

Ideologies of Teachers and Students Towards Meso-level English-Medium Instruction Policy and Translanguaging in the STEM Classroom at a Malaysian University

Abstract

English medium instruction (EMI) as a language policy in higher education is based on monolingual conceptions and limits the use of the full linguistic repertoire of bilinguals in the university classroom. Informed by the constructs of language ideology (Spolsky 2009), translanguaging (Li 2018) and pedagogical translanguaging (Creese & Blackledge 2010), this case study aimed to examine the ideologies held by micro-level stakeholders (i.e., teachers and students) towards institutional English-only EMI policy, translanguaging, and the significance and scope of pedagogical translanguaging in EMI classrooms. Semi-structured interviews were conducted with four teachers and 10 students at a public research university in Malaysia. Also collected were a variety of publicly accessible institutional documents, including the focal university's programme brochures, promotional materials and policy statements on its website. Analyses of the interviews and documents revealed that although EMI was officially adopted in the programmes, both teachers and students advocated for translanguaging and underscored its important role in the transmission of new information, effective communication, and scientific meaning-making. In light of these findings, the study concludes that an inclusive language policy is required that allows teachers and students to access all their linguistic resources.

Keywords: Language ideology; English-medium instruction; translanguaging; translingual practices; higher education; Malaysia

Introduction

In recent years, English-medium instruction (EMI), as a language policy, has been widely embraced by higher education institutions around the world, particularly in Asia (Hu & Lei 2023; Rahman et al. 2018). Drawing on widely circulated definitions of EMI (e.g., Macaro et al. 2018; Pecorari & Malmström 2018), EMI is defined for this study as the use of English as a medium of instruction (MOI) for content subjects in settings where English is a foreign language (EFL) or a second language (ESL) and language development is not the targeted outcome of the instruction. This definition distinguishes between teaching English as a language or subject and using English as a medium of instruction to teach other content subjects in EFL/ESL contexts. Accordingly, an EMI setting is a second, foreign, or additional language context for the participants rather than simply based on the content or subject itself (Kuteeva, 2020).

While the policy community has been enthralled by the bloom of EMI, the theories underlying its development are typically based on monolingual conceptions that limit the use of the full linguistic repertoires of bilinguals in the classroom. The underlying principle of monolingualism is that students' first language (L1) should be excluded when learning the target language (Cummins 2007). However, recent studies have suggested that the adoption of monolingualism in educational settings is not supported by empirical evidence, especially with respect to the learning of content knowledge in EMI settings (Chang 2019; Fang & Liu 2020; Rahman & Singh 2022a). The concept of EMI is problematic since the phenomenon commonly occurs in heteroglossic settings (Pecorari & Malmström 2018). Although perceptions of EMI have been generally favourable in different contexts, especially in Asian countries (Aizawa &

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Rose 2019; Karim et al., 2023a; Song & Lin 2020), there are growing concerns about the negative consequences of EMI for content learning (Rahman & Singh 2022a) due to students' and/or teachers' inadequate English language proficiency (Hu & Lei 2014; Hu et al. 2014; Zhou et al. 2023) as well as other societal issues, such as equality and access (Sah & Li 2018).

English replaces local or native languages for classroom communication where EMI is adopted as a pedagogical practice (Rahman et al. 2020a, 2020b). However, it seems natural that students use both English and their native languages in the EMI classroom. Translanguaging provides language policy scholars with a useful construct for describing linguistic realities in multilingual contexts of language teaching and learning. Although it is natural in heteroglossic contexts, language scholars debate on code-switching (a predecessor of translanguaging) as a linguistic practice that divides bilingualism and multilingualism. While Otheguy, García, and Reid (2015) claim that code-switching is masterfully exploited by bilinguals to benefit from two distinct languages, other bilingualism researchers express their reservations about code-switching since it splits the linguistic repertoires of bilinguals into their native language and another language. Rather, these researchers favour translanguaging, which allows bi/multilingual users to take advantage of the full range of their linguistic repertoires to achieve communication purposes (Li 2018).

Although EMI has attracted considerable research and theorising, there is a scarcity of research on translanguaging in higher education EMI contexts to ensure linguistic inclusivity. This is particularly true in Malaysia, where EMI has been widely implemented in higher education (Ali 2013; Ali & Hamid 2018; Rahman et al. 2021; Rahman & Singh 2022b). Researchers have recently reported that learners utilise their linguistic repertoires productively to develop their communicative competence (Sharma 2023; Tai & Li 2020). Recognising the importance of leveraging university students' full linguistic repertoires in education in Malaysia, the present study investigates the views that teachers and students hold about institutional English-only policy and the deployment of translanguaging in acquiring content knowledge. It aims to add to research on translanguaging in Asian contexts, where many institutions promote an English-only language policy that straightjackets multilinguals by preventing them from using their full linguistic repertoires (Fang & Hu in press; Fang & Liu 2020; Sah & Li 2018). Scholars have advocated that policymakers and practitioners need to take local realities and prevalent discourses into account when allowing or disallowing students' access to specific linguistic resources. This is because sociolinguistic realities shape students' linguistic behaviours in response to differences in contexts and systems (Tai & Li 2020; Cenoz & Gorter 2020; Cummins 1979; Byrnes 2020).

Conceptualisation of Translanguaging: Definition and Pedagogical Implications

Cen Williams (1994) introduced the term *translanguaging* to describe the language practices of bilinguals and multilinguals in educational settings. Translanguaging, as defined by García and Li (2014), draws on a single linguistic repertoire rather than two or more independent language systems of bi/multilinguals. Differentiating translanguaging from code-switching, scholars argue that translanguaging operates on an integrated linguistic resource (Li 2018). Although the two concepts overlap, translanguaging is fundamentally sociolinguistic, ecological and situated, whereas codeswitching is linguistic and compartmentalises bilinguals' linguistic resources into distinct language systems. Despite their common concern with language conversion, translanguaging goes beyond cross-linguistic switches to consider how bi/multilinguals' semiotic resources, including language resources, interact structurally (Rahman & Singh 2022a).

According to Lewis, Jones, and Baker (2012), translanguaging can be classified into two types: universal and classroom translanguaging. Universal translanguaging is a holistic Rahman, M., Islam, M., Karim, A., Singh, M. & Hu, G. (2024). Ideologies of teachers and students towards meso-level English-medium instruction policy and translanguaging in the STEM classroom at a Malaysian university. *Applied Linguistics Review*. <https://doi.org/10.1515/applirev-2023-0040>

psycholinguistic process through which bi/multilinguals develop understanding, make meaning, interact, and shape their knowledge and experience through their linguistic resources, regardless of the contexts in which they find themselves. Classroom translanguaging, on the other hand, involves the use of all the linguistic resources of a student “in a dynamic and functionally integrated manner to organise and mediate mental processes in understanding, speaking, literacy, and, not least, learning” (Lewis et al. 2012, p.655). The dynamic use of various linguistic resources (spoken or written) by bi/multilinguals for instructional purposes in educational contexts has been termed ‘flexible translanguaging’ (Hornberger & Link 2012). Flexible translanguaging allows teachers and students to access linguistic repertoire and communicative resources to go beyond monolingual boundaries and achieve their academic goals (Hornberger & Link 2012). For example, Creese and Blackledge (2010, pp. 112-113) found that flexible translanguaging involved various abilities, skills and knowledge of teachers and students, including the following:

- 1) Ability to engage in label quests across languages;
- 2) Ability to communicate with a broad spectrum of individuals using a full linguistic repertoire;
- 3) Use of translanguaging to construct identities that both contradict and encompass the norms of the institutions to which they belong;
- 4) Understanding that languages do not fit into neat distinct categories and that all languages can be drawn on for meaning making and negotiation;
- 5) Drawing on multiple languages and literacies to keep a pedagogical task going;
- 6) Skillful use of students’ and teachers’ languages to serve different communicative goals, such as narration and explanation;
- 7) Use of translanguaging to enhance access to subject matter and accomplish educational goals.

From a pedagogical viewpoint, translanguaging offers a conceptual framework for studying the use of multilingual linguistic resources for content subject learning. In this framework, translanguaging fosters spontaneous language behaviours among bi/multilinguals (MacSwan 2017). As argued by García and Li (2014), academic contexts can be spaces for translanguaging that foster shuttling between and beyond languages, education systems and language practices constructed by society. Such shuttling produces distinct meaning-making systems and subjectivities that, in essence, reform and transform the old structure and previous understanding. Baker (2011) identified four academic benefits of translanguaging that facilitate the construction of knowledge: 1) translanguaging enables teachers and students to develop a deeper understanding of the contents of academic courses; 2) it builds a nexus between the languages of home and academic institutions; 3) it enhances the efficacy of the nexus between the languages of home and academic institutions; and 4) it can integrate proficient language users and beginning learners. Translanguaging also has the potential to spark creativity among bi/multilinguals who can develop and expand an effective linguistic repertoire while crossing monolingual borders (Li 2018).

From the perspective of language policy, translanguaging can offer an inclusive pedagogical environment for EMI. According to García and Li (2014), translanguaging constitutes an effective pedagogical strategy for promoting student inclusion in bi/multilingual contexts. In recognition of the diversity of students and the need to foster equality of opportunity and social inclusion in the classroom, the educational policies of various countries prioritise inclusive pedagogy (Tai, 2022). Chang (2019) viewed inclusive pedagogy as pivoting

on the right to participate in educational activities and demonstrated how EMI science professors and students used translanguaging as a pedagogical strategy to construct inclusive learning environments and develop content understanding. Similarly, Tai's (2022) study showed that translanguaging promoted meaning-making and knowledge construction by requiring the EMI teacher to mobilise various multilingual and semiotic resources and challenge the monolingual exclusive pedagogy implemented in the traditional EMI classroom.

Informed by the theorising of and empirical research on translanguaging, the focus of the present study is on the science classroom as a potentially translanguaging space (Tai 2022). STEM (science, technology, engineering and mathematics) subjects have been widely studied in recent years in EMI settings (e.g., Lin & He 2017; Pun & Tai 2021; Rahman & Singh 2022a; Tai & Li 2020). Examining EMI science classrooms in Hong Kong, Pun and Tai (2021, p.7) identified several pedagogical benefits of translanguaging: 1) dialogic co-making of knowing that occurs in the dynamic flow of action events; 2) creation of a space for students to develop their understanding of the target laboratory procedures; and 3) construction of a fun and enjoyable learning environment in laboratory sessions. Translanguaging allows low-proficiency learners to respond utilising L1, providing an opportunity for them to display their scientific knowledge (Tai & Li 2020). Lin and He's (2017) ethnographic study investigated how an EMI science teacher in Hong Kong used translanguaging pedagogically to motivate South Asian ethnic minorities and engage them in active meaning-making through dynamic interactions and learning activities leveraging their multilingual repertoires. Similar findings were also reported by Rahman and Singh (2022a) in their study on how STEM teachers and students viewed translanguaging as a pedagogical strategy for constructing content knowledge effectively.

Language Ideology in the Adoption of EMI and Translanguaging

As Spolsky (2009) noted, language ideologies are the values assigned to language and language use, or what speakers consider appropriate language use or practice within a speech community. The ideologies held by participants in a science classroom can influence the adoption of translanguaging. In an earlier study, for instance, Kroskrity (2000) examined “the role a dominant language ideology plays in providing cultural resources for language and ethnic boundary maintenance and in shaping the multilingual and multiethnic [language practices]” (p. 331). Rahman et al (2021) found that macro-level actors recognised the role of translanguaging in the construction of subject knowledge in tertiary EMI classrooms. The English-only language policy was debated, and translanguaging was seen as a crucial element in the classroom, despite their belief that EMI had advantages. Mazak and Herbas-Donoso (2015) reported that although the majority of teachers in Puerto Rican universities held doctorates from U.S. universities and most textbooks were written in English, instruction was typically conducted in Spanish. Kuteeva (2020) explored students’ conceptualisations of English in a Swedish EMI programme and found that translanguaging could play different roles in relation to whether English was conceptualised “as standard, as a lingua franca, or as part of translingual practice” (p.287). Stakeholders’ language beliefs have ramifications for classroom dynamics, power relations, social integration, and content learning. Thus, language ideologies play a key role in the adoption of EMI and/or translanguaging in multilingual higher education contexts.

EMI and the Internationalisation of Malaysian Higher Education

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Malaysia is a multiethnic and multilingual country. According to the Department of Statistics of Malaysia (2020), Malaysia has a total population of 30,374,472. Malays constitute the majority group in the country, accounting for 67.4% of the population, followed by Chinese (24.6%) and Indian (7.3%). Malaysia's official language is Malay. English, the former colonial language, is now regarded as a de facto second language (Coluzzi 2017). Since Malaysia has many ethnic and racial groups, languages other than Malay also have prestige and utility for these groups. Table 1, adapted from Rahman and Singh (2021, p. 38), outlines the sociolinguistic landscape of Malaysia. As shown in the table, Malay is the medium of instruction in mainstream schools and a mandatory language for all the students to learn, irrespective of their ethnic and linguistic backgrounds. Thus, Malay is the academic *lingua franca* in pre-tertiary education in Malaysia.

Table 1: Spoken languages in Malaysia and their functions.

Spoken language	Function of the language
Malay	Symbol of nationalism; government jobs; medium of instruction in schools and higher education; inter community communication.
English	Opportunity of private sector jobs; used as a <i>lingua franca</i> in higher education and internationalisation; prestigious language; economic and technological benefit, inter community communication
Chinese	Chinese identity; language of the Chinese community; economic benefit attached to Chinese in private sectors (Chinese are the major economic force in Malaysia)
Tamil	Language and identity of Tamils.
Arabic	Associated with the major religion of Malaysia, Islam. Used as a major language in several states such as Kelantan, Kedah and Johor.
Other minority languages (e.g., Bangla, Panjabi, Chinese and Malay dialects)	Languages for intracommunity communication

Malaysia's Ministry of Higher Education (MOHE) has proclaimed its intention to become an internationally recognised higher education destination by 2025, with a target of 250,000 international students (Rahman et al 2021). English has helped Malaysia achieve its goal of becoming one of Asia's educational centres by providing a common language for both domestic and international students (Rahman & Singh 2022b). Although official government support of EMI in Malaysian public research universities has yet to materialise, this de facto MOI policy has been generally embraced in the Malaysian higher education sector (Rahman & Singh 2021). Currently, EMI is provided for many programmes in both public and private universities (Ali & Hamid 2018; Rahman et al. 2021). The assumption is that EMI allows broader exposure to English in higher education and prepares students for opportunities in global job markets (Gill 2006; Rahman et al. 2021). However, society and policymakers fall into two camps regarding EMI. One camp favours EMI, whereas the other camp questions the exclusive use of English in imparting knowledge (Rahman & Singh 2022b). A minority of academics are gripped by nationalism to oppose EMI, but the majority of academics advocate for it (Gill 2006). Stakeholders in Ali and Hamid's (2018) study also voiced their preference Rahman, M., Islam, M., Karim, A., Singh, M. & Hu, G. (2024). Ideologies of teachers and students towards meso-level English-medium instruction policy and translanguaging in the STEM classroom at a Malaysian university. *Applied Linguistics Review*. <https://doi.org/10.1515/applirev-2023-0040>

for EMI. Hence, Malaysia's MOI policy is under debate. Rahman et al. (2022) reviewed studies conducted over a decade and found that confounding MOI policy, instructional deficiency, teaching and learning materials included in the Malay language, limited scope for teachers' professional development, and nationalist sentiment have left little space for the broader function of EMI.

(Mis)alignments between policy and practice can be identified and explained through macro-, meso-, and micro-level policy analysis, as proposed by Kaplan and Baldauf (2003). Such an analysis links the language behaviour of individuals as microlevel stakeholders (e.g., teachers and students) and communities as meso-level stakeholders (e.g., English-medium universities) to the policy priorities of societal/nation states as macro-level stakeholders (e.g., the ministry of education). On the macro policy level, no written directive was issued that formally prescribed procedures for implementing EMI in STEM teaching in Malaysia (Gill 2006). Ali (2013) noted that the absence of formally circulated and codified directives left all "open to interpretation by academic staff at the university level" (p. 73). The officialisation of EMI was a top-down process (from macro to meso and from meso to micro levels) following the circulation of a Prime Minister speech to vice-chancellors in national dailies. The vice-chancellors then communicated the directive to the deans, who in turn relayed the message to their faculty members (Ali 2013). Thus, the cascaded EMI policy has led to blended MOIs (i.e., English and Malay) in the classroom (Ali & Hamid 2018).

At the micro level of policy implementation, the parallel existence and fluid use of English and Malay are found in classroom interactions and communication on the campuses (Ali & Hamid 2018). Ali and Hamid's (2018) study of EMI in Malaysian higher education institutions revealed that English was not used exclusively, with lecturers frequently shuttling between Malay and English, and that mixed MOIs were common. They concluded that the Malaysian linguistic context does not provide sufficient impetus for either lecturers or students to use English exclusively for instructional and communicative purposes. Regarding English proficiency, most students fall into the category of academic warning, meaning that they lag far behind in their command of English (see Rahman et al. 2022). Earlier, Gill (2012, 2014) held teachers responsible for the blended MOIs, noting that STEM teachers at universities received their education through Malay and had insufficient opportunities to develop their competence in English as an academic language. Similar findings were reported in a recent study conducted by Rahman and Singh (2022a), which found that EMI lecturers viewed EMI as having benefits but also saw the need for translanguaging in the classroom.

As Malay is the official language used in public institutions, including education, it is crucial to understand the rationale for adopting EMI at public universities. Perceptions of Malay being relegated by the English-only policy are documented in the literature, although Malay is still omnipresent. Compared with EMI or MOI, there has not been much research translanguaging in the STEM classrooms of Malaysian universities. Therefore, it is necessary to examine the ideological orientations held by micro-level actors, including EMI students and teachers, towards the EMI policy and the role of Malay and other languages in the classroom.

Given the aforementioned context, drawing on the constructs of language ideology (Spolsky 2004), translanguaging (Li, 2018) and pedagogical translanguaging (Creese & Blackledge 2010), this case study aimed to examine the ideologies held at the micro level (students and teachers) toward the meso-level (university) English-only policy and translanguaging as well as the scope of pedagogical translanguaging in EMI (e.g., science) classrooms. To this end, the present study set out to achieve the following research objectives:

- 1) To explore institutional policies regarding English and the preference for English as the MOI.

- 2) To investigate the ideologies of STEM teachers and students toward monolingual EMI policy.
- 3) To identify STEM teachers' and students' perceptions of the significance and scope of pedagogical translanguaging in the classroom.

Research Methodology

Context and Participants

The data for this study were collected as part of a larger project at one of Malaysia's public research universities. With approximately 30,000 students enrolled in various first-degree and graduate programmes (coursework, mixed-mode, and research), the focal university is a prestigious university in the country. As a leading destination for international students in Malaysia, English is used at the university as the default language for both official and educational purposes. It offers more undergraduate and postgraduate courses in English than Malay. The School of Industrial Technology, the research site for this study, offers Bachelor of Technology degrees and postgraduate programmes at the master's and doctoral levels. This study focused on the undergraduate programmes and the lecturers teaching in these programmes. A case study design was employed because it enabled a comprehensive grasp of the phenomenon being examined (Creswell & Poth 2017). The focal university was chosen for this study because it was a representative case (Yin 2017).

Participants were recruited through purposive sampling (Creswell & Poth 2017). The sampling method allowed us to collect detailed and comprehensive information from the study participants (Creswell & Poth 2017). The sampling criteria adopted included the following: 1) participating students and teachers were from STEM disciplines; 2) they were familiar with the focal university's EMI policy and programmes; and 3) they had intimate knowledge of how languages were used in their classrooms. Because we had access to the focal university, we were able to select participants who could provide the information needed for our inquiry. Participants in this study included six teachers (T1 to T6) and 10 students (S1 to S10). To ensure that the demographic characteristics of the student and teacher participants were as comparable as possible, we sampled teachers who held comparable positions, had comparable qualifications, and had similar years of experience. Each teacher chosen for the study had a doctorate and more than 10 years of experience working at a university. All the teachers spoke Malay as their first language and English as their second language. English proficiency was not measured because English was required for the focal university's EMI programmes. The student participants were all in their first year. Since all the students were from Malay-medium schools, they were more likely to face English-related problems in their EMI classes during their first year of study than when they had more experience with higher education. These students were also more likely to use translanguaging in class than more senior students were. We kept the focal university anonymous and used codes to protect the participants' identities. Informed consent in writing was obtained from all participants, and participation was completely voluntary. Although all participants had the freedom to withdraw from the study at any time without any adverse consequences, no participant did so.

Data collection and analysis

The case study's robustness was enhanced by collecting data from a variety of sources, including the focal university's website and programme brochures, as well as semi-structured

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interviews with the teachers and students. The use of multiple data sources allowed us to triangulate our findings (Creswell & Poth 2017). The institutional documents were collected for language policy document analysis, a well-established method for delving into institutional ideologies that has been used in previous studies (see Hu & Lei 2014; Rahman et al. 2021). Given that language ideology acts as a mediator between language policies and practice (Spolsky 2009), the semi-structured interviews were conducted to investigate how students and teachers perceived and reacted to the EMI policy at their university and what beliefs they held about the necessity and use of translanguaging in STEM classrooms. As interviews are effective in uncovering ideologies at the level of individual stakeholders (Aizawa & Rose 2019; Rahman et al. 2020b), they are frequently used in research on EMI and translanguaging to investigate stakeholders' beliefs and attitudes towards different languages (Kuteeva 2020; Rahman & Singh 2022a). The interview guides (see Appendices A and B) for the semi-structured interviews were adapted from Rahman and Singh (2022a) and Rahman and Singh (2022b). Although the interviews were conducted in English, it was clarified that any participant who wished to use Malay during the interview could do so. These interviews lasted between 25 and 35 minutes and were audio-recorded.

A thematic analysis was conducted on the collected data (Creswell & Poth 2017). First, the audio-recorded data were transcribed, and a member check of the transcriptions was carried out to ensure the accuracy of the data, as recommended by Yin (2017). Second, we read the transcriptions multiple times to become familiar with the data (Nowell et al. 2017). In the process, we focused on institutional and micro-level stakeholders' language ideologies and practices toward the English-only policy, the EMI programmes as well as the perceived purposes, scope and use of pedagogical translanguaging in the STEM classroom. Third, an initial open coding phase led to the establishment of distinct codes through iterative reading of the data and constant comparison (Saldaña, 2016). Next, the codes were categorised into larger units of meaning, namely, themes reflecting distinct patterns in the data, again by making constant comparisons of the codes across the whole dataset and mapping out their relationships. Following Nowell et al. (2017), peer debriefing was conducted while developing initial codes, generating themes, and reviewing themes to establish the trustworthiness of the data analysis.

Findings and Discussion

Institutional Policy about English and Preference for English as the MOI

Our first research objective was to determine institutional ideologies about English and MOI preferences at the focal university. To uncover these ideologies, a document analysis was conducted together with the thematic analysis of the interviews. The results of the analyses are reported in this section.

English language requirements for English-medium programmes

Although Malay is Malaysia's official language, English is widely used in public and private universities, including the focal university, where it is the primary language of communication. To be admitted into an EMI programme at the focal university, Malaysian and international students need to attain a specified level of English proficiency. Therefore, scores in internationally recognised English proficiency tests are required for admission purposes. The focal university's English language entry requirements for English-medium programmes are presented in Figure 1, taken from the focal university's website.

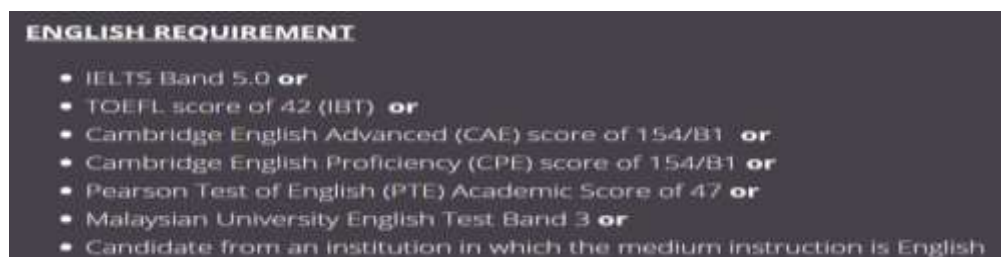


Figure 1. English language requirements for the EMI programmes

Such policies are common in other EMI contexts as well (see Bradford 2016; Hu & Lei 2014), where English language proficiency requirements are mandatory for entry into EMI programmes.

English as the preferred MOI

English was the prescribed MOI for all the courses at the focal university examined in this study. The analysis revealed that the content/materials of the courses were written in English. For example, the course outlines were written in English. Figure 2 is an excerpt from such a course outline.



Figure 2. Part of an EMI course outline

Our review of the programme curricula revealed that graduate students needed to take required English language proficiency courses (ELPs) and English for specific purposes (ESP) courses. Figure 3 presents some of these courses. These compulsory courses were meant to equip students with the required level of English proficiency for the EMI programmes. Such language provision was reported in previous studies of EMI in higher education. For example, Hu and Lei (2014) found that English language proficiency courses and/or ESP courses were offered for the EMI programme examined, and the students viewed them as essential for helping them attain the proficiency in English needed for EMI.

- LSP300/2 Academic English (2 Unit Course)

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- LSP402/2 Scientific and Medical English (2 Unit Course)
- LHP451/2 English language courses (2 Unit Course)
- LHP452/2 English language courses (2 Unit Course)

Figure 3. A sample of compulsory English language courses

The focal university's MOI policy was discussed by the participating teachers and students. English was the only language allowed in the programmes to accommodate the language needs of all students. According to the interviewed teachers and students, the EMI programmes had officially an English-only policy:

Our undergraduate programme, on paper, is an English medium pro. The medium of instruction, including lecture and assessment, should be 100% English. (T3)

Because our program's language is English, our university places a strong emphasis on English usage in class. (S1)

The policy stipulated that all teaching, learning and assessment should be performed in English, and all official communication should also be conducted in English. As the participants highlighted,

All parts of the programme, including lectures and exam papers, must be taught and learned in English. (T6)

English is the recommended medium of instruction for teaching and learning in my program (S2).

With the exception of a few Malay-medium programmes, all programmes were designated English-medium as part of a major strategic shift away from Malay as the official language of instruction toward English. As a result, there were far more English-language programmes than Malay ones (the focal university's website). A similar situation is evident in other Asian countries. For example, Rahman and Singh's (2020) case study in Bangladesh revealed that private universities overwhelmingly choose English rather than Bangla as their MOI, although there is no macro-level requirement that English be used as the MOI.

Ideologies of STEM Teachers and Students toward EMI

Participating teachers and students shared their thoughts on the EMI policy of the focal university's STEM programmes in response to the interview questions related to our second research objective. The responses are reported under several themes in this section.

Influence of English as a global language

In the interviews, both teachers and students stated that the decision to implement EMI at their university was influenced by the impact of English on today's world, especially its dominance in higher education and society and the economic benefits associated with English proficiency.

I believe that English communication is essential for local students who are aiming to pursue higher education abroad, as well as for local graduates looking for jobs in private and multinational corporations. (T2)

English usage is strongly encouraged because many people believe it is the most important language for academic and professional success. (S1)

As you know, English has become a lingua franca in higher education; therefore, more programs have been offered in English. (T4)

English is perceived as a prestigious language in Malaysia. Therefore, studying in English also leads to social recognition. (T5)

In the focal university's STEM programmes, English was used as the language for all academic communication and purposes. Teachers and students were aware of the factors that gave rise

to the policy, including English being the MOI of choice and the global language of higher education, its enormous value in the job market, and the social prestige that the language carries. Such contributing factors have been identified in the literature on English-based monolingual education policies in other educational contexts, such as Bangladesh (Karim et al. 2023b) and Japan (Aizawa & Rose 2019).

Monolingual pedagogy challenged in STEM classrooms

The inconsistencies between the EMI policy adopted in a top-down manner (e.g., the STEM programmes offered by the focal university) and the micro-level policy implementation by stakeholders (e.g., students and teachers) allow for naturally occurring multilingual, bilingual, and translingual practices (Byrnes 2020). The interviewed teachers and students acknowledged that they needed to use Malay despite the English-only policy, which, in their opinion, had a negative impact on teaching and learning subject content. For example, T1 confided:

In regard to language use in the classroom, we do our best to adhere to what the institution requires. However, to meet the needs of students, we are increasing our use of Malay in the classroom.

Although the teachers and students were aware of the role of English in higher education in today's world, they considered the English-only policy in STEM classrooms to be a significant challenge, given the English proficiency of both teachers and learners in these classrooms. Research has shown that learners are inclined to use stronger languages (L1) to support weaker languages (L2) to better grasp concepts (Lewis, Jones, & Baker 2012). These views were shared by the teachers and students in the interviews:

When teachers lecture in English, students' comprehension is limited. A thorough understanding of the content is needed, which is possible only when lectures are given in Malay. (S2)

The primary goal of academic courses is to provide students with a thorough understanding of their subject matter. I believe many students' English proficiency will prevent them from understanding what they're learning in an EMI classroom, and their efforts will be counterproductive. (T1)

If an English-only policy is strictly maintained, the quality of learning and teaching will continue to be a source of concern. Thus, teaching in both the mother tongue and English is a useful strategy for ensuring that students understand and master curricular content (Rahman & Singh 2022b) and has an advantage over monolingual instruction. Dethroning English as the only MOI enables bi/multilingual students to capitalise on their linguistic repertoires and helps to abate the view of a monolingual society as the standard. As teachers and students articulated,

Such a policy reduces the quality of learning and teaching. Students' language proficiency is a concern when implementing such a policy. To effectively teach scientific concepts, we must modify the instructional approach by combining both languages. (T5)

Our understanding would be limited if we only spoke in English. I would have struggled to express my thoughts in class when interacting and collaborating with my peers in English (S5)

These perceptions were consistent with what previous research found. For example, Pacheco, Kang, and Hurd (2019) reported that by transcending the boundaries of languages in an English-only programme, participants viewed “translanguaging as a bridge for connecting languages, a scaffold for participation, and a sign of students’ linguistic expertise and understandings of content” (p.194). Similarly, Tai and Li’s (2020) in-depth investigation revealed that teachers’ and students’ active engagement in fluid and dynamic meaning-making via their full linguistic resources facilitated the acquisition of new knowledge.

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Ideologies of STEM Teachers and Students Regarding Pedagogical Translanguaging

To achieve our third research objective, this study explored teachers' and students' ideologies regarding the significance and scope of pedagogical translanguaging in a STEM classroom because such ideologies could influence language decisions in pedagogy. The participant frequently referred to Malay and English mixing or language mixing, which reflected their translanguaging practices and translanguaging (cf. Wang & Curdt-Christiansen 2019).

Translanguaging as a natural outcome in EMI classrooms

Translanguaging between English and Malay was the top language choice made by the teachers and students, due to the perceived importance of active meaning-making in a STEM classroom. This was considered a natural outcome, as T4 observed:

I permit [the students] to express themselves in the most convenient language to them. Although as a policy, English should be the medium of instruction. However, I believe Malay should also have a place in classroom instruction. I mean, it is sometimes advantageous to use both languages for comprehension.

Such a view echoed MacSwan's (2017) conceptualisation of translanguaging practices as language actions that occur spontaneously in a context. This is evident in the following excerpt:

Malay and English do not have mutual roles. When we want to make an argument about something, we start speaking in Malay.... I do not consciously think about the language I'm speaking; it occurs automatically. (S6)

Malay was seen as playing an essential role in furthering communication in STEM classrooms: It is important to communicate effectively with students by using both English and Malay. Students may lose attention to the lecture if they do not comprehend it. The primary function of language is communication, and using both languages allows me to do so. (T3)

According to the teachers and students, translanguaging is a natural process because the bilingual brain works naturally in this way. Furthermore, translanguaging would allow anyone who wish to communicate or share something to do so: "I utilise it to ensure that everyone in my classroom has an equal opportunity to contribute to the talks" (T5). This represented a substantial departure from the social and political limits of monolingual English-only norms (Rahman & Singh 2022). The practice would facilitate communication and learning by allowing both teachers and students to capitalise on their entire repertoire. As a result, it would promote human agency, an integral part of which is the human ability to communicate in a number of ways and for a range of purposes (García & Li 2014).

Significance of pedagogical translanguaging

As mentioned earlier, Baker (2011) recognised the importance of translanguaging in helping students gain a deeper understanding of subject matter. In line with this understanding, the interviews revealed various advantages and contributions attributed by the participants to translanguaging in STEM classrooms. Teachers, for instance, commented on how it assisted students in constructing meaning from the instruction and teaching materials:

My students communicate in both Malay and English, and it has not taken me long to notice that they have a strong understanding of scientific concepts.... This, in my opinion, is an effective strategy. What is the point if they cannot comprehend what I'm attempting to teach them? Furthermore, combining Malay and English would encourage more classroom interaction. (T4)

Students also expressed similar views about the value of translanguaging. For example, S4 made the following observation:

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During communication and discussion, it is usually to express myself and understand others. It gives me more options for making sense of the instruction.

Translanguaging in EMI classrooms needs to be understood in terms of a single integrated linguistic repertoire allocating resources based on pedagogical needs. As such, it is effective language use rather than inferior language practice, a benefit rather than a problem. In line with this understanding, S9 noted:

You cannot also expect us to communicate entirely in English. Malay aids my understanding of the concept. In most cases, we want to focus on the topic of conversation rather than on which language to use and when.

The language ideologies uncovered in the interviews were consistent with the pioneering proposal made by Cummins (1979) that has underpinned research on bilingualism. Recognising the role of L1, Cummins proposed that for a child to improve his or her academic and linguistic performance in a second language, his or her first language skills must first be well established. In an EMI context, students are predisposed to resort to their home language, a natural language behaviour of bi/multilinguals that policymakers have mistakenly prohibited. Recognising the value of translanguaging in the EMI contexts can displace monoglossic English-only ideologies (García 2009), and allowing students to draw on their whole linguistic repertoire can empower students in their meaning-making endeavours (Bälter et al. in press). Kuteeva's (2020) study in the Swedish context revealed a positive ideological stance on the role and significance of translanguaging that the Malaysian teachers and students in our study shared. Such research on teachers' and students' translanguaging ideologies can break down the barriers between languages.

Pedagogical translanguaging in classroom instruction

Since the focal university's language policy mandated the use of English in instructional materials and assessment, translanguaging could occur only in classroom interactions. Translanguaging was used in numerous instructional contexts by both students and teachers. For example, T6 shared the following experience:

I usually lecture in English and occasionally in Malay. The most common occasion for language blending is during in-class activities. They talk among themselves, attempting to clarify the concepts. Because the instructional materials and assessments were all in English, Malay could be used during verbal communication and discussion.

These translingual practices resemble the flexible bilingualism and effective pedagogy that Creese and Blackledge (2010) delineated in their study on translanguaging in a Panjabi classroom. The practices also came up in our interviews with the students, who acknowledged their frequent deployment of translanguaging in the classroom:

We mostly use Malay rather than English for communication. We switch to Malay or have an entirely Malay lecture and discussion. We only read the text or listen to the lecture in English and then switch to Malay whenever we discuss a topic or debate something. (S6)

Both the teachers and students reported that when discussing scientific concepts, they translanguaged to an extent not expected in a university setting: "Translanguaging is used for a variety of purposes, including explaining or discussing difficult important scientific topics or terminology" (S4). The most important contribution of a translanguaging pedagogy is perceived to lie in its epistemological strength, namely its capacity to facilitate students' meaning making and construction of richer knowledge of the subject (Creese & Blackledge 2015). Furthermore, as García (2017) noted, understanding the scope of translanguaging and its applications can also aid in critical linguistic awareness.

Discussion and Conclusion

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The purpose of this study was to uncover institutional ideologies about English and MOI preferences; the language ideologies held by STEM students and teachers at a Malaysian university regarding English, EMI and English-only policy directives; and their perceptions of the scope and significance of pedagogical translanguaging. As Spolsky (2009) noted, understanding the ideologies of speakers and stakeholders in a language community is essential because their language attitudes can impact the implementation of a language policy. Therefore, policymakers need to give serious attention to the question of how to stimulate micro-level stakeholders' interest in using the languages envisioned in their policy initiatives if these initiatives are to stand a chance of success (Spolsky 2009). In this regard, while EMI for the focal university's STEM programmes was approved at the institutional level, teachers and students pushed against the monolingual English-only language policy. However, they did recognise the relevance of English in their context and the driving forces behind the adoption of EMI for teaching, learning, and assessment. These misalignments between the meso and micro policy levels as well as the ambivalences experienced by the micro-level actors underscore the inherent complexity of formulating and implementing EMI policies in Malaysian and other higher education contexts (Liddicoat 2016). The clear discrepancies between the institutional English-only policy (at the meso level) and the translanguaging practices in the classroom (at the micro level) point to the need for cross-level coordination and articulation (Kaplan & Baldauf 2003).

Although the focal university has implemented a monolingual EMI policy, translanguaging was seen by the participants as a necessary and important language and instructional resource. Clearly, the teachers and students rejected the monolingual English-only policy and advocated for a multilingual ecology where English and Malay can coexist and all linguistic resources available to students and teachers can be legitimately deployed for teaching and learning. According to Chang (2019), positive attitudes toward translanguaging are less documented in the current literature on translanguaging, and existing studies have focused mostly on translanguaging practices in the classroom. Our findings contribute to bridging this gap in the literature. Furthermore, considering the diversity of learners and the demands for promoting equal opportunity and social inclusion in classrooms, inclusive pedagogy is a high priority in educational policy in different countries (Tai 2022). This study affirms the concept of inclusive pedagogy as the right to participate in educational activities and uncovers how EMI teachers and students in the focal university's STEM programmes used translanguaging to construct inclusive learning environments and facilitate classroom dynamics, social integration and content learning (see also Chang 2019; Kuteeva 2020).

From a translanguaging standpoint, the findings also highlighted the need to look beyond the traditional conceptualisation of named languages as separate codes of speech and writing to focus on the embodied components of communication (Li 2018). The teachers and students in our study perceived their classroom as a "translanguaging space" (García & Li 2014), where Malay was validated as a linguistic resource alongside English. Thus, this purposeful act of translanguaging would enable teachers and students to mobilise all their linguistic resources in the process of "making meaning, shaping experiences, gaining understanding and knowledge" (Baker, 2011 p. 288). The ideologies of the teachers and students indicated that they were willing to switch or combine a variety of resources available to them in a flexible manner so that they could create a more inclusive multilingual classroom environment to further STEM teaching and learning. While the instructional materials, including textbooks and assessments, were still exclusively in English, Byrnes (2020) was optimistic that translanguaging-based resources would become more widely available as translanguaging pedagogy gains wide acceptance. The findings of this study support the notion that transcending the boundaries of languages is a natural act of bi/multilinguals, even when

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doing so is discouraged in a university setting (see Chang 2019). This is because English as an MOI is enmeshed in a wider sociocultural narrative in which linguistic resources are increasingly seen as an integrated repertoire (Garcia & Li, 2014; Li 2018; Rahman & Singh 2022b).

The findings of this study have several implications for policymakers in EMI contexts. First, teachers and students, as the two most important groups of actors in language policy, are micro-level agents that make a particular language policy work or break; therefore, their ideologies toward language policy are important factors to consider. Second, from a translanguaging standpoint, the findings accentuate the need to look beyond the traditional conceptualisation of named languages as separate codes of speech and writing. Third, to adopt a more practical and inclusive language policy, in light of the colonial legacy in Malaysia, the higher education system should accommodate translanguaging practices (van der Walt 2013). Such practices can facilitate communication, promote interaction and enhance students' mastery of curricular content. While the rise of EMI in higher education is inevitable, it is certainly within our power to be more linguistically inclusive and realistic in EFL or ESL contexts such as Malaysia to facilitate interculturality, meaning making, learning and human agency.

Although this study focused on Malay students and teachers, international students are also found in Malaysian universities. The quality and experience of EMI for these students and the potential impact of translanguaging on their learning and experience are also important to explore. Therefore, future research should examine international students' ideologies toward and lived experience of EMI and translanguaging in Malaysian higher education institutions. Furthermore, while this study only drew on documents and interviews as data, it is desirable to adopt a multimethod approach that utilises classroom observations in addition to in-depth interviews. Such an approach would not only allow a direct examination of translanguaging practices in the classroom but also uncover (mis)alignment between language ideologies and practices. This approach can help us gain new insights into what, when, why, how, and where translanguaging may be used despite EMI being the mainstream pedagogy.

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