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## Research Article

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# Discipline-specific attitudinal differences of EMI students towards translanguaging

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**Abstract:** This study examines discipline-specific attitudinal differences in translanguaging when studying through English Medium Instruction following a mixed methods research design. The quantitative data for this study came from the Mathematics, Physical and Life Sciences ( $n = 173$ ) and Social Sciences ( $n = 172$ ) divisions of a major public university in Turkey. Semi-structured interviews were also conducted ( $n = 20$ ). After conducting exploratory factor analysis to validate the questionnaire, we ran two independent samples  $t$ -tests to investigate the differences in the attitudes of the participants. Results revealed a statistically significant difference in the general attitudes towards translanguaging in the two divisions but not regarding their attitudes towards teachers' and their own use of translanguaging in class. The qualitative analysis provided partial support for the quantitative analysis. The research suggests important implications by validating the translanguaging questionnaire in the Turkish setting and by highlighting discipline-specific differences observed towards translanguaging practices.

**Keywords:** English medium instruction; translanguaging; discipline-specific attitudinal differences; higher education; attitudes of students

## 1 Introduction

The recent trends of internationalisation (Chapple 2015) and Englishisation (Galloway et al. 2020) of higher education (HE) institutions in the world led to the adaptation of English as a medium of instruction in various parts of the world.

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English medium instruction (EMI) is defined as “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” (Macaro 2018, p. 19). The number of English-taught programmes increased exponentially in different parts of the world (e.g., Galloway and Ruegg 2020; Jenkins 2019; Yuksel et al. 2022), parallel to the number of studies that report the language-related challenges of the students in English-taught programmes (e.g., Aizawa et al. 2023; Altay and Yuksel 2022; Kamaşak et al. 2021; Soruç et al. 2021; Yao et al. 2022). To address these challenges, translanguaging has been proposed as a pedagogical strategy in some recent studies (Yuan and Yang 2023), which could help students learn the content by using one language as linguistic support for the other, and thus, increase comprehension and performative use in both languages (Lewis et al. 2012). Translanguaging also provides an opportunity for bilingual learners to assume responsibility for their own learning and to self-regulate when and how to language, depending on the context in which they are using language (García and Li 2014). It plays a role in mediating the students’ grasp of content, facilitating cooperation among students, and creating a pleasant learning atmosphere in the EMI setting (Dalziel and Guarda 2021; Pun and Tai 2021). Studies on translanguaging practices in EMI contexts have explored its pedagogical potential to facilitate content learning and transfer of academic skills (Adamson and Fujimoto-Adamson 2021; Goodman et al. 2022) and to promote epistemic access and identity affirmation (Probyn 2021) in different disciplines. It is also important to unravel students’ general attitudes towards translanguaging and its use in their classes. However, there is a lack of research on how translanguaging can impact the teaching and learning processes in different academic subjects. Motivated by this gap in the literature, this study focuses on the discipline-specific attitudinal differences towards translanguaging and teachers’ and students’ own use of translanguaging in class in a Turkish HE setting, both qualitatively and quantitatively. We also validated the questionnaire Fang and Liu (2020) developed in the Turkish context via a data reduction technique (e.g., exploratory factor analysis; EFA), determined the factors, and classified students’ attitudes of translanguaging practices.

## 1.1 EMI in Turkey

Among monolingual countries with no colonial past, Turkey was one of the first to establish English-taught programmes, as early as the 1950s, with the foundation of Middle East Technical University. However, due to some challenges in the implementation and biases against teaching content in a different medium of instruction, the use of EMI in Turkish HE has been criticised by some scholars as misguided (Köksal 2002) and destructive (Karabulut 2001) because of EMI’s perceived impact on

the use of Turkish in the HE setting. However, the number of EMI programmes has exponentially grown four-fold in the last twenty years (Yuksel et al. 2022).

Issues of language have been explored in recent EMI studies in the Turkish context on topics such as the impact of language proficiency on EMI success (Altay et al. 2022; Curle et al. 2020; Soruç et al. 2022), language development after EMI studies (Yuksel et al. 2023), and language-related challenges faced by students while studying through EMI (Kamaşak et al. 2021; Soruç et al. 2021). Moreover, some recent studies focused on the analysis of classroom discourse and examined the types and focus of teachers' questions (Genc and Yuksel 2021), discourse strategies of EMI lecturers (Ege et al. 2022) and English as a Lingua Franca interactions in EMI classes (Sahan 2020), which also analysed code-switching practices of teachers and students as a means for creating communicative efficiency. Sahan and Rose (2021) also examined teachers' and students' code-switching and translanguaging practices and elaborated on the typology of the functions of different language use in English-taught classes. Recently, Genc et al. (2023) investigated the functions of translanguaging in Turkish EMI programmes and found that lecturers and students mainly benefitted from translanguaging for content transmission by translating technical terminology, presenting new content, and asking and/or answering content-related questions. However, to our best knowledge, no prior study has focused on the attitudes of learners towards their and their teachers' translanguaging practices in the Turkish HE setting.

### 1.1.1 Translanguaging in EMI

There has been a recent interest in different aspects of classroom discourse in various EMI settings. Issues such as multimodal discourse analysis (Morell 2020), lecturing strategies of non-native EMI lecturers (Khan 2018) and discourse functions performed by metadiscourse markers in EMI lectures (Molino 2018), among others, have been explored. Some recent research also examined the translanguaging practices of lecturers in classrooms (Yuan and Yang 2023) and the functions of code-switching and translanguaging practices of lecturers and students in English-taught classes (Genc et al. 2023; Sahan and Rose 2021).

Translanguaging refers to benefitting from one language to reinforce the other in order to increase comprehension and awareness and supplement development and learning in both languages (García and Lin 2017; Lewis et al. 2012). Translanguaging has been proposed as a powerful strategy that mediates the role of language in high-order mental processing (Yuan and Yang 2023). Via translanguaging, learners can externalise their thoughts (Yuan and Yang 2023) and expand their linguistic repertoire (Basturkmen and Shackleford 2015). Sahan and Rose (2021) also found that translanguaging can be a scaffolding tool for content

transmission by translating technical terminology, presenting new content, and asking content-related questions.

In early conceptualisations of the term, it is regarded as a tool to empower students to take charge of their academic learning and socialise themselves into the specific discourse community of their discipline (García 2009). Recently, in EMI and other content learning settings, its facilitative role to internalise new content has been acknowledged (Cenoz and Gorter 2017; Wei 2018). Content and EMI teachers, following their specific goals, may choose to focus on implementing translanguaging practice (e.g., alternating languages when multiple language resources are accessible) based on the specific situations of the classes they teach (Yuan and Yang 2023) and create a “translanguaging space” (Wei 2011, p. 1222) for knowledge co-construction and negotiation with students via voluntary use of several language resources (e.g., both written texts and spoken utterances) and other meaning-making tools available (e.g., diagrams, images, and videos) (Yuan and Yang 2023). In this way, they can also ease the linguistic challenges stemming from the proficiency deficiencies of their students in English-taught classes (Wei 2018).

## 1.2 Students’ attitudes towards translanguaging

Compared to studies focusing on the attitudes and practices of teachers on translanguaging, the research on students’ attitudes is scant (Fang and Liu 2020). Previous research on this issue revealed that the students sometimes reacted negatively when their teachers utilised translanguaging practices in classes (Galloway et al. 2017) because they usually perceived the use of L1 as an indicator of low English-language proficiency. However, graduate students in Moody et al.’s (2019) study regarded translanguaging as a natural practice facilitating their second language learning, and they believed that it should be used in their classes. In another study, in the Chinese setting, Fang and Liu (2020) reported that the students generally held neutral to positive attitudes towards translanguaging practices. Participants of this study acknowledged translanguaging as “a natural and appropriate practice that improves their confidence and facilitates their L2 learning” (p. 13). The students believed that translanguaging helped them as a tool for scaffolding to elaborate main concepts in classes and to overcome linguistic challenges. However, many students still think English is the standard language expected to be used in classes (Fang and Liu 2020; Liu et al. 2020).

### 1.2.1 Discipline-based differences in EMI

English-taught programmes are offered in a wide range of academic disciplines in HE, from physical and life sciences to the humanities and social sciences. In the

Turkish setting, examining discipline-based differences, Yuksel et al. (2023) investigated whether English language proficiency improved by studying academic content through EMI in two academic divisions, namely, Mathematics, Physical and Life Sciences (MPLS) and Social Sciences (SS). The results of the study revealed that in both disciplines, English language proficiency statistically significantly improved over four years of studying through English. In a previous study, Roothoof (2022) observed no difference in terms of content and language focus among Spanish Science, Technology, Engineering, and Mathematics (STEM) and Humanities lecturers but noted that Humanities lecturers prohibited the first language, whereas STEM lecturers were much less strict.

Via descriptive corpus-based lexical analysis, Ward (1999, 2009) surveyed engineering textbooks and identified the number of words students required to know to follow the content. His analyses revealed that 2000-word families covered up to 95 % of a foundation-level engineering text, and 299-word types provided good coverage of the vocabulary used across five engineering subjects. In a more recent study, Bi (2020) found that first-year computer science undergraduates in the Chinese EMI setting were required to learn an additional 356-word family to comprehend computer science textbooks. No similar studies examined the language (e.g., vocabulary) needed to comprehend the content in social sciences. However, building on the works of Halliday (2004) and Wellington and Osborne (2001), Macaro (2020) argues that humanities subjects involve much greater use of narrative or expository language compared to hard sciences.

Similarly, Kamaşak et al. (2021) report that students who study in the social sciences find writing and reading in EMI classes more challenging than engineering students. It has been suggested that these difficulties can be mediated via translanguaging, which increases the students' understanding of the content (Pun and Tai 2021). However, to provide evidence for this proposition, it is important to understand the attitudes of the students in MLPS and SS divisions towards translanguaging.

Motivated by these gaps in the literature, the current study seeks to address the following research questions:

1. Are there any discipline-based differences in the attitudes of the participants regarding general attitudes towards translanguaging?
2. Are there any discipline-based differences in the attitudes of the participants regarding their teachers' and their own use of translanguaging in class?

## 2 Methodology

The present study adopts a mixed methods approach to explore the students' attitudes towards the integration/permission of translanguaging in their courses.

Attitudes towards a particular practice can positively influence the learning process and the scores (Getie 2020). Drawing on multiple data sources, including questionnaires, semi-structured interviews with the students, and teaching materials (digital and in print), we aim to shed light on how students perceive and engage in translanguaging practices in an EMI context. The findings could provide practical implications for teachers in the EMI context regarding how attitudes can play a key role in integrating translanguaging to promote academic content learning.

## 2.1 Setting and participants

In the Turkish HE setting, institutions offer two types of EMI programmes: *partial* and *full* (Curle et al. 2020). The context of this study adopted a partial EMI model, also called the ‘Multilingual Model’ (Macaro 2018). In this model, students were required to take at least two EMI courses each semester. The university where the data is collected is a major public university in western Turkey with a student population of more than 50,000. It offers 14 partial EMI programmes in Engineering and Economics and Administrative Sciences faculties. Teachers in EMI programmes either have a PhD degree from an English-speaking country in their respective fields or have a B2+ exam score from one of the national or international English exams to be eligible to teach EMI courses.

Similarly, before starting their studies, the students were asked to either provide a valid language proficiency score (e.g., TOEFL, IELTS, or a national alternative) or study in the Intensive English School for a year. The students had to obtain a minimum B1 level to start their studies in their EMI programmes. The quantitative data for this study came from MPLS ( $n = 173$ ) and SS ( $n = 172$ ) divisions of a major public university. More specifically, Mechanical Engineering ( $n = 84$ ) and Electronics Engineering ( $n = 89$ ) students from the MPLS division and Economics ( $n = 87$ ) and International Relations ( $n = 85$ ) students from the SS division participated in this study. A total of 5 students from each academic subject volunteered for a follow-up interview ( $n = 20$ ).

The study started with acquiring the necessary legal and ethical permissions from the university. Then, the participants from MPLS and SS divisions who had completed four academic years of EMI study were approached. A total of 345 EMI students, 173 from the MPLS division and 172 from SS, provided informed written consent for their data to be used in this study. One week before filling out the questionnaires, the participants joined a short session where a working definition or some examples of translanguaging were provided. Afterwards, they completed the five-point Likert scale questionnaire on the use of and attitudes towards translanguaging developed by Fang and Liu (2020). Detailed characteristics of the participants are provided in Table 1.

**Table 1:** Distribution of participants according to academic programmes, gender, and age.

Academic programme	Gender		Age range (Mean)
	Male	Female	
Mechanical Engineering	67	17	21–28 (24.1)
Electronics Engineering	61	28	22–29 (23.9)
Economics	49	38	22–27 (23.7)
International relations	32	53	22–30 (24.4)

Participation was voluntary, and the researchers recognise the limitation of using a convenience sampling method for data collection. This non-probability sampling strategy might restrict the generalisability of the findings obtained (Dörnyei 2007).

## 2.2 Operationalisation of translanguaging

The study is part of a larger study involving the collection of classroom discourse data (please refer to Genc et al. (2023) for the preliminary findings of our classroom discourse study). We used the implications obtained from the discourse data by examining how translanguaging was utilised by teachers and students in classes to operationalise the term translanguaging in our study to avoid confusion with the different concept of the use of first language in the classroom. To this end, we followed the framework proposed by Tai (2021) where translanguaging is regarded as a process of knowledge construction that entails using various linguistic structures, systems and modalities to create meaning. Analyses of the classroom discourse data have shown that pedagogical and spontaneous translanguaging were employed by the teachers. We could observe the translanguaging instances in the presentation slides used in the courses, which led to the implication of the use of translanguaging as a tool in “planned activities... so that languages reinforce one another and multilingual students make the most of their linguistic repertoire” (Cenoz and Gorter 2021, p. X) (see Figure 1 as an example). We could also observe the uses of spontaneous translanguaging in naturally occurring contexts, mostly stemming from students’ requests for clarification of information. In this study, we focused on the participants’ first-language utterances that helped learners use all their language skills to understand and achieve a better understanding of the content (Włosowicz 2020).



Oseen's Approximation

Equivalent sphere for irregular solids  
(Düzensiz katılar için eşdeğer küre)  $(Re > 1)$

$$C = \frac{12}{\rho D} \left( 1 + \frac{3}{16} Re \right)$$

for a cylinder is

(silindir için formül farklıdır)

$$C = \frac{4\pi}{\rho D \left[ 0.5 - 0.577216 + \ln \left( \frac{8}{Re} \right) \right]}$$

**Figure 1:** Sample practice of translanguageing from Fluid Mechanics course.

## 2.3 Data collection

We used a mixed-methods survey approach during data collection (McKinley and Rose 2020). We used an online questionnaire adapted by Fang and Liu (2020) based on the previous surveys prepared by Moody et al. (2019) and Nambisan (2014). The questionnaire had 20 items. Q1 to Q7 included statements “addressing the students’ attitudes towards general translanguageing practices” (Fang and Liu 2020, p. 5). The remaining 13 items inquired about the students’ attitudes towards their teachers’ translanguageing practices in class (Q8 to Q14) and their own translanguageing practices in class (Q15 to Q20). The participants’ responses were taken via a five-point Likert scale with answers ranging from 1 (strongly disagree) to 5 (strongly agree). To enhance the significance of our quantitative analyses, we conducted semi-structured interviews with ten students from each division ( $n = 20$ ). The first round of interviews lasted between 08 and 17 min ( $M = 12.23$ ). A second round of interviews, lasting an average of 35–45 min ( $M = 38.11$ ), was conducted with the same students to support results and clarify issues from the first round. In these interviews, we asked the participants to elaborate on and discuss the impact of translanguageing in their classes. All interviews were conducted in the participants’ first language (i.e., Turkish) to facilitate a smooth data collection process, avoiding potential hindrances due to English language proficiency levels (see Appendix A for the interview protocol in English). All interview sessions were translated into English by one of the researchers, and the accuracy of the translations was cross-examined by a bilingual scholar with a PhD who was familiar with the setting and research on translanguageing. Discrepancies were resolved by

negotiation by the cross-examiner and researcher and the rewording of the translation (Regmi et al. 2010). Pseudonyms were used in the reporting of the interview findings. A pilot study to test the research instruments (both survey items and interview questions) was conducted with a group of ten students with similar characteristics studying EMI programmes in different academic programmes.

## 2.4 Data analyses

The Statistical Package for the Social Sciences (SPSS) version 15.0 was used for all quantitative analyses. EFA was carried out on the translanguaging scale prepared by Fang and Liu (2020). In reporting their findings, Fang and Liu grouped their results into three categories: students' general attitudes towards translanguaging, students' attitudes towards their teachers' use of translanguaging in class and students' attitudes towards their own use of translanguaging in class. However, they used no data reduction techniques such as EFA. To fill this methodological gap, we examined the extent to which it was possible to classify student attitudes of translanguaging practices and determined the factors.

After conducting an EFA, we ran two independent samples *t*-tests to investigate the difference between the participants in MPLS and SS in terms of their perspectives on (a) general attitudes towards translanguaging, (b) attitudes towards teachers' and their own use of translanguaging in class. To augment these findings with contextualised, qualitative data, we carried out a thematic analysis of the interview dataset. Considering the purpose of the research questions, we coded the interview data thematically to provide corroborating and contradictory student attitudes about translanguaging, which we also analysed quantitatively in the study (i.e., general attitudes towards translanguaging and attitudes about teachers' and students' in-class practices). The second round of interviews helped us enrich their qualitative data about the attitudes of the participants towards the use of translanguaging. All interview data were grouped according to the attitudinal views for each factor in the questionnaire (see Selvi 2020).

### 2.4.1 Instrument validation

To examine the factorial structure of the translanguaging questionnaire in the Turkish EMI setting, all 20 items of the instrument were subjected to an exploratory factor analysis with oblique rotation (oblimin). Three items were loaded across another factor, and these items were eliminated from further analyses: Item 2 (from Factor 1) and Items 8 and 13 (from Factor 2) (see Appendix B). When the analysis was re-run with 17 items, the KMO measure verified the sampling adequacy for the

analysis, KMO = 0.937. Bartlett's test of sphericity  $\chi^2(139) = 3,843.27$ ,  $p < 0.001$ , indicating that the correlation structure was adequate for factor analyses. The maximum likelihood factor analysis with a cut-off point of 0.40 and the Kaiser's criterion of eigenvalues greater than 1 (see Field 2009; Stevens 1992) yielded a two solution as the best fit for the data, accounting for 61.66 % of the variance. The results of this factor analysis are presented in Table 2. Initially, based on the reporting of the data in the

**Table 2:** Exploratory factor analysis of the items of the translinguaging questionnaire.

Item	Factor 1	Factor 2	Dimension
1. Translinguaging in class is a natural practice for bilinguals	0.900		General attitudes towards translinguaging
2. Translinguaging in class is an appropriate practice.	0.861		
3. Translinguaging is essential for learning a new language	0.801		
4. Translinguaging develops my confidence in English	0.794		
5. Language instructors should avoid translinguaging because it will prevent second language learning	0.678		
6. If an instructor used translinguaging in class, it would be helpful for the bilingual students	0.778		
7. It is important for teachers to use translinguaging in class to give directions		0.489	Students' attitudes towards teachers' and own use of translinguaging in class
8. It is important for teachers to use translinguaging in class to give feedback to students		0.714	
9. It is important for teachers to use translinguaging in class to praise students		0.684	
10. It is important for teachers to use translinguaging in class to build bond with students		0.753	
11. It is important for teachers to use translinguaging in class to help low-proficiency students		0.725	
12. It is important for students to use translinguaging in class to discuss contents in small groups		0.670	
13. It is important for students to use translinguaging in class to aid peers during classroom activities		0.719	
14. It is important for students to use translinguaging in class to brainstorm during classroom		0.869	

**Table 2:** (continued)

Item	Factor	Factor	Dimension
	1	2	
15. It is important for students to use trans- languaging in class to enable participa- tion by lower proficient students		0.761	
16. It is important for students to use trans- languaging in class to answer teachers' questions		0.814	
17. It is important for students to use trans- languaging in class to ask permission from teachers		0.760	

original study, a three-factor structure was assumed; however, as can be seen in Table 2, after data reduction, all items were loaded into two factors. The two factors were called (a) students' general attitudes towards translanguaging and (b) students' attitudes towards their teachers' and their own use of translanguaging in class. The first factor had an eigenvalue of 7.65, which accounted for 36.48 % of the variance; the second factor had an eigenvalue of 2.81, which accounted for 25.17 % of the variance.

### 3 Results

Before running an independent samples *t*-test for each factor, a Kolmogorov-Smirnov test was run to check the normality of the data obtained from a translanguaging questionnaire of both groups. The results indicated that data for the first factor,  $W(345) = 1.27$ ,  $p > 0.05$ , and the second factor,  $W(345) = 1.010$ ,  $p > 0.05$ , were normally distributed. For both factors, Skewness ( $-0.468$  for factor 1 and  $-0.241$  for factor 2) and Kurtosis ( $-0.513$  for factor 1 and  $-0.745$  for factor 2) values were also within an acceptable range (Hair et al. 2010); data was therefore accepted as approximately normally distributed.

#### 3.1 MPLS and SS students' general attitudes towards translanguaging

The first research question focused on any potential differences between MPLS and SS students regarding their general attitudes towards the use of translanguaging. The original scale had seven items inquiring about the general attitudes of the participants towards the use of translanguaging. After EFA, one item (item 2) was removed

**Table 3:** Independent samples *t*-test results for MPLS and SS students' general attitudes towards translanguaging.

	MPLS		SS		F	t-Value	df	P
	M	SD	M	SD				
Factor 1	3.77	0.77	3.04	0.93	9.571	7.878	343	0.000 <sup>a</sup>

<sup>a</sup> $p < 0.001$ .

from the scale and averages of the remaining six items were used in the analysis. When the two groups were compared, the descriptive statistics indicated noticeable differences between the mean scores of the participants from the MPLS and SS divisions ( $M = 3.77$ ,  $SD = 0.77$ ;  $M = 3.04$ ,  $SD = 0.93$ , respectively) and a statistically significant difference in their general attitudes towards translanguaging  $t(343) = 7.87$ ,  $p < 0.001$  (see Table 3 for details).

Our interview findings support this finding, as the analysis of the interviews revealed that most students in the MPLS division (i.e., eight of the ten participants) considered translanguaging a supporting tool. In contrast, fewer students in the SS division held this view (five out of ten). Regarding viewing translanguaging as a supporting pedagogical tool, in the follow-up interviews, Ruya (Electronics Engineering, F, 21) regarded translanguaging as a springboard to support their learning by stating, "Sometimes, I am lost in classes. The topic itself is very complex, and I can't really follow the flow of the new concepts. Here, if the teacher is providing some support by explaining the basics of the topic in Turkish, then I really understand the rest. It's, in a way, like a springboard for me to help me jump ahead and get them all".

Similarly, more students from the SS mentioned potential problems (seven out of ten) than those from the MPLS division (four out of ten). For example, Aysu (International Relations, F, 22) stated that "Relying too much on translanguaging might not be good for English development". Likewise, Deniz (Economics, M, 25) argued that "translanguaging should be used cautiously as it might impede my English proficiency." He also highlighted that "language development was one of the key reasons for registering for an EMI programme." When asked in the follow-up interview if translanguaging prevented 'language development', Deniz stated that "... if teachers keep talking in Turkish, we cannot practice English and eventually we won't have the opportunities to develop our English".

### 3.1.1 MPLS and SS students' attitudes towards teachers' and own use of translanguaging in class

The focus of the second research question was the potential difference between MPLS and SS students in terms of attitude towards the teachers and their own use of

**Table 4:** Independent samples *t*-test results for MPLS and SS students' general attitudes towards translanguaging.

	MPLS		SS		F	t-Value	Df	P
	M	SD	M	SD				
Factor 2	3.48	0.73	3.40	0.80	2.853	0.902	343	0.368 <sup>a</sup>

<sup>a</sup>*p* < 0.001.

translanguaging in class. The original questionnaire had 13 items (seven on teachers' practices and six on students' own use of translanguaging). After EFA, two items were removed from the teachers' translanguaging practices, and 11 items remained for the comparison of attitudes of MPLS and SS students. The descriptive statistics indicated minor differences between the mean scores of the participants from MPLS and SS divisions in terms of their attitudes towards teachers' and own use of translanguaging in class ( $M = 3.48$ ,  $SD = 0.73$ ;  $M = 3.40$ ,  $SD = 0.80$ , respectively) and independent samples *t*-test analysis did not reveal any significant difference between two groups (see Table 4 for details).

The qualitative analysis of the interviews portrayed a rather different picture, allowing observation of some discipline-specific attitudinal differences in the participants' responses. For example, when asked about the translanguaging practices of their teachers, more MPLS students highlighted the benefits than their peers in the SS (6 out of 10 and 4 out of 10, respectively). The students, in general, mentioned that their teachers used translanguaging "to explain some topics and concepts in detail" (Mert, Mechanical Engineering, M, 23), "to solve a difficult and rather complex problem on the whiteboard" (Zeynel, Electronics Engineering, M, 22) in the MPLS division. When asked to provide some examples of practical uses of translanguaging in their classes in the follow-up interview, Mert stated that he was always afraid of a core course in his programme because "it covered very important foundational information", but he mentioned that "the teacher's use of translanguaging made the content easily accessible when I took the course".

In the SS division, the participants also stated that they benefitted from their teachers' use of translanguaging while "giving examples about some technical terms and field-specific concepts" (Hale, Economics, F, 26) and "providing an overview for some projects and assignments" (Cem, International Relations, M, 24). However, as stated, there were fewer numbers of these instances.

Regarding their own translanguaging practices, a similar pattern emerged, with more MPLS students showing a positive attitude compared to those in SS (7 and 4 out of 10, respectively). MPLS students, in general, appreciated the option of using their first language in class. For example, Fikret (Electronics Engineering, M, 23) never felt

lost in the courses taught in English “because whenever there was something I could not understand, I could use Turkish to ask questions about it and would get further clarification about that topic”. Similarly, Ali (Mechanical Engineering, M, 22) pointed out the opportunity to ask questions in Turkish without constraint, saying, “I can step up and ask a question; most of the time in Turkish, and it never feels weird. Moreover, I get the response either in English or Turkish, and become more familiar with the topic”.

## 4 Discussion

### 4.1 Instrument validation

Our first step in data analysis was instrument validation. Compiled by Fang and Liu (2020), the questionnaire was developed based on the previous literature (e.g., Moody et al. 2019; Nambisan 2014) but was not validated in earlier studies. The instrument validation helped the researchers obtain an improved measurement of research variables (Fang and Liu 2020), and our analysis revealed that, in the context of the current study, some items did not correlate with the overall factors. By providing a more robust questionnaire, we believe that we increased its construct validity, which is ‘considered central to the validation process’ (Bachman 1990, p. 254). Via EFA, we also identified a set of observed items that did not contribute to the measurement of the variable (Child 1990). These methodological insights might enhance the robustness of the findings of further research.

### 4.2 Attitudes towards translanguaging

The quantitative results of our study revealed a significant difference in the general attitudes of MLPS and SS students towards translanguaging, which was supported by interview findings. The interviews revealed that most students in the MPLS division regarded translanguaging as a supporting tool (Fang and Liu 2020; Moody et al. 2019), whereas fewer students in the SS division were enthusiastic about the concept of translanguaging. To our best knowledge, no prior study examined students’ attitudes towards translanguaging considering the discipline-specific attitudinal differences in English-taught programmes. Our findings regarding students’ attitudes towards translanguaging align with the findings regarding teachers’ attitudes towards the use of L1 (Roothoof 2022). Roothoof (2022) found that teachers in social sciences usually prohibited the use of their students’ first language in classes.

In contrast, teachers in the engineering programmes were more relaxed about the use of L1 in classes. We could also observe in our interviews that students in the MPLS division acknowledged the mediating role of translanguaging to grasp the content in English-taught programmes more than those in social sciences (Pun and Tai 2021). For those in the MPLS division, translanguaging was a *springboard* or *supporting tool* that helped them in their classes. In a way, similar to what Fang and Liu (2020) argued, the majority of the students viewed translanguaging as an essential component of EMI classes. Our results in the SS division were also parallel with those of Galloway et al. (2017), who reported that some students did not enjoy their teachers' translanguaging practices because they believed that it was a sign of language deficiency. Similarly, a relatively high proportion of EMI students in Fang and Liu's (2020) argued that translanguaging indicated low English proficiency.

### 4.3 Attitudes towards teachers' and own use of translanguaging in class

There was no statistically significant difference between the attitudes of MPLS and SS students towards teachers and their own use of translanguaging in class; however, the qualitative analysis of the interviews portrayed a rather different picture, with responses showing evidence of discipline-specific attitudinal differences. When asked about the translanguaging practices of their teachers, more MPLS students than their SS peers discussed the benefits (6 and 4 out of 10, respectively). These benefits usually echo those iterated in Fang and Liu's (2020) study, where students felt that translanguaging could be used as a tool for scaffolding and could help them overcome linguistic challenges they faced in their English-taught classes (Wei 2018). Our findings offer unique implications about students' attitudes towards translanguaging practices outside the Asian (i.e., Japanese and Chinese) EMI context. However, our participants in the SS division did not favour translanguaging practices in their classes, at least as much as their counterparts in the MPLS division, because they believed that they had to practice English in classes and that depending too much on translanguaging might impede English language development. The greater presence of English in social sciences and humanities departments (Macaro 2020) might be one of the reasons for this perception, and excessive use of translanguaging in class might be seen as a sign of low language proficiency in the SS division (Galloway et al. 2017).

Our qualitative findings also align with previous descriptive research on the functions of translanguaging in English-taught programmes. Sahan and Rose (2021) listed some pedagogical functions of translanguaging, such as introducing new content or concepts, explaining challenging concepts and relating the lesson content with everyday examples, which were also mentioned by our participants in both divisions during the



interviews (even though participants from SS division more frequently mentioned these issues). All of these functions support students in their English-taught courses, and we argue that translanguaging can ease some of the language-related challenges many EMI students experience (e.g., Kamaşak et al. 2021; Soruç et al. 2021).

Regarding the attitudes towards teachers' and own use of translanguaging in class, our quantitative and qualitative findings did not overlap. While we did not observe any statistically significant difference between MPLS and SS students in the quantitative analysis, our qualitative analysis indicated variety between these two groups. This might be due to the different place and significance of English in the MPLS and SS divisions. As discussed previously, English plays different roles in different divisions (Macaro 2020), and the need for translanguaging might emerge at different levels. This might have impacted the attitudes of our participants in the MPLS and SS divisions.

Recent research about the functions of translanguaging revealed that translanguaging serves some pedagogical, social and affective functions (Sahan and Rose 2021). Exploring the students' attitudes towards translanguaging can help us better situate how these functions are perceived and realised by students in different disciplines. Especially what we have observed in the interviews of the MPLS students in the current study and the findings of our classroom observations in another study (Genc et al. 2023) overlap in terms of how translanguaging supports students in translating technical terminology, presenting new content, and asking and/or answering content-related questions. Thus our findings imply that the attitudes of our participants in the MPLS division, as portrayed in the interviews, support the theoretical claims (i.e., the difficulties in EMI can be mediated via translanguaging and the students' understanding of the content can be supported (Pun and Tai 2021)), and previous research on the functions of translanguaging in class (Genc et al. 2023; Sahan and Rose 2021).

## 5 Conclusions

Our study explored the students' discipline-specific attitudinal differences towards translanguaging and their teachers' and their own use of translanguaging in class. By validating the translanguaging questionnaire developed by Fang and Liu (2020) in the Turkish EMI context, we explored how students in two divisions perceive their teachers' and their own use of translanguaging in class. However, our findings should be evaluated cautiously, considering the limitations of this study. Firstly, even though we used multiple sources of data collection, we did not benefit from the analysis of the classroom discourse, which might have enriched the findings of our study in terms of the translanguaging practices of teachers and students.

Moreover, we have investigated the attitudes of only partial EMI students in a single university setting; future studies might do multiple-setting comparisons that

would include other models of EMI to increase generalizability. Despite these limitations, our study offered some new insights about discipline-specific attitudinal differences also observed in some other EMI studies (e.g., Roothoof 2022; Soruç et al. 2021), thus strengthening the implications of previous research that highlighted the significance of discipline-based differences in English-taught programmes. Moreover, we believe that, if adjusted properly considering the contextual and discipline-based differences, translanguaging can be an effective pedagogical strategy (Wei 2018; Yuan and Yang 2023) to overcome language-related challenges of the students in English-taught programmes (e.g., Kamaşak et al. 2021; Soruç et al. 2021; Yao et al. 2022) mostly derive from the inadequate language proficiency (e.g., Galloway et al. 2020; Wilkinson and Yasuda 2013).

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## Appendix A

### Interview Protocol

Gender: Age: EMI programme:

1. What do you think about the use of translanguaging in the English medium classes you take?
2. What do you think about the use of translanguaging by your teachers in the English medium classes you take?
3. What do you think about the use of translanguaging by you and your classmates in English medium classes you take?
4. Is there anything else you want to add?

## Appendix B

2. Translanguaging indicates a lack of linguistic proficiency in your second language
8. It is important for teachers to use translanguaging to explain concepts
13. It is important for teachers to use translanguaging to clarify activity rules

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