students. For example, there are classes on academic speaking and academic writing, but it's a pity that people don't seem to know much about it.

Participant C

Is that the bilingual education centre?

Host

Yes, it is!

Participant A

But I don't think they are famous in NTU.

Participant B

I think he sends emails to students.

Participant A

Oh yeah, I think I've seen it before.

Participant C

But they actually provide a lot of free lunches!

Participant B

Really?

Participant C

Yes, if you go to an event! There will be people who practise speaking English with you there. Most of the time there would be a speaker, and they'll talk about the topic of the day. They would have participants engage in the discussion in English while having lunch.

Participant B

Do a lot of people go to that event?

Participant C

When I went there, there were more than ten people.

Participant D

Lunch seems to have the ability to attract quite a lot of people.

Participant C

I started going to that event because our English class was promoting EMI, and then our teacher said that if you participated twice in a semester, you could get 5 extra points for your final grade. After going there once, I found out that it doesn't just provide free lunches, but also that you could collect points for participating in that event. Everytime you participate, you get 5 points. And once you collect 120 points, you will get 1,000 NT dollars. I've been participating in the events held by the School of Engineering every Wednesday at noon.

Participant B

Do you think it is helpful for improving listening to English or spoken English there?

Participant C

I think it's mainly because everyone there would speak English, so you get more courage to speak English too. Even though I'm still really bad at speaking English, it does make me more courageous to speak.

Participant B

Sounds great!

Participant C

I think they are actually trying quite hard to promote the events.

Host

But it feels like they don't have a chance to tell the students.

Participant C

They do send emails if you take a closer look at the weekly activity announcement sent by the university.

Participant B

I skipped it as soon as I saw the word 'English' hahaha.

Host

Now for the last question, from the perspective of students, what do you think is the support you hope to receive for EMI lessons? If you were a staff at NTU, what do you think would do to support students' EMI learning experience, especially speaking?

Participant B

Can I first ask about the purpose of EMI

Host

The purpose of EMI can be really really broad, but I can tell you the purpose of the government trying to implement EMI lessons into Taiwanese Universities. The policy of the Ministry of Education said there are two main purposes. One is to raise our students to become global citizens. That is, through EMI lessons, students can have wider options in the future. You may want to go abroad for further study or working. This helps you connect with the international community and become global workforces. In addition, it's also for promoting the economy, implementing English taught

lessons will attract more international students to come to Taiwan's universities to study. And that's basically the purpose!

Participant B

In that sense, I guess the workshop and the year one English modules she mentioned sounds like they're doing something right to support your study for the EMI lessons. However, after going into the EMI module itself, it doesn't really seem to have any support being provided specifically. In a sense you have to be prepared by yourself before going into the lesson. After you go into the classroom, they don't seem to consider that much about whether you understand what is going on or not. Basically, you need to figure it out by yourself.

Participant D

Wouldn't it be better if you could have a TA or something like that in the class then?

Participant B

I think so, but then I wouldn't be able to practise English, because the TA would mainly be speaking in Chinese.

Host

Would you like to have an English for academic purposes lesson on the side of EMI? Or do you not want to take any more classes?

Participant A

I think it's...

Participant B

In my opinion, this should be something that's optional itself.

Participant A

Yes, I agree.

Participant C

I think it's quite useful to change most of the year one English module into the one that teaches you EMI. I think most of the students would have decided to waive the lesson if they can for English lessons that only teaches English textbooks.

Participant A

Yes, because I was also exempted. I heard that my classmates were asked to buy textbooks, which I think was kind of unnecessary in the university.

Participant C

Yeah, our program also asked us to buy textbooks.

Participant A

And I think in fact, there is a huge difference between students' English level. After entering the EMI course, English would not be the same as when you are learning English, as it is now treated as a

tool, which you have to familiarise yourself with before you can smoothly learn the subject knowledge. It also makes it a must for teachers to consider and adjust the way and words they use to explain ideas, which can affect the precision of the teaching. So I think EMI (English as a Medium of Instruction) might be a bit too early for Taiwan. Switching entirely to English all at once seems a bit like putting the cart before the horse. On the surface, it seems like there's a strong emphasis on English, with goals like making all education in English by 2030. But in reality, for people like us, we're forced to use English in classes, but when it comes to learning those basic foundational concepts, it's actually harder to absorb them effectively."

Participant D

I think that if it has to be this way, most of the courses should definitely be offered in both Chinese and English versions so that everyone can choose. Or at least suggests teachers to use a little bit of the Chinese to explain things sometimes.

Participant B

I agree, when it comes to the explanation of concept, Chinese can be used quickly to provide us a brief idea about what is going on.

Participant C

But because there are too few people in our department, we might not be able to have two classes. If everything is in Chinese, then the international students will have a hard time.

Participant A:

Yeah, we also have international students, but...

Participant B:

Actually, I've been wondering why international students would come to Taiwan study without learning Chinese.

Participant A:

Yeah, because the approach of our class teachers is a bit different. We just let them fend for themselves. The teacher directly says, since most of the students in this class still primarily speaks Chinese, and my [teacher's] English is also a bit weak, I apologise to the international students that this lesson will be conducted in Chinese. And the university also doesn't offer the same courses in EMI for them.

Host:

If, for example, there were courses in both Chinese and English, would you guys still choose EMI courses?

Participant B:

I remember one time there was a module for economics, which our department offered both Chinese and English. However, most people said that English lecture generally give better marks, so many of us still chose the English one.

Host:

So the main point isn't really about wanting to learn in English?

Participant C:

I think I can try it if it's a general study module.

Participant A:

Yeah, it gives you the feeling that it wouldn't really affect you that much.

Participant C:

Yeah, exactly. If it's a compulsory module and you ask me to read about organic chemistry in English, I'll feel very overwhelmed. However, if it's a discussion-based module in for example the language department for chatting and making friends, I wouldn't mind learning English on the side.

Participant A

Yeah, I agree. If it's something very academic, which is already extremely tiring, then adding English to it is just gonna be too much.

Participant B

Is Western Literature compulsory? I'm suggesting that it should be taught in English?

Participant D

Yes, foreign language is compulsory and taught in English.

Participant B

Is it true that a lot of foreign language classes are in English?

Participant D

Yeah many of our professors don't speak Chinese, so it's all English.

Participant B

Yeah, it's probably also quite strange to teach Western Literature in Chinese, so it's a bit unavoidable. But it just came to me that a lot of research in Organic Chemistry or Biology is published in English right? So it doesn't seem to be unreasonable to use English directly?

Participant C

But when you listen to the explanation in English everything becomes very confusing.

Participant A

Plus I have to turn all the words I learned in high school into English and memorise everything again.

Participant B

So do you think it would not be that much of a pain if these were taught in English originally in high school?

Host

It seems that the government is also slowly promoting it to school level.

Participant A

I remember that our high school said they were going to do English-taught lessons, and the elder teachers seemed to be very annoyed by that.

Participant C

Our organic chemistry teacher said that you can write Chinese in the exam paper but not the the name of the chemistry has to be in English, for example, ethylene glycol would not be understood by foreigners if it were written in Chinese. Therefore names have to be written in English while explanations can be in Chinese.

Participant A

Last semester, all of our teachers were Taiwanese, but he decided to make the questions on the exam paper English. He told us we should try to write in English, but if we struggle to explain something in English, we can mix in Chinese to explain.

Host

Ok, let's drag our attention back to the support provided by the University. Now that you know the existence of EMI Center, and the workshops it offers such as Academic written English or Academic Spoken English lessons, would you want to go and check them out if not consider the benefits such as money or lunch.

Participant C

No

Participant B

I don't think so.

Host

What about if you have a compulsory module that is conducted in English?

Participant B

If I'm not exempt, I'd probably want to go to the EMI english module because it sounds a little bit more useful than regular year one English.

Participant A

Yes, I think I would choose something more practical.

Participant C

What about the supporting lessons and workshops for academic English? Not the year one English.

Host

Yes, imagine you have a class that must be in English. Would you want to take an EMI course offered by the EMI centre spontaneously?

Participant A

I think I might. What I consider is that, many of us will probably go to pursue a master's or doctoral degree later on, in which we will definitely write a thesis or participate in academic forums. And those are highly likely to be in English. For example, I think learning about thesis formatting, or ways to present research results in conferences will be helpful for me. Yeah, so basically, considering my own future development, I will be willing to go to the workshops!

Participant B

Sorry to interrupt but I'm curious whether you have an exam or report that you need to write on the history of Western Literature?

Participant D

Yeah we have quizzes every week. And for midterm and final, we have to write essays and do presentations as well.

Participant B

If all the questions are in English and you also have to answer them in English, courses like academic speaking and writing might be quite useful in a sense to you then?

Participant D

We're actually required to take similar lessons in our department. We've already got modules that teach both creative writing and academic writing.

Participant C

Do you feel that you need to take additional lessons related to this then?

Participant D

I don't think so. I would probably spend time developing other abilities.

Participant B

I know, I wouldn't really want to take this kind of class to specifically learn the skill. What I think is that, if I want to publish a paper, I might as well do a module that teaches subject knowledge. Because if it's already an EMI course, I'll have to write in English anyway. And through the process of writing, I might gradually and passively learn this skill. Learning in EAP lessons without having a specific topic to write about feels a bit pointless to me.

Host

Do you think there are any opportunities for universities to still provide you support in the EMI lesson? For example, if you have a compulsory EMI lesson now, and the university started up an EAP course that corresponds to this class. Would you think that if the teachers who teach EAP go directly into your EMI lesson to find out the needs of students directly and add it to the EAP course, would it be helpful?

Participant C

Is it like a tutorial class that kind of thing?

Participant B

Or is it a teaching assistant class?

Host

Regardless of whether it's the kind of English classes that you have, or whether it's the classes that the EMI Center itself holds, would it be better to invite someone from the EMI Center into the EMI classroom to look at the needs of you so they can possibly be better at understanding your needs?

Participant A

I think it would be great because every time I fill out a questionnaire for the module feedback, I think it's actually very superficial, and people don't really fill it out seriously. So I think we need to really look at it and understand the actual situation of the students before providing help.

Participant B

I also think it sounds good! If teachers who teach academic writing and speaking can go into the classroom and look at everyone's situation, and find out the part that students struggle with to add it into the EAP lesson, it would be nice!

Host

Okay, so in the end, if you have both Chinese and English courses in one class, would any of you still choose EMI?

Participant C

I think it depends on what kind of class it is, because some of the modules I had in the past actually invested more resources into the English taught session. Also, if the teacher is teaching in English, he's definitely going to teach you how to read the article in English. And you can read a lot of the other ones in English, too. However, if this is a field that is mostly about our local studies, for example the agriculture in Taiwan, which Chinese references will be more insightful for the study, then I would probably do it in Chinese.

Participant B

Oh, so what you might consider the most is the language of the literature you might have to read in the future! I think in my case, I would probably focus on picking the teacher.

Participant A

Yeah me too, if the EMI teacher teaches really well, I would be willing to spend a little bit more time to understand the content in English.

Host

Well, thank you all for your participation today!

b. Lower attainment group

Host

First of all, I would like to ask if you have taken any courses to learn professional knowledge in English, and how often do you use spoken English in these courses?

Participant A

Yes I've taken EMI lessons in the past. And the frequency of speaking English depends on each module. We would speak more in some classes while some we just sat in the classroom and listened to teachers talking.

Participant C

What kinds of situations do you need to speak in?

Participant A

Sometimes the teacher will ask us to discuss something in a group for 10 or 5 minutes. Afterwards, he will ask questions to see if anyone wants to provide their response

Host

During the group discussion, is English the language being used most of the time?

Participant A

As there are international students in our class, we will mostly use English.

Participant B

For us, although the class is taught in English, the common situation when you would talk is when the teacher asks questions and you decide that you want to answer them.

Host

So there aren't a lot of opportunities to speak English? Would you need to go up to the stage to present or something?

Participant B

There are no specific restrictions that everyone has to speak. Most of the time, we will send someone who is good at English to speak for us.

Participant C

The case in my lessons is quite similar to yours. So when the teacher will ask questions, you can choose to answer or not depending on whether you want to answer. It wouldn't really be a problem if you decide not to answer. Also, at the end of the term, we'll have to do a group presentation. However, you don't necessarily have to go up on the stage. You can just send one person.

Participant D

For us, it's mostly the teacher talking on the stage. We rarely do group discussion in class, but we have to do a presentation for our final. We'll go on stage and present in English. We might have to answer questions from the students too, and we'll have to speak in English as well.

Participant B

When you say answer the questions from students, do you mean after you finish the presentation?

Participant D

Yes

Host

Alright, for the second question, I would like to ask you to discuss and rank these spoken English skills from easy to difficult. After ranking them, I would like to ask you to pick out the ones that you would like to learn and improve for you to better engage in the EMI lesson.

Participant C

I think the second option should be answering questions. In my class, we can choose to answer the simpler ones. Since it's not mandatory to answer, you can pick the easier questions if you want to participate for the grade.

Participant A:

For our class, at the end of the semester, students work together to present either individually or in groups of two. Even if you're in a pair, you'll likely need to speak. So basically, everyone has to give a presentation in English. I think it's easier if you have a powerpoint because it not only provides yourself a clear structure. Even if what you're saying isn't very clear, people can still follow along by reading the slides.

Participant B:

Yeah, using a Powerpoint might be easier, but I think speaking from notes is even easier.

Participant D:

Yes I agree. Speaking from notes is definitely simpler. I think together with 'answering questions' being mentioned, these three can all be placed at the easier zone.

Participant B:

Besides that I think pronunciation is also relatively easy.

Participant A:

Yeah I mean, those minor errors don't really seem so important, as long as everyone can understand you roughly and you have the courage to speak English. Let's put it here for now. What about grammar?"

Participant D:

Grammar is really hard. It's difficult to pay attention to grammar while speaking, so I'd probably place it towards the end. I think this one [asking question] fits here; answering questions seems similar.

Participant C:

Yes, and you can often prepare and structure your questions before speaking.

Participant B:

Does communicating ideas [confidently] refer to when the teacher has us discuss in small groups?

Participant C:

Can I ask what the difference is between these two?

Host:

This one [communicating ideas] doesn't necessarily have to be a discussion. The focus is more on 'confidently' expressing your ideas, rather than emphasising the 'interaction'.

Participant A:

That sounds easier. During discussions, if you don't understand some of the words others are saying, you won't know how to respond.

Participant D:

'Communicating ideas fluently' also seems to be quite similar to these two.

Participant A:

I guess this one emphasises the 'fluently' part.

Participant C:

Presenting information and ideas in English also seems similar. What is the difference?

Participant A:

Or is this one more... Does it include more specialised information?

Participant D:

I think information leans more towards content you can find in books, while ideas are more about sharing and discussing your own thoughts derived from that content.

Participant A:

I think this one should be simpler because sometimes it's just about getting a sense of something. But this on the other hand requires more specialised vocabulary, which might make you become unsure about what to say.

Participant C:

What about this one, 'Speaking clearly (pronunciation)' ?

Participant A:

Pronunciation could be placed at the front a little bit.

Participant C:

Yeah, pronunciation can be placed here. Put it as the third maybe?

Participant B:

That seems fine.

Participant A:

Okay, so the remaining three can be grouped together since they are hard to distinguish.

Participant C:

Alright, so this one goes at the end.

Host:

Now that we've finished ranking the difficulty, do you think this order matches your learning priorities? For example, you ranked grammar as the most difficult. Is that the area you most want to improve? Would you particularly like to learn better grammar to help with your EMI courses?

Participant A:

I think from this point [grammar] onwards, yes, but this one doesn't seem as important.

Participant C:

Right, it [grammar] doesn't seem as important.

Participant A:

Because, for grammar, even though you might know it, you can't always use it on the spot. After learning more about the rest of the subskills, you might naturally start using the grammar you know. I mean if you can't speak fluently, you can't focus on the grammar.

Host:

Do you think the rest of these are more relevant to your EMI courses?

Participant D:

I might want to put 'pronunciation' a bit earlier for learning. It seems more important because if your pronunciation isn't good, people might not understand you. So I'd want to move it up.

Participant A:

But after hearing Spanish people speak, it doesn't seem like a big deal to me, haha. Listening to our Spanish classmates makes me feel like I'm listening to Spanish, but it's actually English. Our teacher is Swiss, and I'm not sure if he fully understands them, but they manage to communicate. In a classroom with many international students, you can have six or seven different accents and pronunciation, and those who are fluent can still communicate. It makes me feel like it's probably okay if my English sounds very Taiwanese and if the pronunciation is not extremely accurate. Although I'd like to improve my pronunciation, it's probably not going to be my priority.

Host:

Do you have international students in your class?" (Everyone nods) Do you think your pronunciation or accent affects your communication with them?

Participant C:

I don't think so.

Participant D:

Me neither.

Participant B:

I just speak to them in Chinese, haha.

Participant D:

Do they understand Chinese?

Participant B:

A little bit.

Participant D:

That's impressive! But I do get the point, improving pronunciation might be more important than I thought.

Participant C:

For me, accent isn't a big deal. Our teacher is Taiwanese, and he taught in Canada for a few years. He has quite a strong Taiwanese accent, probably even stronger than mine. I think if he can teach in Canada, it kind of means accent really shouldn't be a problem, haha. Of course, it will be great if we can have it improve, but it's not a priority to me. Being able to communicate and ask questions is more important from my perspective. I would like to focus on learning about asking questions.

Participant D:

Yeah. I also think asking question is really important in the lesson. I normally would ask questions in the lectures conducted in Chinese. However, due to the EMI lesson, I don't really do it as much now.

Host:

If there was an additional course to help you integrate better into EMI classes, and it focused on speaking skills, could you highlight what you'd like to be taught to help you improve? Which aspects would you want to focus on?

Participant C:

Do these three count as one?

Participant D:

They seem different because presenting doesn't require a response, so it's less about interaction.

Participant A:

Communication might be one.

Participant B:

To be honest, I think if we could successfully communicate, that basically means we are capable of the rest of the skills. Since you mentioned that the word "communicate" is somewhat emphasising

interaction, I think fluent communication for example will at least lie on skills such as confidence to talk, ability to answer other people's, and to ask questions.

Participant A:

That's true, even if we want to prioritise learning it, it's not going to be easy to develop without considering the rest of the skills.

Participant C:

Yeah, these skills are somewhat interconnected.

Host:

Is there a particular skill you use more often in class? During lessons, do you need to answer questions or communicate more frequently?

Participant D:

I think we use this one [expressing information and ideas in English] more often. Unlike presentations that we often only do during finals, this seems more common in the lessons throughout the module. And also, since we would have powerpoint during final presentations, it seems easier and less necessary to focus on.

Participant C:

What about communication and discussion?

Participant D:

Not all EMI courses require you to talk with classmates, so I feel like expressing information is used more frequently.

Host:

Would most of you be willing to speak English during class?

Participant D:

Not really.

Participant C:

I rarely would.

Host:

And the teacher doesn't directly call on you?

Participant C:

Not often.

Host:

In your EMI courses, how often do you speak in English?

Participant B:

Never.

Host:

Never? Okay.

Participant C:

I'd say about once or twice.

Participant D:

Same here, not very often.

Host:

So, is expressing yourself in English in EMI courses not that important to you?

Participant A:

I think it depends on the teacher and the class size. Our class had about 15 people, so the teacher would divide us into groups of three to discuss a topic. If the two people in your group are talking, you have to participate too. Sometimes, after group discussions, the teacher would ask each group to share their thoughts. If no one in your group speaks up, you might have to talk more.

Host:

Did you all voluntarily choose your EMI modules? Are there both Chinese and English options available?

Participant D:

I chose the English class because the Chinese one was already full.

Participant B:

Some modules are only offered in English.

Participant A:

Are these optional or compulsory modules?"

Participant B:

They're all optional.

Participant A:

So the module being an English taught lesson doesn't really put you off from choosing it?

Participant B:

No, it's just that some courses are only available in English. If you're interested in that field, you have to take the English class.

Host:

Oh ok. What about you? You mentioned that the module you have was available in both Chinese and English, why did you choose English?

Participant C:

This was a compulsory module, and the teacher of that module promoted it in another course the previous semester. He showed us the feedback from past students, and everyone said it was good. Also, one important reason many chose it was because in the survey that asked how much time students spent on preparing for this course each week, a high percentage of students answered 0-1 hours. People might have thought it means it's easier to get the credit and marks.

Host:

Okay, let's move on to the next question. In your EMI courses, do you feel that the university has provided any substantial support? Taking classes in English versus Chinese can be quite different in terms of experience and difficulty. Has NTU offered you any help, or did they just throw you into it?

Participant C:

I participated in the university's English gatherings. Each college offers them, and they're open to all NTU students, not just those from a specific college. The gatherings usually have a theme and last about an hour. I attended one from the Foreign Language Department and the theme last week was about 'quite'. The gathering starts with an introduction or interactive activity. They would play some videos, have us read articles prepared by the organisers, and discuss with each other about our thoughts or answer questions posed by the host.

Participant D:

Is this organised by the college or by students?

Participant C:

I think it was provided as part of the EMI programme from NTU.

Host:

So, is it organised by the EMI Centre or the Bilingual Education Centre?

Participant C:

I'm not sure, but it seems the format and themes depend on the host's decision. The university probably provides resources and funding because they offer lunch at these events. I attended to improve my English, and the lunch was a bonus, haha. Some people go because their teacher in year one English module gives extra credit for attending.

Host:

That's great! Have any of you attended similar activities?

Participant A:

I've heard about it. I once attended an introduction session for lunch. They were promoting the Bilingual Education Centre's English writing courses and a lunchtime gathering where people eat and

converse in English. Sometimes, they even have alcohol, it's like a bar concept, to help improve spoken English. I'm not sure about the exact format since I haven't been to one.

Participant D:

Didn't you say you went for lunch?

Participant A:

I went to their promotional event, where many people picked up lunch boxes, but I didn't attend the actual gathering.

Host:

Have you found any content helpful for your EMI learning?

Participant C:

Regarding the gatherings, they are more relaxing and not necessarily really academic. However, I've been to some EMI-focused English classes offered to year one students. They seemed to be quite well-designed. They did pre-tests and post-tests to measure effectiveness too. This module is kind of designed based on the Empowerment English Proficiency Test (EEPT) designed for improving EMI. It not only provides practice on the tests, but also how to respond to graphs and how to write proper emails to professors.

Host:

That sounds useful. Have any of you received any support from the university for EMI?

Participant D:

No, not really.

Participant B:

Yeah, I didn't really feel that.

Host:

That's okay. Where do you get the information about those events?

Participant C:

I follow the Bilingual Education Centre's Facebook page.

Host:

Would you guys consider attending these activities after hearing about it?

Participant A:

It sounds good, but I probably wouldn't go unless there's an immediate need.

Host:

So, for example, you mentioned having to choose English-taught courses because there were no other options. If you want to study that field, you have to take the module in English. Do you think attending some supporting sessions could help you integrate better into EMI?

Participant B:

I feel like the difficulty in these specialised modules isn't just understanding everyday English but more about not knowing the academic terms. When you don't know much about the field and do not have basic background knowledge about it, learning it in English makes it even harder to understand the knowledge completely. It feels like looking up terms on your own is more helpful.

Host:

It's mainly the technical terms that you struggle with?

Participant B:

Yes.

Participant D:

I also think the challenging part of EMI modules is understanding the professional term and knowledge. You might have a rough idea of what they're trying to say, but you can't quite grasp what those terms' meaning in Chinese.

Host:

Are your teachers all Taiwanese?

Participant A:

I've taken a few classes. One of my teachers was Taiwanese, and two were foreign instructors. One was American, and the other was the Swiss teacher I mentioned earlier.

Host:

If the teacher is Taiwanese, would they sometimes translate for you?

Participant A:

Mine does.

Participant D:

Ours does too.

Participant C:

In our case, they won't do it during the class, but if you ask questions after class, you can use Chinese.

Participant B:

For us, it's the same, basically. After class, you can use Chinese, but during class, it's all in English.

Participant A:

It's probably because my module is a general studies course, so when the teacher sees the Taiwanese students looking confused, they'll just quickly use Chinese to explain, and everyone would go, 'Oh!' I think in that specific lesson, I'm more willing to express idea because I am more confident about how I have the correct understanding of the knowledge. Although this may not link

directly to speaking skills, but I think sometimes what stop me from engaging and talking in the EMI lesson is because I do not understand the content well enough that I can start contributing or expressing my thoughts in the lesson.

Host:

Ok, so you mean sometimes there's a mix of Chinese. Now, moving on, since you all find EMI lessons a bit challenging, imagine if you were a staff at NTU. What kind of support would you suggest to provide to students based on your experiences?"

Participant B:

For technical terms, they could quickly translate them, so we can know what they mean right away.

Participant D:

Yes, just not insisting on using English all the time during class.

Participant B:

Yeah, I think especially for very academic or specialised terms, they could use Chinese to explain them.

Host:

Does everyone agree? Would you worry that this would affect your English environment?

Participant C:

Not really, and I don't think international students would care either.

Host:

Is anyone taking EMI courses specifically for the English environment?

Participant A:

Not particularly. However, in the smaller classes where more people speak, you feel more inclined to speak up too. Eventually you will start to participate a bit more, and it does help with listening and speaking skills. You understand what everyone is saying better.

Host:

Any other suggestions?

Participant A:

Technical terms, definitely. Maybe they could provide a list of terms before the class, so we have time to familiarise ourselves with them.

Host:

Would you want them to offer corresponding EAP courses? Are your assignments oral presentations or written reports?

Participant C:

Both (oral and written assignments).

Host:

Would you like to learn how to give oral presentations in English, or is it not that important?

Participant A:

Do you mean learning how to present or how to make a Powerpoint?

Host:

More about how to present.

Participant C:

I would. It would be helpful to have some sentence structures and expressions that sound natural in English, rather than Chinglish, for us to learn about how to speak more fluently and coherently

Host:

So the main issues are technical terms and oral presentations. Would you like to have teaching assistants (TAs) to help with EMI courses? Do you currently have TAs?

Participant B:

Yes.

Participant C:

Yes.

Host:

What are their main functions?

Participant C:

Not much use.

Host:

Do they interact with you at all?

Participant C:

They help to collect money when needed

Participant B:

They chat with us in Chinese, not related to the course content though.

Participant D:

Our TA conducts tutorials but goes through the material very quickly. If you don't understand the content from the main class, you will still struggle.

Participant C:

Do they teach in Chinese?

Participant D:

Yes, but they go through the material very quickly, so it still feels like it's not really enough.

Host:

If you had the choice, would you still take EMI courses if there were equivalent courses in Chinese?

Participant C:

Most likely yes, because I've heard the other (Chinese) class isn't well-taught. It's about the course design.

Host:

So you would still care more about the course design?

Participant A:

Yes.

Participant C:

I think our course design is simpler and easier to understand.

Host:

Do you think it's because it's in English?

Participant C:

Maybe they do try to make the content more straight-forward to understand as English is already difficult, but I think that's not the only reason. The design of the other module just has its own problem.

Participant A:

To me, it really depends on the teacher.

Host:

Would you choose a teacher over the language of instruction, or vice versa?

Participant D:

Language over the teacher.

Participant B:

Probably the teacher over the language.

Participant A:

I would choose the teacher.

Host:

Alright, that's all for our interview. Thank you all for participating.

8.4 CUREC approval letter

**SOCIAL SCIENCES & HUMANITIES
INTERDIVISIONAL RESEARCH ETHICS COMMITTEE
DEPARTMENTAL RESEARCH ETHICS COMMITTEE**

Department of Education
15 Norham Gardens, Oxford OX2 6PY
student.curec@education.ox.ac.uk; staff.curec@education.ox.ac.uk



Department of Education, Social Sciences Division
University of Oxford

2 April 2024

Research ethics approval

Research title: Taiwanese undergraduate students' academic speaking literacy in English taught programs

Research ethics reference: EDUC_C1A_24_084

The above application has been considered on behalf of the Education Departmental Research Ethics Committee (DREC) in accordance with the University's procedures for ethical approval of all research involving human participants.

I am pleased to confirm that, on the basis of the information provided to the DREC, ethics approval has now been granted for this study.

Please note the following:

Personal data: It is the responsibility of the PI to ensure that all personal data collected during the project is managed in accordance with the University's [guidance and legal requirements](#).

In-person activities: Any data collection involving in-person interactions with participants must have an up-to-date fieldwork risk assessment in place; further guidance is available from the Safety Office's [website](#).

Amendments: Please notify the committee if you intend to make any amendments to the information in your ethics application as submitted at date of this approval, as all changes must receive ethical approval prior to implementation. The amendment form is available on the [SSH IDREC webpage](#).

We welcome feedback on your experience of the ethical review process and suggestions for improvement. Please email any comments to staff.curec@education.ox.ac.uk / student.curec@education.ox.ac.uk or ethics@socsci.ox.ac.uk.

Yours sincerely,
Julia Badger
DREC member

cc: Heath Rose, Irina Lepadatu

8.5 Participant information sheet

DEPARTMENT CONTACT DETAILS

Oxford University telephone number: 01865 274024

Oxford University email address:



Taiwanese undergraduate students' academic speaking literacy in English taught programs

PARTICIPANT INFORMATION SHEET

Central University Research Ethics Committee Approval Reference: EDUC_C1A_24_084

1. Introductory paragraph

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part.

2. Why is this research being conducted?

In 2021, the Taiwanese government's policy, Bilingual Education for Students in Higher education, is set out to increase EMI (English as the medium of instruction) lessons at universities by 2030. Previous research has indicated that Taiwanese students' speaking skills may be weaker than the other three language skills. This research aims to investigate factors that could help predict Taiwanese undergraduate students' academic speaking literacy and better understand the potential support universities could provide.

3. Why have I been invited to take part?

The National Taiwan University is one of the universities that the government has devoted the most resources into for this programme. This research is particularly interested in the EMI (English as the medium of instruction) experience of local students in different year groups. You are being invited because you are a student studying at this university.

4. Do I have to take part?

No. It is up to you to decide whether to take part. You can withdraw yourself from the research, without giving a reason, by advising us of this decision. The deadline by which you can withdraw any information you have contributed to the research is 01/08/2024. If you withdraw, your data will be taken out of the research paper and deleted.

5. What will happen to me if I take part in the research?

- An online questionnaire link will be provided for you to access.
- The consent form will be on the first page of the questionnaire, which you could read through to ensure you want to participate in this research.
- The questionnaire will take around ten to fifteen minutes to finish. It will include topics related to your background, the EMI (English as the medium of instruction) speaking experience you have, and the support provided by the institution.

- After filling in the questionnaire, there is possibility that I would invite you to contribute in a follow-up focus group, which will take place at one of the classrooms in National Taiwan University. This will be optional.
- The consent form for the focus group will be given to you in paper form.
- The focus group will take up to an hour. You may be asked to discuss your EMI experience, the reason why speaking skills can be difficult for local students and the support that you think institutions could provide to students. With your consent, I would like to audio record your discussion, so I can have an accurate record of our conversation.

6. What are the possible disadvantages and risks in taking part?

You may have to discuss a little bit about the challenge you face in speaking skills, which we understand not all people are comfortable discussing with other people. This research has intentionally asked question related this in the questionnaire but not focus group, meaning that only we will have the access to such information. In the research output, all of your information will be deidentified (e.g. using pseudonyms) to address the risk of being recognisable.

7. Are there any benefits in taking part?

For students who are interested in studying abroad, the researcher is more than happy to receive contacts from you to answer any question you have related to application or learning experiences. For those who do not have such plans, while there are no immediate benefits for you, it is hoped that this research will lead to deeper understanding about how EMI lessons or the EAP (English for Academic purposes) lessons on the side can be improved. That is, the educational institution will have more knowledge about how to better support you in the future.

8. What information will be collected and why is the collection of this information relevant for achieving the research objectives?

We are interested in your background information and your views of speaking skills in the EMI lesson. The information you provide will help me better understand whether different factors can be used to predict academic speaking literacy. These factors primarily include your year group, discipline, and EMI experience in the past. Moreover, your perspectives on what support can be provided by the institution will identify potential support that EAP (English for academic purposes) lessons and the university can provide to students to better support them.

9. Will the research be published? Could I be identified from any publications or other research outputs?

The findings from the research will be written up in a dissertation, which has a chance to be used in further academic publications or conference presentations. However, participants will not be identifiable from the outputs.

10. Data Protection

The University of Oxford is the data controller with respect to your personal data, and as such will determine how your personal data is used in the research. The University will process your personal data for the purpose of the research outlined above. Research is a task that is performed in the public interest. Further information about your rights with respect to your personal data is available

from the University's Information Compliance web site at
<https://compliance.admin.ox.ac.uk/individual-rights>.

The data will be stored in the university OneDrive, which is secure and will not be accessed by anyone except for the researcher and the supervisor. Identifiable data (including consent forms) will be stored in a secure storage facility:

11. Who has reviewed this research?

This research has received ethics approval from a subcommittee of the University of Oxford Central University Research Ethics Committee. (Ethics reference: EDUC_C1A_24_084).

12. Who do I contact if I have a concern about the research or I wish to complain?

If you have a concern about any aspect of this research, please contact _____ or Professor _____, and we will do our best to answer your query. We will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Research Ethics Committee at the University of Oxford who will seek to resolve the matter as soon as possible:

The Chair, Education Departmental Research Ethics Committee;
Email: student.curec@education.ox.ac.uk; Address: Department of Education, University of Oxford,
15 ~~Norham~~ Gardens, Oxford OX2 6PY

13. Further Information and Contact Details

If you would like to discuss the research with someone beforehand (or if you have questions afterwards), please contact:

Department of Education
University tel: 01865 274024
University email: _____

8.6 Informed consent

DEPARTMENT CONTACT DETAILS
Oxford University telephone number: 01865 274024
Oxford University email address:



Taiwanese undergraduate students' academic speaking literacy in English taught programs (Focus Groups)

Central University Research Ethics Committee (CUREC) approval reference: EDUC_C1A_24_084

Purpose of Study: To investigate factors that could help predict Taiwanese undergraduate students' academic speaking literacy and understand the potential support the university could provide.

Please initial each
box if you agree
with the
statement

I confirm that I have read and understand the information sheet for the above research. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

I understand that my participation is voluntary and that I am free to withdraw at any point until **01/08/2024**, without giving any reason.

I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project.

I understand the extent to which I could be identifiable from any publications or conference presentation.

I consent to being audio recorded.

I understand how audio recordings will be used in research outputs.

Use of quotations: Please indicate your preference (select *one* option):

a) I do not wish to be quoted. **or**

b) I agree to the use of quotations in research outputs if I am not identifiable.

I give permission for you to contact me again to clarify information.

I understand how to raise a concern or make a complaint.

I agree to take part.¹

Name of participant

dd / mm / yyyy
Date

Signature

Name of person taking
consent

dd / mm / yyyy
Date²

Signature

¹ In certain projects researchers may want to add an additional statement: I hereby assign to the researcher all copyright in my contribution for use in all work stemming from this project and future projects.

² To be signed and dated in the presence of the participant. Once this has been signed by both parties the participant should receive a copy of the signed and dated participant consent form. The original signed and dated consent form should be kept with the project's main documents, which must be kept in a secure location.

8.7 Tables for normality and homogeneity of variance test

7A: Table: Wilk-shapiro test for normality (RQ1-1)

	Statistics	Df	Sig.
Year 1	.975	13	.950
Year 2	.961	14	.733
Year 3	.942	11	.539
Year 4	.971	19	.801

7B: Table: Levene's Test for Homogeneity of Variance (RQ1-1)

Test statistics	df1	df2	Sig.
.542	3	53	.655

7C: Table: Wilk-shapiro test for normality (RQ1-2)

Discipline	Statistics	sd	Sig.
Social science	.959	14	.713
Science	.971	26	.653
Business and marketing	.872	11	.083

7D: Table: Levene's Test for Homogeneity of Variance (RQ1-2)

Test statistics	df1	df2	Sig.
0.738	2	48	.484