Variations of English-medium instruction: Comparing policy and practice in Turkish higher education



Kari Sahan
Department of Education
New College
University of Oxford

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Abstract

In response to the growing use of English as an international language and a lingua franca in academic settings, the number of English-medium programs in higher education has increased. English-medium instruction (EMI) policies are typically determined through top-down decision making processes. However, decisions to implement EMI programs are often made with little consideration for the educational issues surrounding language policy changes. Disparities between the central policies regulating EMI and the classroom practices shaping EMI inhibit its equal or expected implementation. This DPhil dissertation examines the policies, practices, and perceptions of EMI in engineering departments at state universities in Turkey to investigate the variation with which EMI is implemented.

The research design for this study includes three phases. In the first phase, national and institutional policies regulating EMI are analyzed to understand the aims and expectations of EMI programs. In the second phase, this study explores the classroom language practices of teachers and students at EMI engineering departments in Turkey. The third phase examines EMI lecturers' and students' perceptions of EMI for teaching and learning in order to triangulate the findings and incorporate stakeholders' perspectives on EMI implementation.

To analyze EMI policy, data were collected from national and institutional policy documents (n=145) and, when available, classroom syllabi were collected from participating lecturers during fieldwork. Data concerning policy were analyzed using qualitative content analysis, and the ROAD-MAPPING framework developed by Dafouz and Smit (2016) was applied to situate the analysis of EMI policy. In the second phase of the study, data were collected through classroom observations of 21 EMI lecturers from engineering departments at seven state universities in Turkey. For each lecturer, a minimum of two EMI lessons were observed, resulting in 85 classroom observations. Finally, to analyze perceptions of EMI for teaching and learning, semi-structured interviews were conducted with lecturers and focus group discussions were held with students. Interviews were conducted following each classroom observation for a total of 42 interviews with teachers. Focus group discussions (n=25) were conducted with 4-9 students from each class to triangulate the data and incorporate a student perspective.

Observations and interviews were voice-recorded and transcribed for analysis using NVivo 11. Data from classroom observations were analyzed according to a structured coding scheme, and qualitative content analysis was used to identify recurring themes in interviews with teachers and students. The analysis revealed a variety of classroom practices, with EMI implementation varying in terms of language choice and proportion of teacher-student interaction across classrooms. Lower proportions of Turkish use and teacher-student interaction were found at elite universities compared to small and large universities, where L1 Turkish was more commonly incorporated into the lecture and higher levels of student participation were observed.

The variations in practice were supported by data collected through interviews with teachers and students. Moreover, the analysis of interview and focus group data revealed a tension between teachers' and students' perceptions of the benefits of EMI for students' career opportunities and the challenges of content and language learning through EMI. By revealing the variation with which EMI is implemented at Turkish universities, this study illustrates how teachers serve as EMI micro-level policymakers. Despite national policies which envision a 'one-language-at-a-time' model of EMI education, the findings from this study

suggest that EMI is neither English-only nor English-always in practice, particularly at non-elite universities. Implications are discussed for EMI theory, policy planning, and program development.

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List of abbreviations

CBI – Content-based instruction
CLIL – Content and language integrated learning
CS – Codeswitching
EFL – English as a foreign language
ELF – English as a lingua franca
ELT – English language teaching
EMI – English-medium instruction
FonF – Focus on form
HE – Higher education
HEI – Higher education institution
L1 – First language (in the context of this study, Turkish)
L1 MoI – First language-medium of instruction
L2 – Second language (in the context of this study, English)
LPP – Language policy and planning
MEB –*Millî Eğitim Bakanlığı*, or the Ministry of National Education
MFL – Modern foreign language
MoI – Medium of instruction
NS – Native speaker
ÖSYM – *Ölçme, Seçme, ve Yerleştirme Merkezi*, or the Measurement, Selection, and Placement Center (central assessment body in Turkey)
SFL – School of Foreign Languages (academic unit at HEIs responsible for implementing the year-long, intensive English *hazırlık* program)
TMI – Turkish-medium instruction
YDS – *Yabancı Dil Bilgisi Seviye Tespit Sınavı*, or the Foreign Language Proficiency Exam (central language exam administered by ÖSYM)
YKS – *Yükseköğretim Kurumları Sınavı*, or the University Entrance Exam (administered by ÖSYM)
YÖK – *Yükseköğretim Kurulu*, or the Council of Higher Education (central government agency responsible for overseeing HEIs in Turkey)

List of transcription conventions

T	=	teacher; indicates that the teacher is speaking
S	=	student; indicates that a student is speaking
S1, S2, …	=	student 1, student 2; used to distinguish between multiple students speaking in the recording
Ss	=	students; indicates that multiple students are speaking at once
R	=	researcher; indicates that the researcher is speaking
[=TR]	=	indicates that an utterance (word, letter, variable, etc.) occurred in Turkish; used to indicate language when spelling/writing conventions cannot
[=ENG]	=	indicates that an utterance (word, letter, variable, etc.) occurred in English; used to indicate language when spelling/writing conventions cannot
< >	=	indicates non-verbal direction or clarifies an action, e.g. writing, reading, pause
<pause, 3 seconds>	=	indicates pause and length of pause
<T writes, 'words'>	=	indicates what the teacher wrote on the board
[??]	=	unclear talk; indicates speech was unclear on the recording
word--	=	dash indicates a cut-off in speech
[*italics*]	=	translation of Turkish text to English; translation indicated by italics; any words kept in the original (e.g. original in English) are not italicized
T-1, T-2, T-3, …	=	indicates teacher code; teachers are labelled from 1-21 (T1 – T21)

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Chapter 1: Introduction

With the spread of English as the international language of research, science, and academia (Ammon, 2006; Coleman, 2006; Tollefson & Tsui, 2014), higher education institutions (HEIs) across the world have increasingly offered academic programs taught through the medium of English (Dearden, 2014). As such, English medium instruction (EMI) has become prevalent at universities in order to prepare local students for the linguistic demands of the global market and to increase the international profile of the university (Wächter & Maiworm, 2015). Although language learning is often not an explicit learning outcome in EMI programs, the introduction of EMI in many HEIs brings with it the promise of dual educational aims: "A widely purported benefit of EMI is that it kills two birds with one stone; in other words, students simultaneously acquire both English and content knowledge" (Rose, Curle, Aizawa, & Thompson, 2019, p. 2). However, as EMI continues to grow, disparities between the central policies regulating EMI and the everyday classroom practices shaping it may inhibit the equal or expected implementation of EMI, which often falls short of its intended linguistic and academic aims (Ali, 2013; Broom, 2004; Chapple, 2015; Lei & Hu, 2014).

Countries have taken different approaches to the implementation of EMI (see Macaro, 2018). In some contexts (e.g. Italy, Spain), EMI programs at the tertiary level are not regulated by formal national policies. In other contexts (e.g. China, Japan), the introduction of EMI is a relatively new phenomena which has been supported by the national government. However, governmental support for EMI has oscillated in other contexts (e.g. Malaysia, United Arab Emirates). Commenting on the diversity with which EMI is carried out within and across countries, Dearden and Macaro (2016) state that "there is an urgent need for research to establish whether this diversity is a positive reflection of different cultural needs,

or whether it is simply an overall lack of understanding of EMI's implications and of poor investment in programme preparation" (p. 476). Guided by this call for research, this doctoral research project has investigated the implementation of EMI in higher education classrooms in Turkey in order to identify the variation with which EMI is carried out and to examine current EMI policies and practices.

In Turkey, where English is connected with concepts of modernization and Westernization, EMI has historically been connected with elite education (Selvi, 2014, p. 134). Although the growth of EMI worldwide is a relatively recent phenomenon (Dearden, 2014), the history of EMI in Turkey dates back to Ottoman times with the founding of Robert College in 1863 by American missionaries. At the secondary school level, *Anadolu liseleri* (Anatolian high schools) were established in 1955 as public high schools to provide intensive foreign language instruction through EMI; the curricula at *Anadolu liseleri* consisted of a one-year intensive language preparatory program (*hazırlık*) followed by EMI courses (Kırkgöz, 2007). However, the system of secondary school EMI instruction was abolished in 2006 (Selvi, 2014) and the intensive English-language preparatory year at *Anadolu liseleri* was abandoned in 2005 (Kırkgöz, 2007). *Anadolu liseleri* have since offered Turkish-medium instruction (TMI) for content area courses and EFL classes for foreign language education. EMI at the secondary level is today largely limited to elite private schools.

EMI was introduced at the university level in Turkey with the establishment of Middle East Technical University (METU) in 1956, a public university in Ankara. Historically connected to Robert College, Boğaziçi University became the second public university to offer EMI education in 1971. The two most elite public institutes, METU and Boğaziçi were the only public EMI universities in Turkey until the expansion of the university system in the early 2000s. More commonly, EMI programs were offered by private universities, beginning with the founding of Bilkent University in Ankara in 1984 (Selvi,

2014; Kırkgöz, 2007). Because access to EMI education has historically been limited to the upper class, researchers have asserted that EMI "exacerbates socioeconomic inequalities in the country" (Selvi, 2014, p. 143).

Throughout the last decade, the number of public universities in Turkey has increased dramatically through a government-led initiative to expand higher education starting in 2008. In 2005, there were 73 HEIs in Turkey; by 2010, the number of HEIs had increased to 156 (Günay & Günay, 2011). In 2019, there were 207 HEIs in Turkey, of which 129 were state (public) universities (YÖK, 2019). Despite their young histories, many of the universities opened through these recent expansion efforts offer EMI programs. The expansion of EMI in higher education, particularly the public sector, has broadened the scope, range, and profile of students and teachers engaged in EMI education in Turkey. With this expansion, research is needed to examine the policies and practices shaping EMI across HEI contexts in order to address issues of quality, consistency, and equality of education.

Further, in a recent systematic review of EMI in higher education, Macaro, Curle, Pun, An, and Dearden (2018) concluded: "In Turkey, the collective research picture is one of deep concern in terms of level of English in general and vocabulary knowledge in particular" (p. 53). Given these 'deep concerns' regarding L2 proficiency, this study has focused its attention on the role of English in EMI (Kuteeva, 2019a; Macaro, 2019) and the language used for teaching and learning in EMI classrooms. In developing its research questions, this dissertation was guided by Dearden's (2014) call for research examining different forms of EMI and the kinds of English being used in EMI (p. 3). As Dearden (2014) notes, "little empirical research has been conducted into why and when EMI is being introduced and how it is delivered" (p. 4).

Previous research on EMI—both in Turkey and globally—has examined stakeholders beliefs through survey data (Costa & Coleman, 2012; Dearden & Akıncıoğlu, 2016; Kırkgöz,

2005; 2014; Macaro & Akıncıoğlu, 2018), analyzed top-down policymaking process for EMI programs (Ali, 2013; Rose & McKinley, 2018), and investigated classroom language use through single-case studies (Duran & Sert, 2019; Söderlundh, 2012; Tarnopolsky & Goodman, 2014). What is missing from this growing body of research is an examination of how, or to what extent, policy provisions are interpreted and implemented by the teachers and students engaged in EMI education across classroom contexts.

As such, this doctoral research project has investigated the variation with which EMI is implemented in higher education classrooms by exploring the policies and practices that characterize undergraduate EMI engineering programs at state universities in Turkey and the perceptions of teachers and students engaged in those EMI programs. The data for this study were collected at the macro- (national), meso- (institutional), and micro- (classroom) levels through the analysis of national and institutional policy documents, combined with classroom observations and in-depth interviews with teachers and students. The universities (n=7) included in this study were selected to represent an array of EMI contexts in Turkey, a country with a diverse socio-economic landscape. The aim of the study was to examine EMI education across university classrooms in order provide empirical evidence in support of better theory, policies, and language support structures for EMI teachers and students. To this end, the study has been guided by the following overarching research question:

> *With what variation is EMI implemented in undergraduate engineering programs in Turkey?*

In addressing the overarching research question above, this study has asked the following (sub-) research questions:

1. What are the current policies for EMI engineering education at the university level in Turkey?

    a. How are the dimensions of the ROAD-MAPPING framework enacted in national EMI policies?
    b. How are the dimensions of the ROAD-MAPPING framework enacted in institutional EMI policies?
    c. How do EMI policies vary across universities?
2. How are languages used in university-level engineering classes in Turkey?
    a. What functions do languages (English, Turkish, and other languages) serve in EMI classrooms?
    b. How do the functions of these languages vary across EMI classrooms?
    c. What functions does codeswitching have in EMI classrooms?
3. How do teachers and students perceive EMI in university-level engineering programs?

To contextualize this study, **Chapter 2** provides a review of the relevant literature and existing empirical research on EMI. It begins by defining EMI and describes the growth of EMI as a global phenomenon, which is discussed within the context of the internationalization of higher education. The theoretical dual aims of content and learning in EMI are discussed, and empirical research is then reviewed with respect to language use and language policy in EMI contexts. The ROAD-MAPPING framework (Dafouz & Smit, 2016), which is used as an analytical framework to investigate EMI policy in Chapter 4, is introduced and previous studies which have applied the ROAD-MAPPING framework are reviewed. From the literature review, it is concluded that, while research has investigated language use and EMI implementation through single case studies and large-scale survey data, an empirical study investigating how teachers and students enact EMI (language) policy with respect to the demands and constraints of their particular classroom settings has not been conducted. Given the growth of EMI, such a study has implications for understanding the

nature of EMI pedagogy and refining theoretical conceptions of EMI. The literature review concludes with an in-depth look at the Turkish context and previous research on EMI in Turkey.

Following the literature review, **Chapter 3** describes the research design and methodology used in this dissertation, including the data collection and analysis procedures. The study incorporated data collected from policy documents, classroom observations, semi-structured interviews with lecturers, and focus group discussions with students. The chapter begins by explaining the research design, including the three phases of data collection and analysis. First, national and institutional policy documents (n=145) were collected and analyzed using the ROAD-MAPPING framework (Dafouz & Smit, 2016). Second, data on classroom language practices were collected through classroom observations of EMI engineering lectures (n=85; approx. 64 hours). The audio-recordings were transcribed and analyzed in NVivo using a structured coding scheme (adapted from Tsui, 1985). The third phase of the research design investigated EMI teachers' and students' perceptions of policies and practices. Data were collected through semi-structured interviews with EMI lecturers (n=21) and focus group discussions (n=25) with EMI students (n=150). After introducing the research design, the chapter details the sampling techniques and process of participant recruitment. At this point, the HEIs selected for this study and the participant lecturers are introduced. Next, the data collection procedures are described for each data source included in the study, and the processes of instrument development and data analysis are explained. The chapter ends with a discussion of ethical considerations.

Chapters 4-6 report on the findings of this study. In **Chapter 4**, the results of the policy analysis are presented using the ROAD-MAPPING conceptual framework (Dafouz & Smit, 2016) to answer RQ1 and its sub-questions. This chapter begins by describing the national-level policies regulating EMI at universities in Turkey. It then describes the

institutional-level policies of the seven universities at which data were collected. In examining HEI policies, the chapter investigates how national-level policies are translated to the institutional level, and EMI policies are compared across university contexts. The findings are presented according to the six dimensions of the ROAD-MAPPING framework: the role of language, academic discipline, language management, actors, practices and processes, and internationalization.

Following the findings from the policy document analysis, the dissertation then turns its attention to EMI practices at the classroom level. **Chapter 5** presents the results from the analysis of classroom observation data. It addresses RQ2 and its sub-research questions. Chapter 5 is divided into two sections: First, it presents the results of classroom observation data analyzed according to the structured coding scheme. The findings presented here provide an overview of EMI language practices and reveal the extent to which EMI lecturers differed in their language choices. Next, the chapter builds on the findings of its initial analysis by providing a more in-depth examination of classroom language practices. Here, the chapter examines the variation with which EMI is implemented by presenting a qualitative analysis of classroom language practices in addition to the analysis of the structured coding scheme. The findings are presented according to five vignettes, each of which provides a depiction of EMI classroom language practices with respect to language choice and teacher-student interaction.

Chapter 6 addresses RQ3: *How do teachers and students perceive EMI in university-level engineering programs?* The findings are presented in this chapter according to themes which emerged through the qualitative content analysis of interview and focus group data. The findings presented in this chapter supplement those presented in Chapters 4 and 5 by incorporating teachers' and students' perceptions of policy and practice. The results presented in this chapter contextualize the diversity of EMI practices and policy interpretations found

across EMI engineering classrooms in Turkey. The findings presented in this chapter reveal a tension between teachers' and students' perceptions of the benefits of EMI in terms of improving students' career opportunities and the challenges of EMI in terms of teaching and learning through an L2.

The findings of the study are discussed in **Chapter 7**, which considers the results in light of the existing literature and empirical evidence. The discussion begins by considering the process through which EMI policy is implemented in classrooms, noting key policy arbiters at the macro- and micro-level. The discussion then considers questions of L2 proficiency and L1 use in EMI programs. Finally, the chapter concludes by discussing the theoretical dual aims of EMI and motivations for EMI university programs.

Finally, the thesis concludes with **Chapter 8**, which summarizes the results of the study and discusses implications for EMI practice, policy, and research. It notes the strengths and limitations of the study, and it concludes by offering suggestions for future research.

In examining the variation with which EMI policies were implemented and the practices that characterized language use across classroom settings, this study has made empirical and theoretical contributions to research on EMI. The findings should be of value to researchers, teachers, and policymakers who are interested in introducing EMI provisions and/or improving the quality of education across a variety of EMI contexts.

Chapter 2: Literature review

This chapter reviews key theoretical concepts and empirical findings on EMI in the existing literature. The purpose of this chapter is to situate the current study in relation to the debates and evidence from previous research on EMI policy and practice. The literature review presented in this chapter discusses the aims of EMI, the growth of EMI worldwide, language use in EMI classrooms, EMI language policy, and EMI in Turkish higher education.

2.1 English as a medium of instruction (EMI)

With its global spread, English is increasingly used as a medium of instruction in higher education. A number of definitions have been purposed to define the concept of EMI (e.g. Pecorari & Malmström, 2018). In this study, 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 (L1) of the majority of the population is not English" (Macaro, 2018, p. 19). Since EMI refers to the teaching of non-linguistic academic content, language learning is (often) not an explicit aim or outcome in EMI courses: in EMI, English is the means through which content is conveyed rather than a component of the course content itself.

As such, EMI is conceptually distinct from other L2 educational provisions, such as English language teaching (ELT), content-based instruction (CBI), immersion education, or content and language integrated learning (CLIL), in which instruction is, to varying degrees, explicitly focused on linguistic form (Costa, 2012; Macaro, 2018; Pecorari & Malmstrom, 2018; Smit & Dafouz, 2012). In ELT, or English as a foreign language (EFL) classes, English is taught as the subject material. CBI is an approach to language teaching which integrates content instruction in order to enhance language learning. By some definitions, CBI is conceptually similar to CLIL (see Macaro, 2018), which is defined as a "dual-focused form of instruction where attention is given to both the language and the content" (Coyle, Hood, &

Marsh, 2010, p. 3). Lasagabaster and Sierra (2010) note that CLIL programs are distinct from language immersion programs in that the target language in CLIL is a foreign language which is not spoken locally. In other words, CLIL programs are not conducted in local or minority languages, to which the students would have exposure outside of class, either at home or in society. Although definitions of CLIL do not specify English as the target language, the majority of CLIL programs in Europe are conducted in English (Lasagabaster & Sierra, 2010).

Macaro (2018) describes a 'language-content continuum' (pp. 28-29) through which L2 classrooms can be categorized and compared according to the degree of emphasis on content and language learning objectives. EFL classes are positioned on the 'language-dominant' end of the spectrum, and EMI classes are positioned on the opposite end of the spectrum, on the 'content-dominant' side, since the primary objective of EMI classes is the mastery of non-linguistic academic content. CLIL and CBI are placed along the middle of the spectrum, since language and content learning are both explicit aims, although the emphasis on each may vary according to context. In contrast, language instruction is not an inherent feature of EMI. According to this conceptual understanding, the language learning benefits of EMI occur through exposure to the target language during content teaching (e.g. Macaro, Tian, & Chu, 2018; Pun & Macaro, 2019).

Although language instruction is, theoretically, not an explicit objective of EMI programs, EMI is often framed by policymakers, practitioners, and researcher as an opportunity for students to improve their English skills (Moncada-Comas & Block, 2019; Shohamy, 2013). The introduction of EMI is therefore frequently accompanied by the promise of dual educational aims: "A widely purported benefit of EMI is that it kills two birds with one stone; in other words, students simultaneously acquire both English and content knowledge" (Rose, et al., 2019, p. 2). In terms of language learning, a reported aim of

EMI is “to expose students to large quantities of the target language” (Macaro, Tian, et al., 2018, p. 1), the rationale being that students’ English skills will improve as they learn through an L2 immersion environment. Moncada-Comas and Block (2019) have argued that EMI becomes ‘CLIL-ised’ when it is adopted for the purpose of improving students’ English proficiency. Although policymakers may envision a ‘CLIL-ised’ version of EMI in legislative decisions to introduce it at the university level, empirical evidence has suggested that content lecturers do not incorporate language teaching into their classes (Airey, 2012; Block & Moncada-Comas, 2019; Duran & Sert, 2019; Moncada-Comas & Block, 2019). In other words, although language learning might be an (implicit) policy objective of EMI, empirical evidence has suggested that language teaching is not realized in practice (e.g. Ali, 2013).

In recent years, EMI has grown rapidly at the university level. In a study examining the state of EMI in 55 countries, Dearden (2014) concluded that the expansion of EMI was a global phenomenon likely to continue. Aside from its use as a medium of instruction (MoI), English has emerged as the international language of research, science, and scholarship (Ammon, 2006; Brumfit, 2004; Tollefson & Tsui, 2014). The spread of English in higher education (HE) has raised questions over its impact on the use of other languages (Hultgren, 2013; 2014), with some researchers going as far as to describe English as a “lingua frankensteinia” (Phillipson, 2008). Researchers have referred to the dominance of English as a situation of domain loss whereby the local language is being replaced by English in certain areas of society (Hultgren, 2013; Ljosland, 2007). In this context, researchers have argued that the spread of EMI has brought about the ‘Englishization’ of HE (Hultgren, Jenson, & Dimova, 2015; Kirkpatrick, 2011; Saarinen & Nikula, 2013). The following sub-sections explore the impact of EMI on HE and the relationship between EMI and internationalization.

2.1.1 European Perspectives

Some of the most comprehensive studies concerning the expansion of EMI at the university level have emerged from Europe. Two of these studies (Brenn-White & Faethe, 2013; Wächter & Maiworm, 2015) included large-scale surveys on the number of EMI programs offered by country. The survey conducted by Brenn-White and Faethe (2013) addressed EMI at the Masters level, whereas Wächter and Maiworm (2015) took a broader view of EMI across degree levels. The results of both surveys indicate that the number of EMI programs offered at European universities has increased over the past decade: in 2001, 725 EMI programs were taught at European universities; by 2007, this number had grown to 2,389 programs, and by 2014, the number of EMI programs offered at European HEIs had reached 8,089 programs (Wächter & Maiworm, 2015).

According to the study conducted by Brenn-White and Faethe (2013), the number of EMI Masters programs in Europe in 2013 was 6,407 programs, a 38 percent increase from 2011. From this total, 5,258 programs were taught entirely in English, a 42 percent increase from 2011, and 1,149 programs were taught partially in English, a 19 percent increase in the same period. Since 2002, the total number of EMI programs offered at the Masters level in Europe has grown by 1,047 percent (Brenn-White & Faethe, 2013). When analyzed by country, the greatest growth rates in the number of EMI Masters programs offered between 2011-2013 were found in Denmark (74%) and Sweden (73%), although the Netherlands (n=946) and Germany (n=733) offered the largest total number of programs in Europe respectively (Brenn-White & Faethe, 2013). Similar findings were reported by Wächter and Maiworm (2015), who found the largest total number of EMI programs in the Netherlands (n=1078), Germany (n=1030), and Sweden (n=822).

Brenn-White and Faethe (2013) have suggested that the number of EMI programs in Europe has grown due to local demand for EMI programs and a desire by university

administrators to attract international students and staff. Despite the growth of EMI over the last two decades, some researchers have predicted a 'levelling out' in the expansion of EMI programs due to limited market demand, resulting in slower growth rates in the upcoming years (Brenn-White & van Rest, 2012). This prediction is supported by student enrollment figures which suggest that the number of students enrolled in EMI programs is only 1.3 percent of the total number of students studying at European higher education institutions (Wächter & Maiworm, 2015). Thus, while the number of EMI programs has increased substantially, the magnitude of EMI should not be overstated in relation to the entirety of HE in Europe.

The surveys conducted by Wächter and Maiworm (2015) and Brenn-White and Faethe (2013) found similarities in terms of the distribution of EMI programs across geographical regions and academic disciplines. Both studies found a North-South divide in the availability of EMI programs in Europe and that the most common disciplines of study related to business and economics or engineering and technology. Moreover, the motivations for EMI policy as cited in each study reflect local and global demands related to internationalization, such as a desire to attract foreign students and the need to prepare domestic students for the international job market (Brenn-White & Faethe, 2013; Wächter & Maiworm, 2015). These findings suggest that student and staff mobility are key motivations for EMI in Europe: "The development of these programs, which open up higher education systems that were previously inaccessible to most international students, may have a dramatic impact on the international student flows both within and outside of Europe" (Brenn-White & van Rest, 2012, p. 18). Indeed, many researchers trace the expansion of EMI in Europe to the Bologna Process (Kerklaan, Moreira & Boersma, 2008; Smit & Dafouz, 2012; Tollefson & Tsui, 2014; Unterberger, 2012), which was started in 1999 and has created networks of cooperation and exchange between European universities. The Bologna Process is a series of

intergovernmental agreements signed by European countries to establish the European Higher Education Area, which has facilitated staff and student mobility across countries, such as through Erasmus and Erasmus+ programs. The Bologna Process has also established a system for quality assurance and criteria for comparing qualifications of mutually recognized degrees (see European Commission, n.d.).

As a result of increased collaboration and mobility between universities in Europe, English is used as a lingua franca (ELF) for communication, teaching, and research. Kerklaan et al. (2008) have suggested EMI programs facilitate the mobility of staff and students by removing language barriers to education. On average, 54 percent of students in EMI programs in Europe in 2014 were international students (Wächter & Maiworm, 2015), suggesting that EMI promotes international student enrollment. Gundermann (2014) notes that the purpose of EMI programs in Germany is to attract international students, even to the point of limiting the number of spaces available to domestic students (p. 7). The nature of EMI programs in Europe, therefore, appears to be largely international in focus, or at least inter-European.

Thus, EMI in Europe is often tied to processes of internationalization and associated with discourses of an international learning environment (Hultgren et al., 2015; Hynninen, 2012; see Section 2.1.3). Given this backdrop, research on EMI in Europe has focused on multilingual practices in EMI university contexts (e.g. Dafouz & Smit, 2016; 2017; Doiz, Lasagabaster & Sierra, 2011; 2014; Komori-Glatz, 2015; Kuteeva, 2019a); EMI teachers' identities, beliefs, and self-reported practices (e.g. Airey, 2012; Dafouz, Huttner & Smit, 2016; Jensen & Thorgersen, 2011; Moncada-Comas & Block, 2019); and the effectiveness of EMI teacher training programs (e.g. Dafouz, 2018; Klaassen & De Graaff, 2001). Much of this research has focused on integrating content and language learning and embracing

multiculturalism within the context of inter-European exchange (e.g. Valcke & Wilkinson, 2017; Wilkinson & Walsh, 2015).

2.1.2 EMI in non-Europe contexts

The growth of EMI at the tertiary level has been less thoroughly documented outside of Europe, although extensive research has been conducted on EMI in Japan (e.g. Aizawa & Rose, 2019; Bradford & Brown, 2017; Rose et al., 2019), China (e.g. Hu & Lei, 2014; Jiang, Zhang, & May, 2019), South Korea (e.g. Byun et al., 2011; Cho, 2012; Kang & Park, 2005), Hong Kong (e.g. Evans, 2008; Evans & Morrison, 2011), and the Middle East (e.g. Belhiah & Elhami 2014; Rogier, 2012). The existing research on EMI university programs in these contexts have focused on policy implementation (e.g. Rose & McKinley, 2018; Ali, 2013) and the effectiveness of EMI for content and language learning (e.g. Rose et al., 2019; Hu & Lei, 2014). This research has highlighted issues of (perceived) L2 proficiency in EMI contexts, addressed later in this chapter.

Research on EMI in Asian, African, and post-colonial contexts has highlighted the inequalities associated with EMI education more thoroughly than research in the European context, where researchers typically focus more on the implementation of EMI than its (negative) social implications. Investigating the impact of English as a global language in the Asia-Pacific region, Nunan (2003) concludes that "considerable inequality exists in terms of access to effective English language instruction" (p. 605), particularly as the result of inconsistencies at the policy level. Research in post-colonial contexts has emphasized the challenges of EMI in multilingual societies (Broom, 2004; Owu-Ewie & Eshun, 2015), where debates on EMI have occurred alongside debates on mother-tongue education (Tollefson & Tsui, 2014). Van der Walt and Kidd (2013) suggest that the spread of English in HE in South Africa has challenged the historical position of Afrikaans, leading to an arrangement of bilingual education whereby English and Afrikaans are used side by side. The South African

context is further complicated by its colonial past, thereby making English a preferred medium of instruction in some communities (Broom, 2004). Similarly complex dynamics exist in India, where English serves as the language of the elite class but also as a tool used by minority groups to resist the domination of Hindi as the official language (Tollefson & Tsui, 2014). However, Annamalai (2013) has argued that there is a "hidden social cost of the spread of English-medium education in India" (p. 192), whereby EMI is associated with the promise of economic success—a myth that Annamalai refers to as "the falsity of English" that is rarely realized in first generation English learners who lack access to high quality education.

In addition to the reproduction of economic inequalities, researchers have noted issues related to teaching and learning in EMI contexts. Particularly in primary schools, researchers have suggested that EMI is an obstacle to educational achievement (Ferguson, 2003; Owu-Ewie & Eshun, 2015). Broom (2004) concluded that L1 English-speaking students outperformed their L2 peers on English-language reading comprehension tests in EMI South African primary schools, particularly with respect to cognitive academic language proficiency (CALP) skills. Further, Prinsloo (2012) highlighted variations between the prestigious varieties of English available to some students and the local non-standard varieties of English used in many communities, suggesting that language variation was overlooked by policymakers yet integral to educational outcomes. Thus, research has suggested that EMI may negatively impact the academic performance of certain groups. While the studies by Broom (2004) and Prinsloo (2012) examined the social implications of EMI education in primary and secondary schools in South Africa, they have highlighted the need for additional research in the context of HE.

At the tertiary level, few studies have investigated the role of EMI as a barrier to access in HE through empirical research. Driven by top-down economic considerations rather

than educational motivations (Piller & Cho, 2013), EMI policy often leads to the marginalization of students with low English proficiency (Ferguson, 2009; Shohamy, 2013) and "exacerbates socioeconomic inequalities in the country" (Selvi, 2014, p. 143). To this end, Turkey offers a unique case study as a country of unequal socio-economic development and a border country with Europe, partially but unevenly integrated into the EU system. In Turkey, "English is increasingly going to become a 'commodity' of those belonging to the upper middle class" (Selvi, 2011, p. 196). Before reviewing the existing literature on EMI in Turkey, this chapter continues with a discussion of internationalization as a motivation for EMI. It then reviews language use and language policy in EMI contexts.

2.1.3 Globalization & internationalization

As mentioned in Section 2.1.1, the internationalization of HE (see Knight, 2003; 2004) is often cited as a motivation for the introduction or expansion of EMI programs. The globally integrated system of scientific research and exchange that exists today was enabled by the advancement of the internet in the 1990s, and it has continued to grow over the last three decades largely unimpeded by forces such as the economic recessions of 2008-2010 or global tensions in migration and trade (Marginson, 2018). In the context of this globally integrated system, Dearden (2014) notes that EMI is seen as "a mechanism for internationalising… [and] as a way of rapidly increasing international mobility" (p. 16). In other words, EMI is perceived as means through which HEIs can recruit international staff, attract international students (who pay higher overseas fees), increase university rankings, and prepare domestic students for the international job market (Brenn-White & Faethe, 2013; Brenn-White & van Rest, 2012; Costa & Coleman, 2012; Gundermann, 2014; Inbar-Lourie & Donitsa-Schmidt, 2013; Wächter & Maiworm, 2015; Wilkinson, 2013).

In examining the influence of globalization, the literature on EMI has identified economic development and neoliberal ideology as the primary motivating factors for EMI

education (Piller & Cho, 2013; Tollefson, 2013a; 2016; see Block, Gray, & Holborow, 2012, for discussion of neoliberalism and applied linguistics). English is often considered a desirable MoI because strong English skills are equated with better job prospects and higher salaries in the global market (Coleman, 2006; Heller, 2003; Piller & Cho, 2013). English has been characterized as a form of linguistic capital necessary for success in a knowledge-based economy (Li, 2013) and an asset for acquiring cultural, social, and economic capital in a globalized world (Inbar-Lourie & Donitsa-Schmidt, 2013). Moreover, Gill (2006) suggests that EMI in HE is motivated by a national desire for economic development and entry into the global market. As such, discourses of internationalization related to EMI are often entangled with discourses of a neoliberal global economy. Because EMI policies are driven by and perpetuate economic motivations, academic knowledge is often conflated with language prestige in EMI policy (Shohamy, 2013).

Exploring the relationship between EMI and a neoliberal economic ideology, Piller and Cho (2013) suggest that language education policy is informed by neoliberal values of competition: "neoliberalism with its imperative to compete is a covert form of language policy, which imposes English as a natural and neutral medium of academic excellence" (p. 24). Referring to this 'imperative to compete,' scholars have commented on the language learning behaviors of 'homo economicus,' an entrepreneur in the neoliberal market (e.g. Block, 2018). De Costa, Park, and Wee (2016) have argued that "the neoliberal turn in education: has transformed language learning into "an activity that the learner engages in as a path to better outcomes, such as better employment opportunities" (p. 696). The neoliberal value of competition is enacted in education through practices such as testing, assessment, and rankings, and it is evident in the (policy) actions taken by HEIs and individuals to make themselves more competitive (Piller & Cho, 2013). "Neoliberal theory understands the worldwide sector as a competition between HEIs in the global higher education market"

(Marginson, 2017, p. 237). As Marginson and van der Wende (2007) have noted, international university rankings tend to favor science-intensive, English-speaking HEIs, because "English is the language of research" (p. 311). As such, the introduction of EMI may be viewed by policymakers and administrators as a means through which to make HEIs more competitive in terms of world rankings. Similarly, language skills may be viewed as an economic resource through which students become more competitive in the global job market. In this context, De Costa et al. (2016; 2019) argue that language learners have become *linguistic entrepreneurs* in their motivations and modes of language learning. They define linguistic entrepreneurship as "an act of aligning the moral imperative to strategically exploit language-related resources for enhancing one's worth in the world" (De Costa et al, 2016, p. 696). In other words, language learning is increasingly framed as a form on entrepreneurship, by which learners invest in, develop, and portray their language skills as a marketable commodity.

Although the discussion above has centered on *language skills* as an economic resource, the value of English in the neoliberal market is unrivaled: "English is often valorized as the global language par excellence that facilitates global business and economic development" (De Costa et al., 2019, p. 396). In terms of the internationalization of HE, some scholars have suggested that the 'international' is a euphemism for English, whereby internationalization refers to 'Englishization' (Coleman, 2006; Kirkpatrick, 2011; Phillipson, 2009). Saarinen and Nikula (2013) argue that internationalization policies render minority languages invisible by focusing on monolingualism rather than multilingualism. Analyzing policy documents at a Finnish university, the researchers found that English was conflated with or euphemized as "foreign language(s)," while languages other than English and Finnish (the local language) were absent from policy documents (Saarinen & Nikula, 2013). Similarly, Coleman (2006) has suggested that the spread of EMI has adverse effects on local

languages, and other scholars have highlighted the extent to which fears of domain loss propel opposition to EMI policy (Hultgren, 2013; Doiz, Lasagabaster, & Sierra, 2013a; Li, 2013; Wilkinson, 2013).

Thus, the introduction of EMI for purposes of internationalization alters the local language landscape, including at the institutional level (Doiz, Lasagabaster, & Sierra, 2013a). Piller and Cho (2013) are critical of what they consider the "illusion of a meritocracy" (p. 39) in English education and instead characterize English as a gatekeeper to quality education. Other scholars have taken a harsher stance toward English, characterizing it as a lingua frankensteinia (Phillipson, 2008) or a tyrannosaurus rex (Tardy 2004; Swales, 1997). Given the dominant role of English in education, some scholars have suggested that the emphasis of language education policy should shift from the expansion of EMI to the support of multilingual education (Shohamy, 2013). Considering the presence of bi- and multilingual speakers in EMI classrooms, the following section examines language use in EMI.

2.2 Language in EMI

With the expansion of EMI worldwide, a multitude of studies have examined language use in EMI contexts, typically focusing on approaches to teaching and learning (e.g. Alptekin & Tatar, 2011; Lin, 2012) or the (perceived) English language proficiency of students and lecturers (e.g. Byun et al., 2010; Kırkgöz, 2005; Jiang et al., 2019). Some studies have suggested that English is a barrier to content comprehension (e.g. Hu & Lei, 2014; Sinanoğlu, 2004) and a threat to cultural integrity (Görgülü, 1998). Other studies have found that EMI instructors tend to simplify their language to improve student comprehension during lectures (e.g. Sert, 2008). In examining the role of language in EMI, research has explored whether learning in English as an L2 produces insufficient or reduced learning outcomes of both content and language (Sert, 2008; Wannagat, 2007). To this end, research has suggested

that students with low levels of L2 proficiency struggle to understand content (e.g. Aizawa & Rose, 2019; Rose et al., 2019).

In their case study of an EMI business program at a university in China, Hu and Lei (2014) concluded that English was a barrier to comprehending subject material, largely due to low levels of English proficiency of students and staff. The study employed Spolsky's (2004; see Section 2.3) tripartite model of language policy to analyze language ideology, practice, and management using data collected from policy documents and interviews with teachers (N=7) and students (N=10). The sample included EMI teachers (n=4) and students (n=6), as well as teachers (n=3) and students (n=4) who were engaged in the parallel L1 MoI business program. Interview data were transcribed for qualitative analysis, which employed a matrix of analytic categories to code the data according to Spolsky's (2004) model. The findings suggested that EMI education resulted in reduced learning outcomes for both content and language due to students' (perceived) low levels of L2 proficiency. Similar findings have been reported in the Turkish context (Section 2.5); however, as with the study conducted by Hu and Lei (2014), such research is often limited to single case studies using interview data rather than an examination of classroom practices. Moreover, the program examined in Hu and Lei's (2014) case study was a partial EMI program through which students took "only two or three" compulsory EMI courses per semester (p. 555). As such, the language-related challenges experiences by teachers and students could have resulted from minimal contact hours in EMI. The results may have been different in programs with higher proportions of compulsory EMI tuition. Additionally, many of the participants included in Hu and Lei's (2014) study were not directly involved in EMI teaching and learning; as such, their perceptions may not have reflected the reality of classroom practices.

Despite the concerns raised above regarding L2 proficiency in EMI classes, other studies have suggested that English is not a barrier to content learning in EMI (Inbar-Lourie

& Donitsa-Schmidt, 2013). Wächter & Maiworm (2015) found that the heterogeneity of students' English proficiency, as opposed to their actual level of proficiency, was reported as a significant obstacle to EMI (p. 22), as teaching staff reported problems managing varying levels of English proficiency in the classroom (p. 103). Further, Wächter and Maiworm (2015) concluded that the low levels of language-related challenges found in their study were the result of stakeholders becoming more aware of English variations in English as a lingua franca (ELF) communications (p. 134). In other words, EMI stakeholders adjusted their linguistic expectations to meet the realities of EMI practices. The authors suggested that "English language proficiency has become less of a problem over the past seven years" (p. 105) because stakeholders have "gotten used to the imperfections of communication in an international classroom, of which they might have originally had too high an expectation" (p. 105). Thus, the researchers identified a shift from English 'insufficiency' to 'heterogeneity' in EMI classrooms. This shift in stakeholders' expectations might suggest a growing awareness and acceptance of non-native speaker (NNS) varieties of English, implying that native-speaker (NS) norms of English may be inapplicable in the EMI classroom. Instead, paradigms more inclusive of English varieties may prove beneficial for the analysis of EMI classroom practices.

However, these findings should not be interpreted to imply the demise of NS ideology or the acceptance of ELF norms in EMI classrooms. Gundermann (2014) provided an ethnographic analysis of an EMI Master's program in Germany to investigate how stakeholders perceived and coped with ELF. Her findings suggested that NS ideology played a prominent role in the EMI context, where the NS was "an absent but influential provider of linguistic norms" (p. 10). Other studies have confirmed the dominance of NS ideology in EMI contexts by suggesting that NSs of English are considered language experts (e.g

Söderlundh, 2013). The emphasis on NS varieties of English in the EMI classroom enhances the function of English as a gatekeeper in HE (Saarinen & Nikula, 2013).

The literature is not unanimous, however, in its conclusions on NS ideology: other studies have suggested that the NS is not the sole language expert in EMI contexts. Such findings suggest that the NS concept can be challenged through the construction of language expertise by NNSs (Hynninen, 2012; Kuteeva, 2019a). In a study focusing on EMI classrooms in Helsinki, Hynninen (2012) found that language expertise was constructed through social negotiations based on specific contexts, sometimes framing NNS teachers and students as language experts.

2.2.1 Language and pedagogy

Often, concerns related to language proficiency overlap with pedagogical issues in the EMI classroom. Gundermann (2014) has noted that EMI classrooms are not "culture-free" contexts (p. 266) and suggested that language proficiency is often conflated with cultural differences in expectations of teaching and learning. She has argued that cultural problems are often framed as linguistic problems, resulting in student criticism of a lecturer's English proficiency to mask complaints about teaching style (p. 270-271). To overcome perceived language issues in the classroom, Gundermann suggests that incorporating communicative strategies into teaching practices can facilitate comprehension (p. 272-273). Similarly, Ball and Lindsay (2013) suggest that EMI teaching, as opposed to lecturing in the L1, requires a re-evaluation of the methodological approaches used by content instructors.

Other scholars have also suggested that student-centered learning is an effective pedagogical approach in EMI classrooms because it encourages students to use English actively (Wilkinson, 2013). Although his focus is not explicitly on the EMI context, Canagarajah (2011) has argued that a dialogical pedagogy allows students to develop their

language proficiencies and think critically about the effectiveness of their language choices through teacher feedback.

While such research has underlined the benefits of dialogical approaches to teaching in EMI contexts, studies have found that EMI classrooms are less interactive than L1 learning environments (e.g. Lo & Macaro, 2012; Pun & Macaro, 2019). Lo and Macaro (2012) investigated the effects that language of instruction (L1 MoI or EMI) had on classroom interaction in secondary schools in Hong Kong, concluding that L2 instruction resulted in more teacher-centered classrooms with "fewer opportunities for negotiation of meaning and scaffolding" (p. 29). They used a mixed-methods approach to examine classroom interaction in Grades 9 and 10 at two types of secondary schools: (1) schools that switch from L1 MoI to EMI after Grade 9 and (2) schools that use EMI for all grades. The aim of the study was to understand how a change in MoI affected classroom interaction. Data were collected from 60 classroom observations at five secondary schools, three of which were MoI switching and the other two of which were full EMI. A structured coding scheme adapted from Tsui (1985) was used to measure objectively the proportion and characteristics of classroom interaction. Using the coding scheme, data were classified according to speaker and function; a time analysis was also conducted using a five-second sampling technique. Finally, interaction was analyzed according to discourse patterns and question type. The study indicated that EMI classes were more teacher-centered than L1 MoI classes with shorter interaction sequences and less opportunities to scaffold content. Further, the findings suggested that the MoI switching schools varied in their implementation of EMI, with average proportions of L2 use ranging from 19.8% to 79.3% of the Grade 10 EMI lessons. In comparison, 96.8% of the EMI schools' Grade 10 lessons were conducted in English.

The findings from Lo and Macaro (2012) indicate that EMI resulted in less interaction between the teacher and students. Similarly, Inbar-Lourie and Donitsa-Schmidt (2013) have

suggested that the structure of EMI courses is typically characterized by input-based instruction with little to no focus-on-form. Based on their analysis of data collected from a questionnaire with students (n=22) enrolled on two EMI summer courses, the researchers concluded that EMI courses were not ideal for language learning, even though students reported that their primary motivation for enrolling to the EMI course was to improve their English language skills (Inbar-Lourie & Donitsa-Schmidt, 2013, p. 168). Such findings suggest that the (potential) dual aims of content and language learning through EMI are not achieved in practice due to the monologic nature EMI lectures.

2.2.2 Language proficiency in EMI

With respect to language learning in EMI education, research has highlighted the need for continuous language learning support alongside content classes (e.g. Aizawa & Rose, 2019; Jiang et al., 2019). In an analysis of EMI curricula, Unterberger (2012) found a discrepancy between EMI policy expectations for language learning and (a lack of) explicit policies designed to facilitate language learning in EMI programs: while 32 percent of university-level EMI business courses in Austria listed "explicit language learning aims" (p. 93) in their course objectives, ESP classes comprised only 11 percent of the curriculum on average. Unterberger credited the lack of ESP instruction to assumptions of high student L2 proficiency and assumptions that language acquisition is a natural consequence of EMI. In addition to a lack of ESP coursework (e.g. Jiang et al., 2019), research has suggested that language teaching is rarely explicit in EMI classrooms: studies have found that content instructors were uncomfortable assessing language or providing language feedback in EMI classes because they considered language outside their area of expertise (Airey, 2012; Block & Moncada-Comas, 2019). In their case study of an EMI engineering lecturer in Catalan, which included two interviews and two classroom observations, Moncada-Comas and Block (2019) found that the EMI lecturer was uncomfortable categorizing himself as an English

teacher or a language expert. If lecturers do not perceive themselves as capable of providing language support, then language instruction is unlikely to emerge as a component of EMI teaching. To provide more explicit language support to EMI students, researchers have called for increased collaboration between EMI content and language instructors (Jiang et al., 2019; Lasagabaster, 2018; Wilkinson 2013) and have found that both types of instructors benefit from processes of collaborative learning to identify learners' linguistic needs (Dearden & Akıncıoğlu, 2016).

Other studies have suggested that the English proficiency of teachers and learners is taken for granted in EMI programs, particularly when language exam scores are required for entry (Ball & Lindsay, 2013; Li, 2013). The prerequisite of exam scores may imply that language learning is not an aim of EMI programs but a trait considered a priori: students are expected to enroll with advanced language skills, not develop them throughout their studies. However, while students are expected to enter EMI programs with sufficient levels of English, the level of English required for entry is often described as "good" or "sufficient," lacking a clear, objective descriptor (Saarinen & Nikula, 2013). Moreover, Dearden and Akıncıoğlu (2016) have suggested that EMI students need language skills related to the technical English of their fields rather than the general English taught in most EFL courses and assessed on proficiency exams. Thus, students with high levels of (general) English according to proficiency exams may lack knowledge of the subject-specific terminology needed for EMI courses at the university level (see Macaro, 2019, for discussion of technical terminology in EMI). Despite L2 proficiency requirements for some EMI programs, the "tentative conclusion appears to be that many university students do not have sufficient language skills for EMI courses" (Doiz, Lasagabaster, & Sierra, 2013b, p. 216).

Similarly, in Europe, English language proficiency is a requirement for teaching staff in EMI programs in Denmark, Turkey, and Belgium (Wächter & Maiworm, 2015, p. 23).

However, Gundermann (2014) suggests that language exam scores alone are an insufficient indicator of an instructor's ability to teach EMI courses (p. 273), noting that initial factors limiting comprehension, such as issues adjusting to new accents, are often resolved as familiarity is established in the course. These findings raise questions about the most effective means of assessing language proficiency for EMI study. Despite language proficiency requirements for both students and instructors, it remains difficult to assess how proficiency scores translate into effective language use in the classroom.

Despite Wächter and Maiworm's (2015) overall conclusion regarding sufficient language proficiency in EMI programs, Turkey stands out as a unique case in the study, which analyzed survey data from EMI program directors and administrators at over 1000 HEIs in 28 countries. Turkey was one of five countries in the study for which program directors unanimously rated the English proficiency of their entire academic staff as 'good' or 'very good' (Wächter & Maiworm, 2015, p. 101), prompting the authors to note that this rating is "unrealistically positive," particularly when "contrasted with some negative remarks over the English skills of [EMI] teachers often heard from students or critics of [EMI programs]" (p. 101). In contrast, low proficiency levels of domestic students were reported in Turkey (p. 98), and Turkish students and administrative staff received some of the lowest proficiency rankings in the study. These findings raise questions about the English proficiency of EMI stakeholders in Turkey as well as the validity of the survey data.

Further, in Wächter and Maiworm's (2015) study, Turkey was one of four countries for which the language proficiency of domestic students was ranked lower than that of foreign students (p. 21), suggesting that Turkish EMI students either possessed or were perceived to possess lower than average English proficiency levels. The British Council (2015) report entitled *The State of English in Higher Education in Turkey* similarly concluded that Turkish students possessed inadequate levels of English proficiency for EMI study,

although the report did not specify in what ways students were deficient, nor was its methodology clear in terms of how data were collected and analyzed. Nonetheless, language proficiency appears to be perceived as a challenge to EMI in Turkey. Embracing the heterogeneity described by Wächter and Maiworm (2015), this study aims to investigate the variation with which languages are used in EMI classrooms.

2.2.3 Language fluidity

The role of English in EMI has been examined by a number of scholars (e.g. Dafouz & Smit, 2016; Kuteeva, 2019a; Macaro, 2019) who have suggested that the 'E' in EMI varies in terms of the type and quantity of English used. In an ethnographic study of an EMI course in Sweden, Söderlundh (2012) concluded that stakeholders "adopt their use of language to place-bound needs and conditions, giving rise to local norms" (p. 87). Söderlundh's understanding of emergent norms governing language practices is similar to concepts of translingualism (Canagarajah, 2013) or translanguaging (e.g. Garcia & Li Wei, 2014). Canagarajah (2013) has argued that grammatical norms should be understood as emergent from practice rather than prescriptive according to norms of correctness. Translingualism frames language as a performative act reflecting the multiple identities of users who create, construct, and interpret meaning based upon the resources available in their linguistic repertoires (Canagarajah, 2011; 2013). Thus, multilingualism is a strength compared to monolingualism, for it multiplies the linguistic resources available to users.

Similarly, translanguaging "takes as its starting point the language practices of bilingual people" (Garcia & Li Wei, 2014, p. 22) and "leads us away from a focus on languages as distinct codes to a focus on the agency of individuals" (Creese & Blackledge, 2015, p. 26). As such, translanguaging provides an ontological perspective of named languages as social constructs rather than objective or natural occurrences. "[L]anguages do not exist as real entities in the world and neither do they emerge from or represent real

environments; they are, by contrast, the inventions of social, cultural and political movements" (Makoni & Pennycook, 2007, p. 2). Thus, translanguaging conceptualizes the multilingual resources of bilingual speakers as a single, continuous linguistic repertoire (Garcia & Li Wei, 2014).

In recent years, the concept of translanguaging has been applied to examine language practices in EMI and CLIL classrooms (e.g. Kim, Kim, & Kweon, 2018; Lin & He, 2017; Mazak & Herbas-Donoso, 2014; 2015; Toth & Paulsrud, 2017; Wang & Curdt-Christiansen, 2019). These studies have demonstrated the ways in which translanguaging offers a conceptual lens through which to analyze classroom language practices. By analyzing language norms as practice-driven, translanguaging is "less about applying linguistic labels than about understanding participants' discourse as part of their sense-making processes" (Sayer, 2013, p. 81). However, given the practical limitations of operationalizing translanguaging in research, empirical studies examining translanguaging have often operationalized the phenomena as codeswitching (Vaish & Subhan, 2015; Sayer, 2013), thus contradicting an ontological premise of translanguaging to move beyond discretely defined language categories. Given these practical limitations, this dissertation acknowledges the ontological and epistemological contributions of translanguaging as a lens through which to study language fluidity in EMI but utilizes concepts of codeswitching to understand language practices involving multilingual repertoires. The following section explores research on codeswitching and L1 use in EMI classrooms.

2.2.4 Codeswitching and L1 use

Research has suggested that L1 use has a facilitative effect on L2 learning in the classroom (Anton & DiCamilla, 1998; Swain & Lapkin 2000; Cook, 2001). Li Wei and Martin (2009) argue that codeswitching is a natural bilingual behavior that only attracts attention in the classroom because language education policies tend to be shaped by top-

down monolingual ideologies that ignore the possibility of multilingual use, reproducing what Phillipson (1992) refers to as the monolingual fallacy. Macaro (2001) argues that forbidding L1 use in foreign language classrooms may impede learners' cognitive and metacognitive opportunities. Instead, Macaro (2001) advocates for the optimal use of code-switching, suggesting that teachers should utilize L1 when it enhances learning more effectively than L2 exclusivity. Ferguson (2009) emphasizes "the utility of CS [codeswitching] as a communicative and pedagogic resource in bilingual contexts, especially where pupils struggle to understand difficult subject matter whilst simultaneously learning a foreign language, one that is nominally the official medium of instruction" (p. 231). A proponent of L1 use in the classroom, Ferguson (2003; 2009) suggests that codeswitching facilitates the transmission of knowledge, classroom management, and establishment of rapport. Other research, however, has cautioned against excessive use of L1 in the classroom (McMillan & Turnbull, 2009; Turnbull, 2001). While scholars have distinguished between terms such as codeswitching and codemeshing to describe L1 use (see Canagarajah, 2011), these terms are used interchangeably and described broadly as 'L1 use' for the purposes of this literature review.

Research on codeswitching in the classroom has evolved from quantitative tabulations of language use to examinations of codeswitching's pedagogical and communicative functions (Li Wei & Martin, 2009). A number of studies have highlighted the positive effects of L1 use in the EFL or modern foreign language (MFL) classroom in terms of vocabulary acquisition (e.g. Lee & Macaro, 2013; Tian & Macaro, 2012), suggesting that L1 use may be beneficial in the L2 language learning process. Other research has suggested that teachers and students hold positive attitudes toward the use of L1 in EFL classrooms, even favoring its inclusion over English-only policies (Macaro & Lee, 2013; Sali, 2014). L1 use serves both instructional and social purposes in the L2 classroom, such as facilitating comprehension and

building rapport (de la Campa & Nassaji, 2009; Macaro & Lee, 2013; Sali, 2014). Conversely, problems associated with L1 exclusion include "cognitive overload" (Macaro & Lee, 2013, p. 731), less student-centered communication, and a limited range of classroom activities (p. 733). Because these studies have focused primarily on EFL classroom contexts and second language acquisition, they have examined language learning itself rather than the role of language in conveying course material. What remains to be explored is the negotiation of language and language choices (L1 and L2) made by lecturers and students in EMI classes, particularly in settings where students and lecturers share the same L1.

While the studies cited above have noted the benefits of L1 use in EFL classrooms, it is important to consider key distinctions between EFL and EMI before assuming similar effects in the EMI context. Ferguson (2009) distinguishes between the use of codeswitching in EFL classrooms, where English is the content material, and in EMI classrooms, where it is not, and notes that the implications of this distinction are critical although often unacknowledged by researchers. Thus, the purposes and uses of codeswitching in the EMI classroom may be different than in the EFL classroom. While fewer studies have been conducted on the use of L1 in EMI or CLIL settings (Macaro, Tian, et al., 2018; San Isidro & Lasagabaster, 2019), research has nonetheless highlighted the benefits of L1 use for a variety of purposes.

Research analyzing the use of L1 in EMI tertiary classrooms has highlighted the negotiation of language choice in multilingual contexts. In an ethnographic study at a Swedish university, Söderlundh (2013) concluded that the norms of language choice in EMI classrooms were constructed by teachers and students, with English used for "on-task" discussions, L1 used for closed discussions between L1 speakers, and codeswitching primarily used for single word translations. Similarly, Airey (2012) described EMI in the Swedish context as a situation of parallel language use, whereby course material was in

English but lectures were often given in Swedish unless international students were present. Tarnopolsky and Goodman (2014) found that the L1 was used in EMI classrooms to establish rapport, discipline, and improve comprehension through explanations of content-specific terminology. Thus, research suggests that EMI classrooms often do not achieve the "English-only immersion" envisioned by policymakers (Evans, 2008, p. 495), but codeswitching and L1 use are common phenomena that serve a variety of purposes in EMI contexts, complementing the findings EFL research (e.g. de la Campa & Nassaji, 2009; Macaro & Lee, 2013; Sali, 2014).

Although codeswitching has been identified as a common classroom practice, some research has suggested that the use of L1 is related to the L2 competencies of teachers and students. Hu and Lei (2014) concluded that EMI language practices were determined by the proficiency levels of lecturers and students, suggesting that low teacher L2 proficiency led to greater L1 use. Similarly, in an EFL context, de la Campa and Nassaji (2009) found that experienced instructors relied less on their students' L1 than novice instructors, although instructors at both experience levels utilized L1 for instructional and social purposes. Similar findings were reported by Lasagabaster (2017) in a study on CLIL teachers' beliefs on L1 use in Spain: in focus group discussions, more experienced CLIL teachers reported using English only in their classes, in order to maximize students' exposure to the L2, whereas the least experienced teacher reported using the L1 and L2 interchangeably. The study also found that, while teachers acknowledged translanguaging as a natural bilingual practice outside of class, some teachers were opposed to language mixing for instructional or assessment purposes.

The limitation of an 'English-only' approach is that it fails to acknowledge codeswitching as a pedagogical tool, instead framing it as the result of linguistic insufficiencies. Some scholars have interpreted the use of L1 in EMI or CLIL classrooms not

to imply that codeswitching is connected with insufficient language skills but to suggest that codeswitching aids in the learning of both content and language through techniques such as scaffolding (Lin, 2012; Toth & Paulsrud, 2017; Toth, 2018). Lasagabaster (2013) found that CLIL secondary school teachers in Colombia identified L1use as a scaffolding tool to aid in the teaching course content. The teachers also reported using the L1 to build students' confidence and foster debate in class. Thus, codeswitching and L1 use are not necessarily detrimental to classroom instruction but can facilitate learning.

Rather than perceive L1 use as a hindrance to EMI learning, pedagogical approaches that incorporate the L1 as a tool in EMI contexts offer innovative means for students to access academic resources and course materials. Van der Walt and Kidd (2013) examined the effects of L1 use to improve students' reading comprehension in an EMI university program in South Africa. They found that students who were provided with a summary in their L1 (Afrikaans) of an academic text in their L2 (English) scored higher in terms of reading comprehension than students without the L1 summary. The results suggested that the L1 summary helped improve the academic performance of L1 Afrikaans students and decreased differences in reading comprehension scores between L1 Afrikaans- and L1 English-speaking students. Similarly, in their case study of an EMI business program in China, Hu and Lei (2014) found that Chinese students often supplement their EMI learning through the use of Chinese texts and reference books outside of class. Such findings suggest that bilingual or L1 resources might improve comprehension of content material in EMI settings.

Lo (2015) examined patterns and proportions of codeswitching in EMI classrooms in Hong Kong. The study used data collected from a large-scale project (Lo & Macaro, 2012; see Section 2.2.1) and analyzed L1 use in 30 EMI lessons from five secondary schools. Lo found that approximately two-thirds of codeswitching incidents were related to content transmission, primarily to provide 'parallel translations' of L2 vocabulary in the L1, and

codeswitching was rarely used for social or affective functions, such as building rapport. Lo further concluded that language use was influenced by school policy, notably whether the school was entirely EMI or switched to EMI in Grade 10: by comparing the proportion of L1 use found in the five schools, the analysis revealed that teachers in MoI switching schools used more L1 than teachers in full EMI schools. While Lo (2015) examined CLIL classrooms across secondary schools, less research on L1 use in EMI university settings has been conducted through observations. The research that has utilized observation techniques to examine EMI higher education classrooms (e.g. Gundermann, 2012; Söderlundh, 2012; 2013) has typically been limited to single case studies, minimizing the possibility for comparison across institutions as in Lo (2015).

In a study similar to Lo (2105) (and Lo & Macaro, 2012; see Section 2.2.1), Pun and Macaro (2019) investigated the effect of L1 and L2 on question type in EMI science classrooms in 'early' and 'late' EMI secondary schools in Hong Kong (e.g. secondary schools that taught exclusively through EMI and schools that switched MoI at Grade 10). Classroom observation data were collected from 19 teachers, with a total of 33 lessons recorded. The data were transcribed and analyzed according to percentage of interaction time, proportion of L1 and L2, and teachers' question type (e.g. low-order or high-order questions). The findings indicated that teachers in late EMI classes used significantly more L1 and significantly more higher-order questions than teachers in early EMI classes—similar to the findings in Lo (2015), in which more L1 use was found at MoI switching schools. Moreover, the findings from Pun and Macaro (2019) suggested that the quality of teacher-student interaction in English was lower than the quality of interaction in the L1, and that "L1 use appears to be associated with higher order questions" (p. 72). These findings suggest that L1 use may lead to richer content learning, although the results raise questions about the effectiveness of EMI classes to develop students' academic English skills, since less higher-

order questions were found in classes with high proportions of L2 compared to classes with high proportions of L1.

The studies conducted by Lo (2015) and Pun and Macaro (2019) were carried out in secondary schools. It remains to be seen how their findings on classroom interaction might translate to the tertiary context, in which monologic lectures are more common compared to secondary schools. In a recent study examining L1 use in university-level EMI classes, Macaro, Tian, and Chu (2018) conducted classroom observations (n=14) of five EMI teachers at a university in China. The classroom observation data were supplemented with questionnaires (n=103) and interviews (n=32) to examine students' beliefs about their teachers' language use. To measure the use of L1 and L2, the researchers counted the number of English words and Chinese characters appearing in the verbatim transcripts of the recordings. The researchers opted to count the number of characters/words as a measure of L1/L2 use because, as they reported, the proportion of L1 use was so low that "a time measurement might not pick up some L1 use episodes" (p. 7). Although the findings revealed that the EMI teachers rarely used the L1, differences were observed in L1 use between teachers, with L1 use ranging from 632 Chinese characters to 12 characters per lecture (Macaro, Tian, et al., 2018). However, differences in L1 use between teachers' classes should be interpreted with caution, as the highest proportion of L1 use found in any of the classes comprised less than 2.5% of the entire lecture transcript. In this study, the researchers found that the most common function of L1 use was to explain aspects of language, such as by translating L2 terms. The analysis of questionnaire data revealed that students generally preferred their teachers to use English rather than the L1, although they did not believe the L1 should be banned for EMI classes. The authors' summarized students' beliefs: "on the whole students wanted their lessons to be predominantly in English but that when comprehension

problems did occur they were open to the idea of Chinese being used" (Macaro, Tian, et al., 2018, p. 13).

In another study examining EMI implementation at a university in China, Jiang, Zhang, and May (2019) collected data through classroom observations (n=9), interviews with EMI teachers (n=3), and a questionnaire administered to students, although it is unclear how many students from the second-year cohort (N=200) completed the questionnaire. The classroom observations were audio-recorded and transcribed for analysis. Instances of focus-on-form (FonF) instruction were identified in the data and analyzed for pragmatic features, although the authors did not provide further information regarding the procedures of analysis. In total, the researchers identified five instances of what they characterize as FonF instruction in the data, excluding codeswitching and 'input enhancement,' a term which is not defined in the study. Each of the FonF instances was initiated by the teacher, with two categorized as "reactive FonF on grammar" and the other three as "pre-emptive FonF on lexis" (p. 113). From these findings, the researchers concluded that (explicit) language teaching rarely occurred in the EMI classes and that the findings raise questions about the effectiveness of EMI for developing students' English proficiency. Based on their findings, the authors concluded that ongoing language support was needed for students, and they suggested increased collaboration between language and content specialists to offer ESP courses alongside EMI content courses.

The studies reviewed in this section have suggested that L1 use in EMI classrooms may lead to higher proportions of teacher-student interaction compared to the L2 (Lo, 2015; Pun & Macaro, 2019); however, these findings primarily come from secondary schools in Hong Kong. Research on L1 use at EMI universities in China has suggested that the L1 is rarely used during lectures (e.g. Macaro, Tian, et al., 2018; Jiang et al., 2019). Little evidence is available on classroom language use at Turkish HEIs: to my knowledge, only one study on

EMI in Turkey has employed classroom observations to analyze language use (Duran & Sert, 2019). In this study, the researchers conducted a conversation analysis to examine preference organization from two EMI classes at a university in Turkey. The classes were taught by the same EMI lecturer, and the content covered in the classes was the same ('Guidance'); the class was a mandatory course for fourth-year students in the Department of Educational Sciences. Data were collected from approximately 30 hours of video-recorded EMI lectures and analyzed using conversational analysis techniques to identify what the researchers refer to as "the teacher's dispreferred turns-of-action to student responses" (p. 76), or instances in which the teacher disagreed with the students' response. In total, the researchers identified 39 instances of the teacher's dispreference in the data. In these instances of teacher-student interaction, the researchers found that the EMI teacher prioritized meaning-making with respect to content, not L2 accuracy in teacher-student interaction. However, because Duran and Sert (2019) limited their analysis to the 39 instances of 'teacher dispreference' in the data, conclusions cannot be drawn about how language was used throughout the lecture, and the researchers did not provide information on L1 use in the data. While these findings have indicated that the participant EMI lecturer prioritized content over language in her classes (e.g. Airey, 2012; Block & Moncada-Comas, 2019; Unterberger, 2012), little is known about broader patterns of teacher and student talk. Although the current study does not apply conversation analysis in its methodology, it contributes to this research on EMI at the university-level by following Duran and Sert's (2019) recommendation that future studies examine aspects of EMI classroom interaction such as codeswitching and mixed language use.

2.3 Language policy and planning

The enactment of EMI education is determined by language policy and planning (LPP) decisions, often made at the level of the national government. LPP involves the

complex interaction of multiple variables, linguistic and non-linguistic (Spolsky, 2004, p. 6), and includes activities such as corpus planning, status planning, standardization, and codification (Ferguson, 2006). Language policies often reproduce standard language ideologies, including notions of correctness and the superiority of certain language varieties (Ferguson, 2006).

The global spread of English has had critical effects on LPP (Ferguson, 2006; Tollefson, 2013; Spolsky, 2004). Tollefson (2013) asserts that, while nationalism and national identity play a strong role in formulating language policy, state institutions are weakened by the power of global capitalism and the spread of English. Spolsky (2004) suggests that the spread of English is the result of complex socio-historical forces which reflect language acquisition decisions made at the local level and the changing "ecology of the world's language system" (p. 90). For Spolsky, language policy is determined by choice, ranging from the micro-level of the family to the macro-level of the state. Tollefson, on the other hand, sees globalization as a capitalist, economic force that produces radical changes in the lives of individuals. Thus, Tollefson attributes changes in LPP to structural forces such as globalization, whereas Spolsky emphasizes the agency of individuals.

Moreover, Spolsky (2004) offers a broader definition of language policy which can be applied at the micro-level and which draws upon the idea of language ecology, or the interaction of language and its environment, including social elements. Other scholars (e.g. Shohamy, 2006) have also recognized the multilayered processes of LPP. Shohamy (2006) notes that language policy is often implicitly-derived from the de facto practices of the community: "In these situations, language policy is more difficult to detect as it is subtle and hidden from the public eye" (Shohamy, 2006, p. 50). This study adopts Spolsky's (2004) and Shohamy's (2006) theoretical understanding of language policy as multilayered and enacted across multiple levels of analysis.

Spolsky's (2004) framework includes three components of language policy: language practices, language beliefs and ideology, and language management. These three components interact, overlap, and conflict to shape language policy outcomes. Language practices include "the habitual pattern of selecting among the varieties that make up [a speaker's] linguistic repertoire" and include the "sum of the sound, word and grammatical choices that an individual speaker makes," both consciously and unconsciously (Spolsky, 2004, p. 5). Language beliefs and ideologies include "beliefs about language and language use" that are derived from and influence language practice (p. 5). The third component, language management, refers to explicit, direct efforts to manipulate a language situation, such as through legal codification and statements made by governments, institutions, and individuals. While language practices and language beliefs are typically implicit aspects of policy, language management is explicit and direct in its effort to influence a language situation. However, the effects of language management on practices and beliefs are not always straightforward or guaranteed, since management decisions are not necessarily implemented as intended on the micro-level.

Spolsky's tripartite framework forms the basis for understanding EMI implementation in this study: language management is addressed through the analysis of policy documents (Chapter 4), language practices through the analysis of classroom observations (Chapters 5), and language perceptions through the analysis of interview and focus group data (Chapter 6). While Spolsky's framework underpins the research design of this study (Chapter 3), the operationalization of LPP for research requires greater specificity. As Johnson (2013a, p. 9) states: if language policy is policy, and if language practice is policy, what is *not* language policy? As such, to analyze *official* EMI policy (e.g. language management according to Spolsky's model), this study adopts Dafouz and Smit's (2016) ROAD-MAPPING

framework, which was developed to capture the dynamics of EMI in university settings. The ROAD-MAPPING framework is described in the following section.

2.3.1 ROAD-MAPPING framework

The ROAD-MAPPING framework is a conceptual model that includes six dimensions: (1) roles of English, (2) academic disciplines, (3) management, (4) agents, (5) practices and processes, and (6) internationalization and glocalization (Dafouz & Smit, 2016, p. 403). Although each dimension can be analyzed individually, Dafouz and Smit (2016) state that the six dimensions are dynamically interconnected through discourse, which serves as "a viable access point to the analysis of social practices" (p. 402). An illustration of the framework is reproduced in Figure 2.1 below.

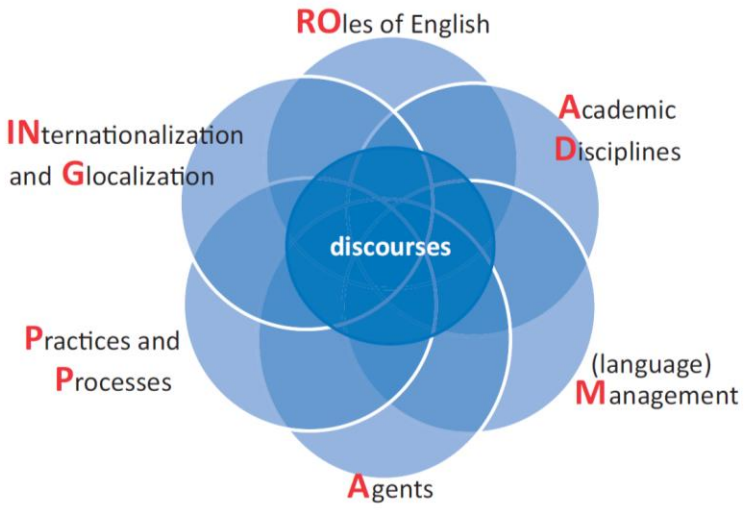


Figure 2.1: The ROAD-MAPPING framework (Dafouz & Smit, 2016, p. 404)

The first dimension of the framework, roles of English (RO), refers to the function and status of English in relation to other languages in the HEI context. Dafouz and Smit (2016) state that "the functional breadth of English must be considered in relation to the complete linguistic repertoire of a specific higher education site" (pp. 403-404). In other words, English should be considered in relation to other languages (e.g. local languages) as

well as with respect to its position as a foreign language and a lingua franca. In the context of the multilingual university, English might be used as a lingua franca for communication between speakers of different languages, and/or it might fulfill functions as an academic language.

With respect to academic discipline (AD), the ROAD-MAPPING framework examines EMI from the perspective of disciplinary knowledge and academic literacy: "teaching and learning practices, curricular design or assessment methods may vary depending on the inherent epistemological characteristics of each academic discipline" (Smit & Dafouz, 2016, p. 404). This aspect of the framework considers the relationship between EMI and disciplinary knowledge (see Airey, 2012; Bernstein, 1999). Engineering was selected as the discipline under examination in this study. Disciplinary knowledge in engineering could be described as a hierarchical knowledge structure, in which new information is incorporated into existing frameworks—as opposed to a horizontal knowledge structure which expands in new directions through knowledge creation and is more associated with the humanities (Airey, 2012; Bernstein, 1999; Kuteeva & Airey, 2014). Airey (2012) argues that language is a tool rather than a method of meaning making in disciplines with hierarchical knowledge structures, and Kuteeva and Airey (2014) found that disciplinary differences in knowledge creation affected lecturers' attitudes toward the use of English for teaching and research in HE.

The third dimension of the framework incorporates (language) management ('M'), or language policy statements and declarations. The management component of the ROAD-MAPPING framework refers to official regulations made by governing bodies and political agencies (Dafouz, 2017). It also considers 'de facto' policy decisions (e.g. Shohamy, 2006) as well as instances in which policy regulations are absent from HEIs. The 'M' dimension refers

to policies explicitly regulating language and implicitly affecting language use in the HEI context.

The fourth dimension of the framework ('A') considers the various actors and agents involved in EMI. It examines "the multifaceted and dynamic nature of the roles that stakeholders engaged in [EMI] may adopt at HEIs" (Smit & Dafouz, 2016, p. 407). It considers both individuals and institutions in its analysis, as well as relationships between actors and the divergence or convergence of their particular aims and interests.

The practices and processes ('PP') dimension examines 'ways of doing' and 'ways of thinking' in EMI programs (Smit & Dafouz, 2016, p. 707). It draws on social constructivist theories of learning (Mercer, 2000; Vygotsky, 2012) and incorporates Spolsky's (2004) understanding of language policy as practice (see Dafouz, 2017). As such, this dimension examines activities related to teaching and learning, as well as the (co-)construction of meaning in the classroom.

Finally, the sixth dimension of the framework examines the effects of internationalization and glocalization (ING) on EMI. Here, the juxtaposition of internationalization and glocalizaton highlights "the tensions but also the synergies that exist between the global and the local forces that are shaping 21st-century universities" (Dafouz, 2017, p. 179). This dimension of the framework considers competing motivations and constraints on HEIs to expand their global reach, such as through staff and student mobility programs, while also responding to the demands of the local context.

The ROAD-MAPPING framework captures the dynamic complexity of LPP in EMI settings (see Dafouz & Smit, 2020). It offers utility in providing specificity to EMI contexts while remaining theoretically grounded in sociolinguistics and ecology of language research. Still in the nascent phases of its development, the ROAD-MAPPING framework has been

applied in a limited number of empirical studies. Table 2.1 summarizes the existing research which has utilized the ROAD-MAPPING framework.

Table 2.1: Studies (n=13) using ROAD-MAPPING framework

Study	*Context*	*Application of framework*	*Methodology*	*Research aims*
Baker & Huttner (2017)	EMI programs in Thailand, Austria, and UK	Analyzed dimension: Role of English	Questionnaires (N = 121), interviews (N = 12), document analysis, observations	To investigate student beliefs about the roles of English and other languages in EMI programs
Bradford & Brown (2017)	EMI programs in Japan	Conceptual framework	Review of existing empirical research	To describe the current state of EMI in Japan
Dafouz (2017)	EMI programs in Europe	Conceptual framework	Review of existing empirical research	To describe the current state of EMI in Europe
Dafouz (2018)	Teacher education program (TEP) in Spain	Analyzed dimensions: Agents, Practices & Processes, and Academic Discipline	Online written responses from EMI lecturers in TEP; qualitative content analysis	To investigate what lecturers perceive as the benefits of teaching through EMI and how they view EMI in relation to their professional identity
Dafouz, Haines, & Pageze (2019)	European higher education	Conceptual framework	Large-scale survey	To identify the roles, beliefs and practices of education developers in internationalized programs in Europe
Dafouz, Huttner & Smit (2016)	Cross-country comparison of 4 HEIs	Analyzed dimension: Agents (also ING and AD)	Interviews with teachers (n=18)	To investigate how EMI lecturers perceive content and language integration
Dafouz & Smit (2017)	EMI programs in Austria & Spain	Analyzed dimension: Role of English	Interviews with teachers and students	To examine the roles of English in multilingual university settings
Komori-Glatz (2015)	International business program at a university in Austria	Analyzed dimension: Role of English	Interviews, document analysis from team meetings; qualitative content analysis	To investigate the roles of English and other languages at a strategic level in the university and intercultural student teams

Komori-Glatz (2017) – PhD dissertation	International business program at a university in Austria	Conceptual framework	Interviews, observations; qualitative content analysis	To investigate how EMI students use English as a business lingua franca in multicultural teamwork
Kuteeva (2019b)	Swedish higher education	Framework for discussion	Review of existing empirical research	To provide an overview of the research on EMI in Sweden
Shao (2019) – PhD dissertation	Business programs in China, Japan, and the Netherlands	Theoretical framework for comparison	Questionnaire, semi-structured interviews, archive analysis, classroom observation	To investigate how the dimensions of the ROAD-MAPPING framework are enacted in each research site
Gaisch (2014) – PhD dissertation	Masters course in computer science in Austria	Conceptual framework	Ethnographic techniques: interviews, observations; Grounded Theory	To identify the international classroom affordances perceived by content teachers
Ngo (2019) – PhD dissertation	EMI university in Vietnam	Conceptual framework	Ethnographic case study: classroom observations, interviews, focus groups, documents	To examine EMI classroom practices and explore lecturers' and students' 'ways of doing' and 'ways of thinking' in EMI

As can be seen from the overview of research presented in Table 2.1, the ROAD-MAPPING framework has been utilized in a variety of research contexts. The majority of studies which have utilized the ROAD-MAPPING framework have used it to investigate stakeholders' beliefs or perceptions about EMI, or to examine language use in EMI settings. Many empirical studies have selected one dimension of the framework, such as 'Role of English', and centered their analysis on this dimension (e.g. Baker & Huttner, 2017). In these studies, other dimensions of the framework provided support and context to the analysis. In terms of data analysis procedures, research applying the ROAD-MAPPING framework has utilized qualitative content analysis to identify emergent themes in the data (e.g. Gaisch, 2014). Deductive codes have also been applied from the six dimensions of the ROAD-MAPPING framework during qualitative content analysis (e.g. Shao, 2019). Data appears to

have been primarily collected through ethnographic techniques, including interviews and observations. The existing body of research has indicated the robustness of the ROAD-MAPPING framework to analysis EMI provisions at the country-level (e.g. Bradford & Brown, 2017, in Japan; Kuteeva, 2019b, in Sweden) and to draw comparisons between contexts (e.g. Baker & Huttner, 2017; Shao, 2019). Furthermore, the ROAD-MAPPING framework has been applied to a number of doctoral research studies (e.g. Komori-Glatz, 2017; Ngo, 2019; Shao, 2019).

The current study contributes to this growing field of research by applying the ROAD-MAPPING framework in a new context—Turkish higher education—and to a new aspect of EMI research: the analysis of policy documents. While previous research (e.g. Kuteeva, 2019b) has applied the framework to *discuss* analyses of EMI policy, the framework has yet to be applied as a lens through which to *analyze* EMI policy documents.

2.3.2 Language policy implementation

Johnson (2013a) proposes that LLP consists of three stages: creation, interpretation, and appropriation. Official policies are typically created through policy documents, legislation, and discourse, after which policy is interpreted by actors at multiple levels, including those who appropriate or enact it in practice. Through processes of interpretation and appropriation, LPP decisions do not necessarily produce their intended effects on classroom practices. Many researchers have noted the heterogeneity with which EMI policies are implemented, particularly with respect to geography (Costa & Coleman, 2012), institutional identity (Doiz & Lasagabaster, 2017; Evans, 2008), English proficiency (Owu-Ewie & Eshun, 2015), and the lack of a clear implementation strategy (Gill, 2006). Such research has highlighted the importance of micro-level actors in EMI policy implementation.

Language education policy is interpreted at multiple levels, including the macro- (national), meso- (institutional), and micro- (classroom) level. As language education policy

moves across levels, it is interpreted and appropriated by key actors who oversee its implementation. Researchers have suggested that teachers act as "the final arbiters of language policy implementation" (Menken, 2008, p. 5; see also Johnson, 2013b). In other words, teachers determine how language policies are enacted as classroom language practices. Johnson and Johnson (2015) define language policy arbiters as "any language policy actor (potentially: teachers, administrators, policymakers, etc.) who wields a disproportionate amount of power in how a policy gets created, interpreted, or appropriated relative to other individuals" in the LPP process (p 225). Thus, while policy implementation is multilayered, not all individuals involved in the process have the same authority in shaping it. The theoretical model proposed by Johnson and Johnson (2015) uses the analogy of a funnel to represent the influence of language policy arbiters in policy implementation: "the image of a funnel is used to illustrate that while policy decisions are socially negotiated between multiple actors within and across levels, at some point, there is one language policy arbiter who has singular power with regard to how a policy is interpreted and appropriated" (p. 226). The model proposed by Johnson and Johnson (2015) is reproduced in Figure 2.2.

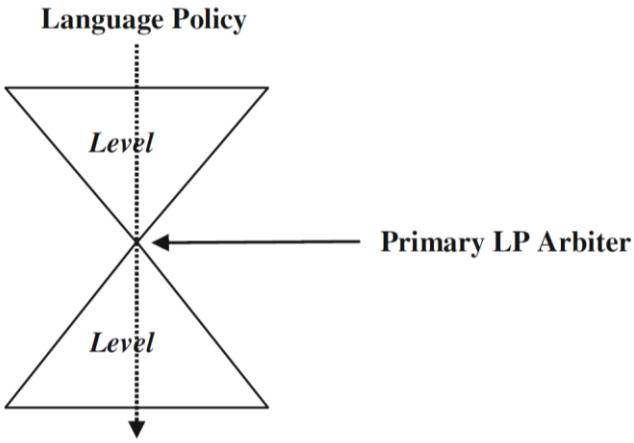


Figure 2.2: Language policy funnel (Johnson & Johnson, 2015, p. 226)

Johnson and Johnson (2015) illustrated the utility of their model through an ethnographic study of bilingual education programs in two school districts in the U.S. state of

Washington. The bilingual programs were "nominally identical district-level programs, which [were] funded under the same state-level language policy" (p. 222). The researchers collected data through a four-year project which included classroom observations and more than 50 interviews with teachers, principals, and school administrators. Data were also collected from policy documents. The analysis examined how and by whom decisions concerning policy implementation were made. The results revealed different decision-making structures in the two school districts, which affected the scope of the language policy arbiters' ability to influence power. Moreover, the key arbiters in each district were found to differ in their beliefs about language education and educational research. Johnson and Johnson (2015) argued that the beliefs of the language policy arbiters influenced the decisions they made with respect to policy implementation. The study concluded that the 'nominally identical' programs were different in practice due to the positioning and beliefs of language policy arbiters. The study by Johnson and Johnson (2015) offers a theoretical model through which to understand language policy implementation at multiple levels, although the model has not been applied to EMI contexts.

Research on EMI has examined policy interpretation and implementation across multiple levels: Ali (2013) analyzed language policy implementation at the macro- (national), meso- (institutional), and micro- (teachers) level in Malaysia through the case study of a public university. Data were collected through policy documents and interviews with participants. The participants included one university administrator and 11 content lecturers; the data were analyzed using qualitative content analysis for emerging themes, and the analysis compared policy aims and implementation at the macro-, meso-, and micro-level. The findings indicated that macro-level policy goals were not 'translated' into meso- or micro-level implementation: although macro-level policymakers positioned EMI as a means through which to improve students' L2 proficiency, meso-level policies at the case study HEI

were not found to support English learning through EMI. At the micro-level, Ali (2013) found through interviews with content lecturers that EMI teachers were unaware of macro-level policy aims with respect to language learning and did not perceive clear directives with respect to language use. The findings from Ali's (2013) study revealed that EMI content lecturers were the primary actors in EMI policy implementation. Ali (2013) concluded that, in the absence of implementation guidelines across policy levels, EMI content teachers were responsible for carrying out the language learning aims envisioned by macro-level policymakers, although these language learning aims are not realized in EMI classrooms.

Similarly, Rose and McKinley (2018) and Aizawa and Rose (2019) provided complementary studies on EMI policy and its implementation in Japan; together, these two studies illustrate how macro-level policy is interpreted at the meso-level and implemented at the micro-level. Rose and McKinley (2018) analyzed policy documents related to the 'Top Global University Project' (TGUP), an internationalization initiative in Japan. They collected English-language policy documents from 37 Japanese universities and found that internationalization policy through TGUP allowed universities to establish their own agendas and practices. As a result, the study found that the relationship between EMI and internationalization in meso- (institutional) level policy was not always straightforward or explicit.

Building off the findings of Rose and McKinley (2018), Aizawa and Rose (2019) examined the implementation of EMI at the meso- and micro-levels through the case study of a Japanese university included in TGUP. Data were collected from institutional policy documents, and semi-structured interviews were conducted with students (n=7) and teachers (n=3). Supplemental data were also collected from a questionnaire administered to students (n=108). Aizawa and Rose (2019) used qualitative content analysis to code data from policy documents and interviews for emerging themes. The findings indicated that teachers and

students experienced language-related difficulties, regardless of their L2 proficiency level in relation to the threshold suggested by policy. Moreover, teachers and students reported that mixed-language use was common in EMI classes. Based on their findings, Aizawa and Rose (2019) concluded that meso-level EMI policy aims were not translated into classroom-level practices.

Both Ali (2013) and Aizawa and Rose (2019) employed single case studies to examine EMI implementation; what is missing from their analyses is an investigation of how national-level policies are interpreted and implemented across HEI contexts—particularly given Rose and McKinley's (2018) finding that HEIs set their own agendas in interpreting macro-level policy. In other words, it is not clear whether the results of these studies are transferable to other HEIs in the same national context (Malaysia for Ali, 2013; Japan for Aizawa & Rose, 2019). Moreover, both studies relied on data collected from policy documents and stakeholder interviews. As such, their findings regarding micro- (classroom) level EMI implementation are based on reported rather than objective measures of classroom practices. To contribute to the findings of Ali (2013) and Aizawa and Rose (2019), the current study has incorporated classroom observations from multiple HEIs to examine how macro-level policies are interpreted and enacted across and within university contexts. In doing so, the current study responds to Aizawa and Rose's (2019) call for more direct measures of data collection and to Rose and McKinley's (2018) call for field-based research into policy implementation.

While a number of studies (Ali, 2013; Hu & Lei, 2014; Costa & Coleman, 2012; Kırkgöz, 2009; Gill, 2006) have suggested that a gap exists between policy aims and classroom practices, the existing research has not examined variations in classroom practices and language use across HEI contexts under the same conditions of a guiding national policy: in other words, the implementation of 'nominally identical' (Johnson & Johnson, 2015) EMI

programs. Rather, the existing research is dominated by single case studies or questionnaire and interview data that lack examination of classroom practices. Alluding to this research gap, Hu and Lei (2014) note that there is a lack of research concerning the alignment of EMI policy goals and classroom practices. The present study seeks to contribute to the literature by examining the 'alignment' of policy and practice across a sample of university contexts in Turkey.

2.3.3 Language policy and national ideology

Tollefson (2016) has argued that language policy is crafted to support nationalist ideologies by legitimizing narratives of the nation-state. Examining the influence of national language ideology on foreign language education, Toh (2014) concludes that problems related to ELT in Japan can be linked to "deeper internal struggles over matters to do with 'foreignness' and with the English language itself" (p. 302). Toh suggests that the myth of monolingualism in Japan perpetuates commonly held beliefs about the difficulties of or inability to learn English (p. 303). Further, Toh (2014) concludes that "anomalies and contradictions" in the implementation EMI policy arise at multiple levels, including the institution and administrative level, as a result of the dominant national language ideology (p. 314). Noting a tension between national identity and the global prestige of English, Hashimoto (2013) argues that the ELT in Japan "is not fundamentally about furthering the learning of English, but instead functions to promote and shape the national language" (p. 176) by emphasizing the need to create English speakers capable of sharing local cultural values with the outside world (p. 187).

Researchers have long documented the importance of language ideology in Turkey, including the impact of Ataturk's Language Reform project on national identity (Büyükkantarcıoğlu, 2004). Language reform in Turkey has been called a "catastrophic success" (Lewis, 1999) for its role in the nation-building project of the 1930s. Language and

national identity are closely linked in Turkey, with Article 3 of the 1982 Constitution explicitly stating that Turkish is the language of Turkey. The early Republican period was characterized by the suppression of minority languages, including Kurdish, and legal bans have been placed on the use and teaching of non-Turkish languages in schools (Kim & Yun, 2008). In response to terrorist activity by the separatist Kurdish Workers' Party (PKK), the Turkish government imposed a law prohibiting the use of the Kurdish language in 1983, a regulation which remained in effect until 1991 (Phillips, 2008). Since 2002, reforms carried out by the Justice and Development Party (AKP) have expanded minority language rights, including educational and broadcasting rights (Larrabee, 2013). Still, language education policy remains a contentious issue in Turkey.

The influence of national ideology in Turkey can also be found in English language education policy. The primary school system is governed by the Ministry of National Education (*Milli Eğitim Bakanı*, MEB), which centrally administers the English language curriculum and supplies teaching materials, all of which are produced by MEB and focus heavily on Turkish culture and public figures (Kırkgöz, 2007, p. 180). The strong role that national identity and local culture play in the ELT resources developed by MEB suggest that national ideology influences policymaking with respect to foreign language education. Given this backdrop, the following section elaborates more broadly on EMI in Turkey.

2.4 EMI in the Turkish context

Turkey is a compelling context for the examination of EMI policies and practices given the country's diversity and geopolitical positioning. Ranging from infrastructure to income, Turkey is a country of uneven development, where economic disparity and access to resources are vastly different across the country. Geographically, culturally, and politically, Turkey has been characterized as a bridge between East and West, possessing traits of both Europe and the Middle East. Although it was never colonized, Selvi (2011) claims that

Turkey shares sociolinguistic characteristics with former colonies of English-speaking nations because of its sociopolitical history. Many of Turkey's universities are members of the Bologna Process and participate in student and staff mobility exchange programs, although enactment and participation in these programs is disparate. Given Turkey's unique position, it is important to study the Turkish case in order to understand how EMI practices vary across socioeconomic contexts—such as between urban elite universities integrated into global structures and developing rural institutions with limited access to English resources—in order to better understand the implications, limitations, and nature of EMI education in practice.

In Turkey, EMI has historically been connected with concepts of Westernization and accessible to the upper class (Selvi, 2014, p. 134). The history of foreign language medium of instruction (L2 MoI) in Turkey dates back to Ottoman times with the founding of secondary schools by missionary groups: Robert College was established by American missionaries in 1863, Galatasaray Lisesi by French missionaries in 1868, and Üsküdar American College by American missionaries in 1876 (Selvi, 2014; see Uçar & Soruç, 2018, for comparison of EMI and French MoI in Turkey). Kırkgöz (2007) has suggested that the introduction of L2 MoI was connected with efforts to Westernize the education system during the Ottoman Tanzimat period of reform in the mid-19th century (Kırkgöz, 2007, p. 175). Robert College, Galatasaray Lisesi, and Üsküdar American College remain three of the most elite secondary schools in the country and continue to provide L2 MoI.

At the secondary school level, *Anadolu liseleri* (Anatolian high schools) were established in 1955 as public high schools to provide intensive foreign language instruction through a one-year language preparatory program (*hazırlık*) followed by EMI courses (Kırkgöz, 2007). However, the system of EMI instruction and the intensive English-language preparatory year were abolished from secondary schools in 2006 (Kırkgöz, 2007; Selvi,

2014). *Anadolu liseleri* have since offered Turkish-medium instruction (TMI) for content area courses and EFL classes for foreign language education.

EMI was introduced at the tertiary level with the establishment of Middle East Technical University (METU) in 1956, a public university in Ankara. In 1971, Boğaziçi University was opened as the second EMI university in Turkey. Historically connected to Robert College, Boğaziçi University was converted into a public institution in 1971 and has since offered full EMI instruction. Two of the most elite universities in the country, METU and Boğaziçi teach entirely through EMI. EMI programs have also been offered at private universities in Turkey, beginning with the founding of Bilkent University in Ankara in 1984 (Selvi, 2014; Kırkgöz, 2007).

Because access to EMI education has historically been limited to the upper class, researchers have asserted that EMI "exacerbates socioeconomic inequalities in the country" (Selvi, 2014, p. 143). Moreover, scholars have argued that variations in the quality of English education throughout schooling levels have perpetuated social divisions (Kırkgöz, 2009; Selvi, 2011). However, the number of public universities in Turkey has increased dramatically since 2008 through a government-led initiative to expand higher education (Günay & Günay, 2011). Despite their young histories, many of the universities opened in the past decade offer EMI programs. The increase in EMI programs offered at public universities since 2008 has altered the scope of EMI in Turkey and the demographics of students who study through EMI. As such, research is needed to examine the policies and practices shaping EMI in Turkey.

2.5 Research on EMI in Turkey

Debates on EMI in Turkey are governed by a tension between the perception that English is important for instrumental purposes, such as economic gain and career advancement (Kırkgöz, 2007; 2009; Uçar & Soruç, 2018), and the perception that it is a

threat to Turkish language and culture (Sinanoğlu, 2004; Büyükkantarcıoğlu, 2004). Kırkgöz (2007) has suggested that the aim of EMI in Turkey is to help students access scientific research published in English (p. 176). In higher education, EMI is promoted in connection with scientific research (Kırkgöz, 2009) and framed as a benefit to HEIs through increased international exchange opportunities (Alptekin & Tatar, 2011). Aside from its role as an academic lingua franca, English serves instrumental purposes for career development in Turkey in tangible ways, such as through financial bonuses offered at work based on English examination scores (*yabancı dil tazmınatı*). Scores from English proficiency exams are considered for hiring purposes, particularly scores on the national standardized language assessment (*Yabancı Dil Sınavı,* YDS).

Despite Alptekin's (1998) assertion of the cognitive benefits of developing bilingual skills through EMI, research from the Turkish context has suggested that EMI results in reduced understanding of content material (e.g. Kırkgöz, 2014; Sert, 2008). Previous research on EMI in Turkey has examined the language challenges faced by students in EMI settings and the strategies used to overcome these challenges (e.g. Soruç & Griffiths, 2018; Soruç, Dinler & Griffiths, 2018). Studies have suggested that EMI students achieve lower academic attainment (Sert, 2008) and have difficulty taking notes (Zok, 2010), asking questions in class (Dalkız, 2002), understanding technical vocabulary (Yıldız, Soruç, & Griffiths, 2017), and comprehending lectures due to low levels of English proficiency (British Council, 2015; Kırkgöz, 2009; 2014). Research has suggested that EMI students experience difficulty comprehending lectures and express concerns about low levels of English proficiency (e.g. Kırkgöz, 2009; 2014; Yıldız, et al., 2017). These findings are supported by studies which have suggested that teachers and students use Turkish in EMI programs to compensate for poor English skills (Kılıçkaya, 2006). Sert (2008) found that university lecturers reportedly prefer TMI over EMI because they believed that TMI more effectively supported content

learning. Other problems identified with respect to EMI education include a lack of qualified teaching staff and a Turkish-language national examination system that disadvantages EMI students who often lack the ability to express scientific terms in Turkish (Selvi, 2011).

Further, research has found mixed results regarding students' levels of motivation for EMI programs. Some studies have found relatively high levels of motivation among EMI students (e.g. Macaro & Akıncıoğlu, 2018; Turhan & Kırkgöz, 2018; Uçar & Soruç, 2018). However, the findings from these studies have also suggested that motivation to study through EMI decreases as students advance in their undergraduate degree programs; in other words, these studies have found that students further along in their courses were less convinced of the benefits of EMI than first-year students (e.g. Macaro & Akıncıoğlu, 2018; Turhan & Kırkgöz, 2018). Macaro and Akıncıoğlu (2018) investigated the motivations and beliefs of students (n=997) enrolled in EMI university programs through an online survey; the results of the study were also reported in Dearden and Akıncıoğlu (2016). The study, which included students from 18 universities, found that only 59 percent of EMI students enrolled believed that studying in English was beneficial (Dearden & Akıncıoğlu, 2016, p. 9). The findings also revealed that private university students were more positive about the benefits of EMI and their experiences studying through EMI than students enrolled to state universities (Macaro & Akıncıoğlu, 2018). However, 60 percent of the respondents were enrolled in English preparatory programs, meaning that they had yet to begin their EMI departmental studies, and none of the respondents had completed more than their second year of EMI coursework. As such, the study is limited in that a majority of respondents had not yet taken an EMI class. Other studies have suggested that Turkish university students in EMI programs lack motivation to learn English, despite receiving English courses and language support through their programs (Sert, 2008). Low or decreasing levels of student motivation

raise questions about the purpose of EMI education in Turkey, particularly if EMI students are not convinced of the benefits.

Kırkgöz (2014) compared fourth-year EMI and TMI engineering students' perceptions of the benefits and challenges of content and language learning in their courses using a partially open-ended questionnaire administered to 66 TMI and 64 EMI students. Focus group interviews (n=12) were also conducted with a sub-sample of participants, although the study does not report how many students participated in the focus group interviews. The results of the study indicated that MoI was perceived to affect content learning, and the study found that EMI presented (or was perceived to present) obstacles for both language acquisition and content comprehension. Given these findings, the expansion of EMI programs at the university level in Turkey requires further research to examine the effectiveness and quality of education.

However, the majority of the research on EMI in Turkey, including the studies mentioned in the preceding paragraphs, is limited in that it examines attitudes and perceptions rather than practices. In other words, these studies lack objective measures of L2 proficiency, content learning, and language use in EMI classes. The British Council (2015) report included classroom observations from multiples universities, but the reported methodology was unclear in terms of how many classes or which types of classes were observed. The report appeared to conflate data collected from and findings related to EFL, English for Academic Purposes (EAP), and EMI classrooms. As such, it is unclear to what extent the study's conclusions are grounded in evidence from EMI classes. Furthermore, the report's recommendation to impose a minimum English proficiency requirement on EMI programs would exacerbate social inequalities by limiting access to EMI programs—including entry to Turkey's two most prominent public universities—as the majority of public school graduates would be unable to meet the proposed minimum threshold. Given these limitations and the

problematic nature of existing recommendations, additional research is required to investigate EMI implementation.

In addition to arguments emphasizing the educational drawbacks of EMI programs, many studies have found that opposition to EMI education in Turkey is due to fears of domain loss (see Hultgren, 2013), framing English expansion as a threat to Turkishness (Selvi, 2011; Sinanoğlu, 2004). Opponents of EMI argue that it prevents the development of Turkish terminology in the fields of science and technology where there are no Turkish equivalents for English loans words (Büyükkantarcıoğlu, 2004). Combined with the increasing presence of English in media, such arguments are extended to suggest that the increasing number of English loan words in everyday life jeopardizes the purity of the Turkish language (Selvi, 2011) and threatens local cultural identity.

Debates on EMI in Turkey are therefore influenced by ideological factors related to the status and prestige of Turkish. Research has found that students enrolled in university EMI programs felt distant from their L1 culture (Kırkgöz, 2009) and were concerned about losing their Turkish language abilities or not being able to express field-related terminology in Turkish (Dearden & Akıncıoğlu, 2016, p. 10). Given these concerns, EMI in Turkey has been described as a "balancing act" between accessing global networks through English and protecting local values (Selvi, 2014, p. 146). Nonetheless, 87 percent of students who responded to Dearden and Akıncıoğlu's (2016) survey were Turkish nationals (p. 8). If this figure represents demographics across EMI programs in Turkey, it suggests that most EMI programs are not internationally-oriented but cater to domestic students, who likely share an L1 with their teachers.

2.6 Implications for research

The research reviewed in the previous section has suggested that teachers and students experience language-related challenges in EMI classes in Turkey. These challenges persist

despite L2 proficiency criteria which teachers and students must meet before engaging in EMI courses. EMI students and lecturers who meet these proficiency criteria are assumed to have the English language skills needed for content learning. The question to be examined is how effective these policies are in providing for the equal implementation of EMI programs across contexts, or whether the implementation of an EMI program varies according to individual circumstances and institutional norms.

A majority of the research concerning EMI education in Turkey has been conducted at private or elite universities (e.g. Karakaş, 2016; Soruç & Griffiths, 2017) and typically has been concentrated in major urban centers (e.g. Duran & Sert, 2019) with access to a wide range of resources not necessarily available in other parts of the country, including the ability to recruit international staff and students. As such, these research contexts do not reflect the diversity of HEIs or EMI programs in Turkey. Kırkgöz (2007) notes that, despite centralized policy in Turkey, "due to relative heterogeneous conditions and variations in the facilities and socioeconomic condition in certain regions, it is expected that each school might have context-specific problems" (p. 189). Research is needed to investigate EMI practices in such heterogeneous conditions.

Further, most empirical studies examining EMI in the Turkish context have relied on questionnaires and interview data to assess (perceptions of) educational practices (e.g. Macaro & Akıncıoğlu, 2018; Kırkgöz, 2014); lacking are classroom observations that provide an in-depth analysis of the language used by students and teachers. To date, only one study has employed classroom observations to examine EMI practices (Duran & Sert, 2019). Moreover, research emphasizing concerns over English loan words in Turkish has been based on participants' attitudes rather than an examination of how language in used in EMI classrooms. With this in mind, the current study contributes to the literature by examining the

language practices that shape EMI education in Turkey, highlighting how EMI is implemented across HEI contexts.

Chapter 3: Methodology

This dissertation employed qualitative research methods to examine the policies, practices, and perceptions of EMI university education in Turkey. Dörnyei (2007) describes qualitative research methods as exploratory in nature, fundamentally interpretative, and involving open-ended data collected in natural settings to provide an insider perspective. Qualitative research involves descriptive data and seeks to explore meaning in individual cases rather than to generalize results to a larger population. It begins from the assumption that human behavior is contextually bound and dependent on social realities (Phakiti & Paltridge, 2015). From this assumption, qualitative research seeks to explore social behavior by collecting rich data from a wide range of sources (Holliday, 2015).

As with other qualitative research studies, this project employed a naturalistic approach that rejected "the belief that human behaviour is governed by general, universal laws and characterized by underlying regularities" (Cohen, Manion, & Morrison, 2011, p. 15). Such an epistemological starting point distinguishes naturalistic approaches from a positivist paradigm emphasizing an objective and observable reality. Rather, naturalist approaches emphasize the autonomy of individuals and the co-constructed nature of the social world, by which contexts are flexible, rather than static, and meaning is constructed through social interaction (ibid.). Mackey and Gass (2016) note that applied linguistics research in naturalistic settings focuses on external variables that affect language use and learning, including social and contextual variables like status and gender (p. 95). Qualitative research seeks to provide a holistic representation of individuals and events in their natural setting, thus offering an emic perspective that allows researchers to "interpret phenomena in terms of the meanings people attach to them… [and] use categories that are meaningful to members of the speech community under study" (Mackey & Gass, 2016, p. 216).

With these epistemological considerations in mind, this dissertation combined policy documents, classroom observations, semi-structured interviews, stimulated recalls, and focus group discussions to investigate the ways in which participating students and lecturers enacted EMI policy and used their linguistic resources in engineering classrooms.

3.1 Research questions

This study was guided by the following overarching research question: *With what variation is EMI implemented in undergraduate engineering programs in Turkey?*

In addressing this overarching research question, this study posed the following research questions:

1. What are the current policies for EMI engineering education at the university level in Turkey?
    a. How are the dimensions of the ROAD-MAPPING framework enacted in national EMI policies?
    b. How are the dimensions of the ROAD-MAPPING framework enacted in institutional EMI policies?
    c. How do EMI policies vary across universities?
2. How are languages used in university-level engineering classes in Turkey?
    a. What functions do languages (English, Turkish, and other languages) serve in EMI classrooms?
    b. How do the functions of these languages vary across EMI classrooms?
    c. What functions does codeswitching have in EMI classrooms?
3. How do teachers and students perceive EMI in university-level engineering programs?

3.2 Research design

A multi-method, sequential design was used in this dissertation to examine variations of EMI policy and practice at three levels: the national, institutional, and classroom level. The research design for this study is summarized in Figure 3.1.

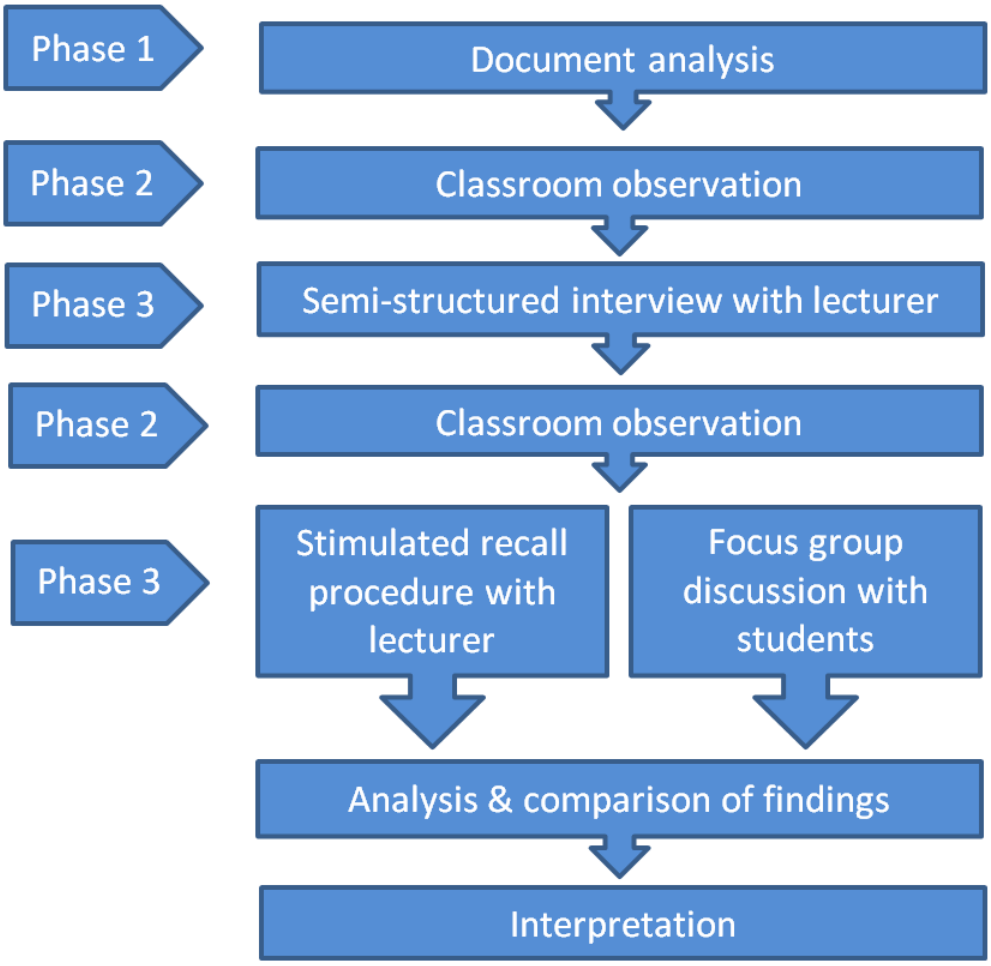


Figure 3.1: Research design

The study included three distinct phases: the first phase analyzed policy documents to examine the positioning of languages in EMI policy. While an analysis of EMI policy documents reveals information concerning official representations of policy at the national and institutional levels, it does not provide evidence of EMI implementation. As Coffey (2014) asserts, "we cannot treat documents—however official or otherwise—as firm evidence of what they report" (p. 369). As such, the second phase explored classroom

language practices across and within higher education institutions, and the third phase examined teachers' and students' perceptions of EMI. Thus, this dissertation incorporated multiple sources of data and considered multiple perspectives to examine the variation with which EMI programs were implemented.

During Phase 2 of this project, data concerning EMI classroom practices were collected through classroom observations. Moreover, interviews with lecturers and focus group discussions with students served to triangulate the data from classroom observations. Triangulation involves the use of multiple and independent methods of data collection to derive the same research findings, thus increasing the validity and reliability of a study (Mackey & Gass, 2016, p. 233). Interview data provide information into the thoughts and assumptions of participants that would be unavailable by observation alone. In the third phase of this study, the interview and focus group data are analyzed to address RQ3 by examining EMI teachers' and students' perceptions of EMI for teaching and learning and to triangulate the findings with respect to policy and practice. Table 3.1 summarizes the data collection methods and analysis procedures with respect to each research question.

Table 3.1: Data collection methods and analysis techniques

Research question	**Method**	**Data collection, sample & instruments**	**Data analysis**
1. What are the current policies for EMI engineering education at the university level in Turkey? 1a. How are the dimensions of the ROAD-MAPPING framework enacted in national EMI policies? 1b. How are the dimensions of the ROAD-MAPPING framework enacted in institutional EMI policies? 1c. How do EMI policies vary across universities?	Policy document analysis	-*National:* YÖK policy documents; press releases & newspaper articles -*Institutional:* University policy documents, accessed from websites and printed materials -*Classroom (if available):* Syllabi of participating classrooms provided by lecturers	*Qualitative content analysis:* -deductive coding using ROAD-MAPPING framework (Dafouz & Smit, 2016) -use of NVivo -comparison of national policy & policies across HEIs
2. How are languages used in university-level engineering classes in Turkey? 2a. What functions do languages serve in EMI classrooms? 2b. How do the functions of these languages vary across EMI classrooms? 2c. What functions does codeswitching have in EMI classrooms?	Classroom observations (supplemented with data from interviews and focus groups)	-Audio-recorded and transcribed -*Sample:* 85 observations from 21 lecturers at 7 HEIs; 2 sets of observations per lecturer	*Structured coding scheme:* -time length -speaker -language -function -codeswitching
3. How do teachers and students perceive EMI in university-level engineering programs?	Interviews with lecturers	-*Interview 1:* semi-structured; focus on background & attitudes toward EMI -*Interview 2:* stimulated recall; focus on classroom practices -*Sample:* 21 lecturers from 7 HEIs; 2 interviews per lecturer (42 interviews total)	*Qualitative content analysis* -emergent coding -recurring themes -use of NVivo
	Focus groups discussions with students	-Audio-recorded and transcribed for analysis -*Sample:* 25 FGs total, with 150 students; avg. 6 students per group	

3.3 Sampling and participants

3.3.1 Sampling techniques

Sampling relates to "the issue of defining the population on which the research will focus" (Cohen et al., 2011, p. 143). Qualitative data is often characterized by purposeful or purposive sampling in which the aim of the research is not to generalize to the larger population but to "provide rich and varied insights into the phenomenon under investigation" (Dörnyei, 2007, p. 126). Purposive sampling is often used by qualitative researchers to ensure that the cases selected for examination possess particular characteristics, are representative of a larger population, and enable comparisons to be made between cases (Cohen et al., 2011, p. 156). Dörnyei (2007) suggests that sampling parameters should be determined with respect to the participants, settings, and events under investigation in order to meet the aims of the study. In qualitative research, participant selection is an iterative process that requires the researcher to monitor the processes of data collection and analysis until saturation has been achieved, at which point the researcher is "empirically confident" (Dörnyei, 2007, p. 127) that the research question can be answered without further data.

The purposive sampling techniques used in this study involve criteria sampling to select universities that represent a variety of EMI contexts while maintaining key commonalities between lectures and lecturers. The aim of this study was not to generalize the findings to the entirety of the larger population (e.g. the whole of EMI education in Turkey) but to describe the variation and characteristics of EMI education across contexts. Thus, purposive sampling was used to select appropriate cases for the examination of a diverse range of EMI contexts in Turkey. Previous studies investigating EMI education in Turkish higher education have included lecturers and universities with extensive EMI experience and often recruited heavily from the private sector (e.g. Dearden, Macaro, & Akincioglu, 2016). While these studies offer valuable insights into stakeholders' beliefs about EMI, a sample

with such individual and institutional characteristics does not represent the range of EMI contexts in Turkey. The present study included a more diverse sample of EMI institutions to shed light on the complex nature of EMI education through empirical investigation.

The sampling criteria for this study resulted in the selection of cases according to geographic location and university type while limiting the characteristics of university departments and lecturers included in the sample. Socioeconomic development in Turkey is largely defined by geographic location, with the western part of the country significantly more developed and urbanized than the central or eastern parts. Thus, geographic location was selected as an initial inclusion criterion to highlight a diversity of settings. However, the final sample of participating universities was limited to urban centers in Western and Central Anatolia (discussed below; see Table 3.4). Further, state universities were identified as falling into three broad categories: elite universities, with a history of EMI instruction and internationalization; large state universities, which are comprised of different faculties and disciplines but lack the international profile of elite universities; and small state universities, which were founded in the last decade as specialized, technical universities related to a specific discipline, such as technical universities specializing in engineering.

Elite universities were determined with respect to their reputation in Turkey as well as their international ranking. In 2017, there were five Turkish universities ranked in the top 800 HEIs according to the Times Higher Education (THE) and Quacquarelli Symonds (QS) World University Rankings. These five HEIs were selected as potential sites for elite universities in this study. Three of the HEIs were located in the Western region of Turkey, and two were located in Central Anatolia. As none of the five top-ranked universities were located in Eastern Anatolia, this geographic region was dropped from the final sampling criteria. Among the five HEIs meeting the criteria of an ‘elite university’ in this study, the HEIs were evaluated in terms of the availability of EMI engineering programs and their

reputation in Turkey. The two elite HEIs included in this study were selected for inclusion because they had a long, established history of teaching through EMI, which further served as a marker of their elite status.

Large universities were defined with respect to the number of faculties or academic units they comprise as well as the size of their student body. Additionally, they were longer-standing universities, founded prior to the expansion of higher education since 2008. In contrast, small universities were defined as HEIs founded after 2008 and consisting of no more than three faculties. Whereas large universities included several faculties, enrolled 40,000+ undergraduate students, and produced research outputs in a variety of fields, small universities were more specialized. The small universities included in this study were technical universities specializing in engineering and had less than 3,000 students enrolled to undergraduate courses at the time of data collection. Six HEIs were identified as possible 'small universities' for inclusions in the study, and 21 HEIs met the inclusion criteria for 'large universities.'

Because this study examined the variation with which EMI was implemented across *HEI* and *classroom* contexts, I decided to limit the scope of the study to one academic discipline in order to facilitate comparison. Engineering was selected as the discipline of study because it is a discipline commonly taught through EMI in Turkey (ÖSYM, 2017). Moreover, engineering is a prestigious subject in Turkey and, along with medicine and law, a subject which requires one of the highest university entrance exam scores (ÖSYM, 2017). Engineering is a 'hard' EMI subject, meaning that English is not overtly connected with the discipline itself. Macaro (2019) states that "the more a subject can be taught through a language other than English, the more it becomes what we might call a 'hard core' EMI subject *if it is* taught through English" (p. 2; emphasis in the original). Given that engineering programs are taught through L1 MoI worldwide, engineering provides a suitable example of a

'hard' EMI academic discipline. Furthermore, engineering is an applied science; it has practical applications and leads to a specific career, at least in theory. Because engineering is connected to (local and global) industry, it has practical linguistic needs (e.g. communicate with industry). As the divisions between local and global industry become increasingly blurred in a globalized economy, however, the linguistic needs of EMI engineering students provide a compelling case for examination. Finally, because mathematics is integral to engineering, an examination of engineering courses would also allow for an examination of the ways in which mathematics is incorporated into EMI teaching. Given these factors, engineering was deemed an appropriate subject for examination. The availability of EMI engineering programs across university types also made it feasible in terms of sampling.

Thus, in terms of inclusion criteria, the higher education institutes included in the sample were limited to four-year state universities, the lecturers were limited to Turkish nationals—with the assumption that they shared the same L1 as the majority of their students—and the lectures to engineering courses (or required courses for engineering degrees). In this way, the variables of university type and location were varied while the academic discipline and nationality of the lecturers were held constant in this study. A breakdown of the sampling criteria is presented in Table 3.2.

Table 3.2: Sampling criteria

Lectures:	State universities Undergraduate courses (4-year degree program) Engineering courses
Lecturers:	Turkish nationals PhD degrees in Engineering or related field At least one-year experience teaching EMI
Students:	Undergraduate Engineering students Enrolled full-time in EMI course (at least 30% EMI) Passed English proficiency exam according to university policy

Based on the aforementioned criteria, potential data collection sites were identified using the 'Higher Education Program and Quota Manual' (*Yükseköğretim Programları ve*

Kontenjanları Kılavuzu; hereafter, *kılavuz;* ÖSYM, 2017), which lists all undergraduate programs and is used by prospective students for admissions. I reviewed the *kılavuz* to identify HEIs meeting the size criteria for small HEIs (<3000 undergraduate students) and large HEIs (>40,000 undergraduate students). I then examined the list of undergraduate programs offered at these potential HEIs and the five HEIs that were categorized as 'elite universities,' according to the world rankings previously described, to identify which universities offered EMI engineering programs. These universities comprised the list of potential HEIs for inclusion in the study. Table 3.3 summarizes the number and distribution of HEIs identified as potential sites for data collection. The list was used to contact participating HEIs in the sample.

Table 3.3: Number of HEIs meeting inclusion criteria

	Elite	Large	Small
West	3	8	2
Central	2	9	3
East	0	4	1
Total	**5**	**21**	**6**

Cohen et al. (2011) have suggested that sample size in qualitative research is determined by "fitness for purpose" (p. 161). The initial criteria for selection included three geographic regions (West, Central, and East) and three university types (elite, large, and small). However, because no elite universities exist in Eastern Anatolia, the geographic categories of Central and East were combined, resulting in a 3x2 matrix to capture the geographic and institutional characteristics of the sampling criteria. As such, the initial research design sought a sample size of six (6) universities. Due to the issues of access and recruitment, the final sample included seven (7) universities in two regions.

3.3.2 Access and recruitment

Lecturers and administrators at 14 different universities were contacted and invited to participate in the study. Of the 14 universities approached, lecturers from 7 universities agreed to participate. The lecturers and/or administrators who were contacted at the other 7 universities declined to participate for a variety of reasons or failed to respond to the researcher's invitation (see Appendix A.1). Data were collected for this study beginning in 2017, a year following the failed coup attempted in Turkey on 15 July 2016. At the time of data collection, Turkey was under a state of emergency, and university employees were under intense government scrutiny. The political climate created obstacles in terms of access, especially for outside researchers, and affected some potential participants' willingness to join the study.

Based on the sampling criteria, the steps for participant recruitment were as follows: First, I made a list of potential elite, small, and large universities to contact based on the sampling criteria (Table 3.3). The universities were then rank-ordered in terms of fit to the inclusion criteria for each university type (e.g. to represent geographic and urban diversity; to fit each idealized 'type'). Issues of access were also considered when rank-ordering the list of potential participant universities. During this process, I consulted university and department websites to determine the availability of EMI classes and the number of EMI lecturers meeting the inclusion criteria in Engineering Faculties. Because the *kılavuz* does not explicitly state the MoI for partially-taught EMI programs (Chapter 4), department website were used to verify the availability of EMI classes.

From this list, I then contacted the top two universities for each university type. The top two elite universities responded positively and were included in the sample (Elite-1 & Elite-2). One of the top two small universities responded positively (Small-2) and was included in the sample; the other small university, which was in the Central/Eastern region,

had stopped teaching through EMI in its Engineering Faculty for the 2017-2018 academic year, and this university was removed from the list. The next small university on the list was contacted but not included in the sample, since the dean of the faculty demanded teaching services in exchange for participation. The subsequent small university on the list was contacted and responded positively (Small-1). As result, both small universities were located in Western Anatolia. Similarly, one of the top two large universities responded positively and was included in the sample (Large-1). The second large university declined to participate, and subsequent universities on the list were contacted. The engineering departments at Large-2 and Large-3 responded positively and agreed to participate within a few days of each other; as such, they were both included in the sample, resulting in seven rather than six universities.

Participants were contacted for the study in two ways. The first method invited participant lecturers via email: the researcher identified potential lecturers at engineering departments in the selected HEIs who would be appropriate for the study given the sampling criteria outlined in Table 3.2. Lecturers who met those conditions were contacted via email with an invitation letter explaining the research and inviting them to participate. Lecturers from two universities (Elite-1 & Elite-2) joined the study in this way. When a response (positive or negative) was not received within two weeks of the initial invitation, a follow up email was sent. A third follow-up email was also sent, after which it was assumed that the participant was not interested in joining. Overall, the response rate from email invitations was very low, which led me to pursue an alternative means of participant recruitment through personal and professional contacts. Following an initial introduction by a mutual contact, I explained the nature of the research to the potential participant via email or an in-person meeting. If the participant agreed to participate, observations and interviews were scheduled. The mutual contacts were language or content lecturers working at the same HEI or in the same field at a different HEI.

While a method of sampling that relies on personal and professional contacts to recruit participants can be seen as a limitation of the study—as it may have resulted in a biased or unrepresentative sample—I believe it is also a strength of the research and may increase the reliability of the results. Given the importance of social bonds in Turkish society and my position as a foreigner, I believe that a personal introduction allowed me to establish trust and legitimacy with participants throughout the research process. This, in turn, likely resulted in more reliable or candid data.

The seven participating HEIs are described in Table 3.4. The final sample included five universities in Western Anatolia and two universities in Central Anatolia; no universities from Eastern Anatolia were included in the sample, although two were contacted and declined to participate. The participating universities from Central Anatolia were located in urban centers, rather than rural areas. While this is a sampling limitation with respect to geographical inclusion, it reflects the concentration of EMI programs offered in the West compared to the East and in urban rather than rural areas.

Lecturers and students participated on a voluntary basis, which may have resulted in selection bias, particularly for those lecturers who were invited via email rather than through a colleague's introduction. Participants were assured of full confidentiality, including their name and university association. Throughout this dissertation, I have striven to maintain the anonymity of the participants as best as possible.

Table 3.4: Participating university information

No.	Type & code	Location	Established	Undergraduate Enrolment (in 2017-2018)	Number of faculties (academic units) offering undergraduate coursework	Largest faculty (academic unit)	Engineering departments included in study	Type of EMI programs offered (100%, 30%, both)
1	Small-1	Western	2010 or later	< 3,000	3-4	Engineering	Civil & Industrial	Both
2	Small-2	Western	2010 or later	< 3,000	3-4	Engineering	Mechanical	Both
3	Elite-1	Western	Between 1950-1980	10,000 – 20,000	5-7	Science and Letters	Mechanical	100%
4	Elite-2	Central	Between 1950-1980	10,000 – 20,000	5-7	Engineering	Mechanical	100%
5	Large-1	Western	Between 1950-1980	40,000+	30+	Economics & Administrative Sciences	Mechanical & Industrial	30%
6	Large-2	Western	Between 1980-2010	40,000+	30+	Economics & Administrative Sciences	Environmental	100%
7	Large-3	Central	Before 1950	40,000+	30+	Economics & Administrative Sciences	Mechanical & Electrical	Both

3.3.3 Participant demographics

The participant sample included seven universities in four cities. The cities were located in the Marmara (Northwest) and Central Anatolian regions. The universities included in the sample were state universities and included elite (n=2), large (n=3), and small (n=2) universities. A summary of participants is presented in Table 3.5, and a comprehensive overview of the lecturers' demographics is available in Appendix A.2.

Table 3.5: Summary of participant sample

Sample type	**Sample size**
Cities	n=4
Universities	n=7
Lecturers	n=21
Lectures	n=85
Focus groups	n=25
Students in focus groups	n=150 (male=110, female=40)

From the seven universities, a total of 21 EMI university lecturers participated in the study. The lecturers were Turkish nationals with doctoral (PhD) degrees in Engineering (n=20) or a closely related subject (Physics, n=1), and they were employed as full-time staff at their institutions, where their responsibilities included both teaching and research. The lecturers were teaching an engineering subject or a subject required for the completion of an engineering degree at the undergraduate level. With one exception, the lecturers were teaching a course directly related to their area of expertise; the one exception was Teacher 3, who was teaching an Industrial Engineering course but whose expertise was in Mechanical Engineering.

The lecturers were predominantly male (n=19). Seven of the lecturers had received their PhDs in Turkey, and the remaining lecturers had received their doctorates from the U.S. (n=10), Switzerland (n=2), Germany (n=1), and the U.K. (n=1). The majority of lecturers (n=19) had not received any kind of formal pedagogical or teacher training, including training related to EMI teaching. The two lecturers who indicated that they had received teacher

training stated that this training was a requirement for their teaching assistantship positions during their PhD studies in the U.S. Both indicated that the training was short and included linguistic and pedagogical components. The participant teachers had a minimum of one-year teaching experience through EMI at the university level. The lecturers' total teaching experience and their experience teaching through EMI are reported in Appendix A.2.

In total, 150 students (male, n=110; female, n=40) participated in the focus groups, which were conducted after the second set of observations. While I sought one focus group per class, a total of 25 focus groups were conducted with students from 20 of the 21 lecturers' classes. The students from one class (Teacher 1, Small-1) did not wish to participate in a focus group discussion, resulting in a lack of focus group data for that class. In another class (Teacher 14, Large-1), the students were eager to participate in focus groups, and five focus groups were conducted to accommodate the students' schedules and availability. The average number of students per focus group was six (n=6). A total of five international students participated in the focus groups, reflecting the low number of international students enrolled in the observed courses. The international students were three female and two male students from Afghanistan, Kenya, Kyrgyzstan, Namibia, and Pakistan. One international student (female, Kenya) participated in a one-on-one interview with the researcher, and another interview consisted of only two international students (male, Pakistan & male, Kyrgyzstan); these two interviews have been counted toward the total number of 25 focus group interviews, even though they were conducted with one and two students respectively. Excluding these two interviews, the average number of students per focus group was 6.4 students (min=4; max=9). While the gender distribution of the participating students does not represent an equal balance, it reflects the tendency for more male students than female students to enroll in many engineering departments.

In the reporting of this dissertation, the terms 'teacher' and 'lecturer' are used interchangeably, and teachers are referred to by a number code (e.g. T1, T2, T3, …T21). Universities are referred to by type (elite, small, large) and a number to distinguish between universities of the same type (e.g. Elite-1, Elite-2).

3.4 Data collection and coding

Data were collected through policy documents, classroom observations, interviews with lecturers, and focus groups with students. In addition, I kept field notes throughout the data collection process. Table 3.6 provides an overview of the data collected for this dissertation, each aspect of which is discussed below.

Table 3.6: Overview of data collection

Type of data	**Data Source**
Documents	Policy texts, university websites, syllabus, course materials, PowerPoint slides, exams and assignments
Audio recorded classroom observations	85 classroom lessons (67 hrs 37 min 33 sec)
Audio recorded interviews with teachers	42 interviews (19 hrs 6 min 28 sec)
Audio recorded interviews with students (focus groups)	25 interviews (7 hrs 59 min 52 sec)
Field notes	Observation sheets, focus group sketches, 4 A5 notebooks

3.4.1 Policy document analysis

Policy data were collected from national and institutional policy documents (n=145) outlining the language standards for higher education. In Turkey, education is regulated centrally and national policy documents are issued by the Council of Higher Education (YÖK). National policy documents were accessed through the YÖK website (https://www.yok.gov.tr/) and the national gazette (*Resmî Gazete*; https://www.resmigazete.gov.tr/). Additional policy statements were accessed through newspaper publications. The main policy decree regulating EMI was identified as Law No. 29662, published in the National Gazette on 23 March 2016. Two previous iterations of this

law were collected from the National Gazette (No. 27074 from 2008 and No. 22598 from 1996). These three policy iterations formed the central pillar of the national policy document analysis. In total, 89 national policy documents were included in this analysis.

In addition to analyzing national policy, I reviewed EMI policy documents from each of the participating universities, and I primarily accessed these policy documents from university websites. The policy documents consulted for each university were the Directive for Undergraduate Education (*Lisans Eğitim-Öğretim Yönetmeliği*; published in the Official Gazette), the Promotion and Hiring Directive for Teaching Staff (*Öğretim Üyeliğine Yükseltilme Ve Atanma Yönergesi;* published on the YÖK website), the Annual Activity Report (*Faaliyet Raporu;* published on the HEI website), the Strategic Plan (*Stratejik Plan;* published on the HEI website*),* and the Introductory Catalogue (*Tanıtım Kataloğu;* published on the HEI website). Furthermore, each HEI's website was reviewed, including the website of its Engineering Faculty, the engineering departments included in this study, and its School of Foreign Languages (SFL). During data collection, printed materials such as course material and syllabi were collected from participating lecturers who agreed to share them with me; this allowed me to incorporate classroom-level documents. However, many classroom documents were unavailable, as the majority of lecturers (n=16) indicated that they did not have (written) language policies for their classrooms or printed syllabi specifically for that course.

In total, 145 policy documents were reviewed for this study. A complete list of policy documents is provided in Appendix B.2. Policy documents collected from the national gazette were obtained through an online search of governmental archives. Two archives were used: the national gazette archive and the Legislation Information System (*Mevzuat Bilgi Sistemi;* https://www.mevzuat.gov.tr/) archive. First, key policy documents were obtained through keyword searches using the following terms: *yabancı dil* (foreign language), *yabancı*

dil eğitim (foreign language education), *yabancı dil öğretim* (foreign language instruction), *yabancı dille öğretim* (foreign language medium of instruction). The search for '*yabancı dil*' returned 852 results on the national gazette, and only one result on the Legislation Information System. The search results were then filtered to produce national policy documents issued by YÖK. This returned 12 results in the national gazette system. The 12 results were iterations, amendments, and variations on the regulations concerning foreign language teaching and teaching in a foreign language at HEIs (e.g. Law No. 29662 and its previous versions).

These 12 documents, along with Higher Education Law (Decision No. 2547), form the foundation of the national policy documents analyzed in this study (Appendix B.1). The policy documents were reviewed chronologically in order to trace their legislative histories. The documents specified which regulations they replaced and/or amended, and this legislative path was followed during the analysis to examine changes in EMI policy from 1984 to 2016. The policy documents also referenced related legislation, such as the Higher Education Law (Decision No. 2547). Legislation that was referenced in the policy documents was also retrieved and added to the dataset (Appendix B.2). Additional policy statements were obtained from the YÖK website. Documents collected from the YÖK website included information prepared for stakeholders such as university administrators and prospective students applying to undergraduate programs.

A similar process was followed to obtain official legislation related to the HEIs included in this study, such as the Directives for Undergraduate Education published in the national gazette. The directives were obtained by searching the national gazette archive for the name of each participating HEI. To maintain the anonymity of participating universities, the national gazette number and the name of the university is not included in Appendix B.2. HEI websites were also searched to obtain the desired policy documents (e.g. the Annual

Activity Report, Strategic Plan, and Introductory Catalogue). These documents were selected for inclusion in the study because they are common across HEIs in Turkey and are produced and/or approved by institutional or department leadership (e.g. rector, dean, or department head). The HEI websites were also reviewed for additional information related to the EMI programs offered.

3.4.2 Classroom observation

In order to explore language use in EMI university classrooms, data were collected through classroom observations, which involve the systematic inquiry of naturally-occurring events. Classroom observations are "a highly developed data collection approach typical of examining learning environments" (Cohen et al., 2011, p. 176). Although classroom observations have been used to collect data from EMI/CLIL secondary school classrooms (Gierlinger, 2015; Lin & Wu, 2015; Lo, 2015; Wannagat, 2007), the method has been less commonly employed at the university level. Given differences between university lectures and secondary school classrooms, this study contributes to the literature on classroom interaction in EMI settings by analyzing patterns of language use in university settings. The classroom observation data collected for this dissertation provide empirical evidence on classroom interaction at the tertiary level.

The classroom observations used in this study were direct, overt, non-participant observation. A minimum of two (2) classroom observations were conducted for each of the EMI lecturers. The observations were audio-recorded and the data transcribed in NVivo. In addition, field notes were kept throughout the observations. The field notes served as a guide for the stimulated recall procedures during the second semi-structured interview with lecturers as well as a source of supplemental data to facilitate the transcription process. The field notes consisted of my observations during the lecture as well as phrases or drawings that were written on the board and notes taken from other visuals such as PowerPoint slides. The

field notes were a valuable source of supplementary data because I did not have access to visuals: I decided not to video-record the lectures following the pilot study (Section 3.4.4), and I did not necessarily have access to visuals used during the lecture. Less than half of the lecturers in this study used prepared lecture slides (n=9). While some lecturers (n=5) agreed to share their lecture slides with me, other lecturers opted not to share their slides due to copyright reasons (e.g. the slides belonged to the textbook publisher) or personal preference. The lecturers who did not use slides (n=12) wrote on the board and drew figures during their lectures. As such, the field notes provided valuable supplementary information which facilitated the processes of transcription and data analysis. A summary of the classroom observation data is presented in Table 3.7.

Table 3.7: Overview of classroom observation data

Data type	**Amount**
Total number of class sessions observed	85
Average number per teacher	4
Total time of audio-recordings	67 hours 37 min 33 sec
Average time of audio-recording per class	47 min 44 sec
Minimum recorded time per class	15 min 13 sec
Maximum recorded time per class	85 min 53 sec

3.4.3 Development of the observation coding scheme

To provide for the systematic analysis of data collected from classroom observations, "an objective descriptive tool is necessary so that remarks made on the data will not be impressionistic or arbitrary" (Tsui, 1985, p. 9). As such, a structured coding scheme (Appendix A.3) was used to analyze classroom observation data. Observation schemes allow researchers to record events quickly through techniques such as event or time sampling (Dörnyei, 2007). Event sampling allows the researcher to record the frequency with which events occur, although not necessarily the chronological order in which they occur. In contrast, time sampling results in a chronological representation of events by recording what is happening at fixed intervals. A five-second sampling technique to capture codeswitching

behavior was developed by Macaro (2001) and involves recording the language spoken (L1/L2) every five seconds throughout the period of analysis. The five-second sampling technique allows researchers to measure the frequency with which each language is used in the classroom as well as the order in which codeswitching instances occur. However, because the technique involves recording the language spoken only at the exact time of sampling, it does not allow the researcher to capture the complexity of codeswitching as it occurs throughout extended utterances or examine fluid language practices that defy delineated categories of L1 and L2. Thus, the observation scheme used in this dissertation was developed to allow for a more in-depth look at language use by capturing larger segments of data with respect to interaction, language use, and codeswitching.

The structured coding scheme for classroom observations was adapted from Tsui (1985). The system of analysis developed by Tsui (1985) combined previously existing observational systems to create an objective method for analyzing language input. Originally developed to analyze classroom interaction, Tsui's (1985) system has been modified to meet the research aims of this dissertation: the scheme was expanded to include language and codeswitching categories, and its scope of analysis was not limited to teacher-student exchanges. Although the coding scheme was expanded to include additional categories, the structure of Tsui's (1985) scheme was retained because it provided a systematic method of collecting data related to teacher and student talk in the classroom. It allowed for a side-by-side comparison of teacher and student talk, thus organizing data according to the interlocutor while also allowing language to be classified according to other categories, such as codeswitching and function. The development of the coding scheme is outlined in Appendix A.4.

The structured coding scheme includes categories of language function, codeswitching behavior, language use, and speaker:

Function: The scheme includes a 17-category system of language functions adapted from the taxonomies developed by Tsui (1985), Lo (2015) and Canagarajah (1995) (see Appendix A.4). The 17 functions are divided across three major categories (content transmission, classroom management, and social or affective functions) and include a mix of low (*"translate technical vocabulary"*) and high *("build rapport"*) inference categories. The coding scheme was piloted prior to main data collection (Section 3.4.4).

Codeswitching: The sub-categories of codeswitching were modified from those used by Üstünel and Seedhouse (2005) to examine the relationship between language choice (operationalized as codeswitching) and pedagogical focus in EFL classrooms. The study by Üstünel and Seedhouse (2005) focused on teacher-initiated and teacher-induced instances of codeswitching, the former of which refers to instances in which the teacher switches languages and the latter of which refers to instances in which the teacher uses one language to encourage (or induce) a response in the other. Because this dissertation focuses on the language of both teachers and students in EMI classrooms, the sub-categories of codeswitching have been expanded to include teacher- and student-induced and -initiated incidents of codeswitching. As with the sub-categories of teacher-initiated and teacher-induced, student-initiated codeswitching refers to instances in the data in which a student switched the language of communication, and student-induced codeswitching refers to instances in which a student's utterance explicitly resulted in the interlocutor switching the language of communication. These categories capture patterns of codeswitching behavior and language preference in EMI classrooms and are analyzed in conjunction with the functional purposes of codeswitching.

Language use: The structured coding scheme consists of six language categories: pause (0), English (L2), English with Turkish lexical items (E-t), inter-sentential codemixing (L1/L2), Turkish with English lexical items (T-e), and Turkish (L1). These categories were

created to capture the fluidity of language use in EMI classrooms by segmenting coding units according to longer utterances for analysis, rather than assessing the proportion of language use according to measurements taken at distinct moments of time (e.g. according to a 5-second sample technique, as in Lo (2014)) or through word count (e.g. as in Macaro, Tian, et al, 2018). High proportions of intra-sentential codeswitching were observed in the pilot data. These instances consisted of, for example, utterances in Turkish with English words throughout. Because language mixing of this kind was common in the pilot data, I opted not to use a time-sampling method, as this technique might not have captured single L2 words in L1 utterances or to count words, as this would not have captured the nature of language mixing. To capture intra-sentential codemixing, I decided to expand the unit of analysis to full utterances and include language categories other than English and Turkish (or other named languages). This system of language categorization attempted to capture language fluidity of classroom language use to understand how teachers and students use the linguistic resources available to them to discuss and negotiate meaning of technical and academic concepts in EMI classrooms. These language categories incorporate practices of intra-sentential and inter-sentential codeswitching, which are observed in naturalistic bilingual interaction (Myers-Scotton, 1993), to analyze the language used by participants rather than behaviors of codeswitching.

Speaker: The speaker sub-categories in the coding frame include categories for teacher-talk and student-talk as well as a separate category for teacher-student interaction. The decision to create a separate category for teacher-student interaction was made because the university lectures observed largely consisted of teacher-centered monologues and because much of the student participation in the data consisted of short, one-word responses lasting less than three seconds (often less than one second) on the recording. Because it would have been difficult to record the single-word utterances of students as separate codes

in the data, I opted to create a category of 'teacher-student interaction' to capture exchanges between teachers and students; this category captured short student utterances for which it would have been difficult to record a time measurement if they had been categorized separately as student talk. Categorizing these short student contributions as teacher-student interaction captured student participation in the lesson and facilitated analyses with respect to interaction because I could compare patterns of interaction in this category across EMI classes.

In sum, the structured coding scheme allowed for classroom observation data to be coded according language type, language function, codeswitching behavior, and speaker or interactional patterns. The time length for each unit of analysis was recorded in seconds in order to compare proportions of language use through data analysis techniques similar to those used by Lo (2015) to analyze the proportion and length of teacher and student talk in CLIL classrooms.

3.4.4 Piloting and finalizing of the coding scheme

In order to ensure reliability of the structured coding scheme, a pilot study was conducted in May 2017. Data from the pilot study were collected using the same research methods as the main data phase. The sample included three EMI lecturers from a Mechanical Engineering Department at a state university in Turkey. The lecturers who participated in the pilot study were experienced teachers, each with a minimum of 9 years' experience lecturing in their subject area and at least 5 years' experience lecturing through EMI. They were all Turkish nationals and L1 Turkish speakers who held doctoral degrees in mechanical engineering. The participant lecturers were contacted by the researcher via email and voluntarily participated in the pilot study. Approximately 14 hours of audio-recordings were collected from the classroom observations, and interviews and focus groups were conducted with teachers and students, respectively.

To determine the reliability of the structured coding scheme, I coded the classroom observation data from the pilot study twice, approximately ten months apart (September 2017 and June 2018) and compared the results. Cohen's kappa (κ) was calculated to determine the intra-rater reliability of the structured coding scheme, and an acceptable level of agreement was found, $\kappa = .82$, $p < .001$. During and immediately after the first round of coding, the categories of the structured coding scheme were evaluated to assess the appropriateness of the categories for the data. The sub-categories with respect to speaker, language, and codeswitching were found to be appropriate, and no changes were made to these categories. Modifications were made to the language function sub-categories: five new categories were added, three categories were combined, and two categories were revised based on the pilot data to create the 17 sub-categories of language functions used in the final coding scheme. The modifications that were made to the sub-categories of language function are detailed in Appendix A.4. At this stage, the process of data segmentation was also evaluated as part of intra-rater reliability: data segmentation (e.g. determining where one unit of coding began and ended on the transcript) was part of both coding processes and differences in data segmentation were recorded as coding disagreements in the reliability calculation.

The final coding scheme was trialed and inter-rater reliability was assessed for each category. Three transcripts, selected at random, were chosen to assess the reliability of the final coding scheme. Inter-rater reliability was assessed with the help of a Turkish-English bilingual colleague who holds a PhD in Applied Linguistics. A training session was held via Skype, during which the rater was familiarized with the aims of the research and the categories of the structured coding scheme. The three transcripts were then sent to the rater along with the coding scheme. Cohen's kappa (κ) was calculated to determine agreement between the rater and myself, and an acceptable level of agreement was found between the two raters' overall judgements across the four categories, $\kappa = 0.828$ to 0.987 (95% CI), $p <$

.001. Table 3.8 summarizes the inter-rater reliability for each category of the coding scheme. Following the calculation, discrepancies were reviewed and discussed with the rater to clarify ambiguities before beginning the main data analysis. Again, data segmentation was included in the calculation of inter-rater reliability. The transcripts sent to the rater were not segmented, and the rater was asked to segment data appropriately according to the categories of the coding scheme.

Table 3.8: Cohen's Kappa (κ) to assess inter-rater reliability of the structured coding scheme for classroom observations (Note: all p values <0.001)

	Speaker *(κ)*	**Language *(κ)***	**Codeswitching *(κ)***	**Function *(κ)***
Transcript 1	0.975	0.917	0.873	0.696
Transcript 2	0.984	0.972	0.846	0.823
Transcript 3	0.983	0.953	0.727	0.846
Overall	0.987	0.939	0.828	0.866

3.4.5 Limitations to classroom observation

There are several limitations to classroom observation as a method of data collection. First, observations do not provide insight into why something occurred or the cognitive processes involved in decision-making. “Observations typically do not allow the researcher to access the participants’ motivation for their behaviors and thoughts” (Mackey & Gass, 2016, p. 228). To address this limitation, semi-structured interviews with lecturers and focus group discussions with students were conducted to triangulate the data. Additionally, data collected from classroom observations may be subject to bias resulting from the presence of the researcher, known as the Hawthorne effect, which may alter the behavior of participants and affect the validity of the data (Dörnyei, 2007, p. 185-186; Harbon & Shen, 2015). Because this bias can be reduced through repeated observation (Mackey & Gass, 2016, p. 228), multiple observations were carried out and the stimulated recall procedures were conducted after the second observation, when the interference of the researcher’s presence was more likely to be reduced (Mackey & Gass, 2016, p. 238). In terms of positionality, I am a native

English-speaking American collecting data on EMI language use. Thus, it is possible that participants altered their language to 'impress' me or to meet what they perceived to be my expectations. However, given the diversity of linguistic practices in the data, I believe these affects to be minimal. To combat bias, I assured lecturers and students that I was not there to evaluate their English and sought to develop rapport with lecturers throughout the data collection process (Marvasti, 2014). One aspect of establishing rapport included conducting interviews in Turkish, which likely made some participants more comfortable and candid in their responses. Participants were told that they could speak whichever language they preferred during the interviews, and many opted to speak Turkish.

Further, generalizability is an issue with classroom observations: this study does not seek to generalize its findings to all EMI classrooms. Rather, in line with Harbon and Shen's (2015) suggestion that classroom research provides the link between theory and practice, this study aims to contribute to theoretical understandings of EMI and the understanding of EMI classroom practices with empirical evidence including similarities and differences in language use across contexts.

3.4.6 Semi-structured interviews with lecturers

Semi-structured interviews were conducted with lecturers following each classroom observation. Thus, the lecturers were interviewed twice, with each interview lasting approximately 30 minutes (M = 27.3 minutes; SD = 12.2). The first semi-structured interview obtained background information as well as lecturers' opinions and experiences regarding EMI education at the university level. The second semi-structured interview employed stimulated recall techniques to access the lecturers' cognitive processes while teaching in English (Section 3.4.7). To assess the validity of the classroom observation data, lecturers were asked in each interview whether the observed lesson was representative of a typical lesson given by that lecturer.

The interviews with lecturers were used to triangulate data from the classroom observations and address RQ3, which investigates teachers' perceptions of EMI, by allowing participants to discuss their interpretations of observed phenomena (Cohen et al., 2011). Burns (2000) suggests that interviews supplement observation data by investigating "in more detail an informant's typifications of persons and events" (p. 410). Thus, the aim of the semi-structured interviews in the research design was to allow participants to reflect and comment on the classroom practices observed by the researcher.

The interviews were semi-structured in nature, meaning that they followed a general interview schedule (Appendix A.5) but the questions were not fixed to a set order; this provided flexibility for participants to describe their perceptions and experiences (Burns, 2000, p. 424) on teaching and learning through English. The semi-structured interview schedule also allowed me as the researcher to determine the exact content and sequencing of the questions according to the circumstances of the interview (Cohen et al., 2011; Dörnyei, 2007). The flexible nature of semi-structured interviews allowed me probe further with follow-up questions and encourage participants to clarify, extend, or elaborate on their responses.

3.4.7 Stimulated recall procedures

The second interview with each lecturer included stimulated recall procedures to collect data related to lecturers' thought processes while teaching in English. Stimulated recall interviews use introspective methods to elicit participants' thoughts after an event has occurred and provide data that is not available through simple observation (Gass & Mackey, 2000; Dörnyei, 2007, p. 147). An assumption of stimulated recall methods is that individuals have access to and can verbalize their internal thought processes. They require the use of a tangible prompt, such as a visual or audio cue, to encourage participants to retrieve and verbalize their thoughts at the time of the event, thus allowing researchers to explore

participants' thought processes or strategies (Mackey & Gass, 2016, p. 87). As such, "stimulated recall relies on an information-processing approach whereby the use of and access to memory structures is enhanced, if not guaranteed, by a prompt that aids in the recall of information" (Gass & Mackey, 2000, p. 17).

The prompts used to gather data during the stimulation recall procedures were events that occurred during the lecture. The events were determined by the researcher and described to the lecturer, who then confirmed that he or she remembered the event before proceeding with the stimulated recall. Because the stimulated recall interviews were conducted immediately following the observed event (Gass & Mackey, 2000), there was no time to transcribe, review, or prepare the recording. During the pilot study, I found that using the recorder to replay events distracted (or even frustrated) teachers and impeded the interview. Instead, it was more effective to describe an event from the lesson using my field notes and proceeded with the recall after and only when the lecturer confirmed that he or she remembered the event in class. Examples of events include notable instances of language fluidity, focus-on-form teaching, or meaningful teacher-student interactions in the classroom. When these events occurred, I noted them in my field notes with specific details to aid in the stimulated recall. If a lecturer could not remember a specific event, the event was discarded and not used for the recall. For each interview, 3-5 events were selected for stimulated recall.

Mackey and Gass (2016) state that conducting a stimulated recall interview immediately after the event increases the likelihood of being able to access a participant's short-term memory, whereas the retrieval of information from long-term memory can cause recall interference and bias (p. 88). In line with this suggestion, the majority of the stimulated recall interviews were conducted immediately following the observed lesson; two interviews were conducted later in the day and one interview was conducted the following day due to scheduling constraints.

Stimulated recall techniques seek to elicit only information that is directly retrievable, such as what participants were thinking, rather than explanations or interpretations of events (Dörnyei, 2007, p. 149). With this aim in mind, the interview guide for the stimulated recall portion of the semi-structured interviews (Appendix A.6) included instructions for participants and model question prompts for the researcher, adapted from the examples provided by Gass and Mackey (2000, p. 59). During the stimulated recall portion of the interview, participants were asked to vocalize their thoughts at the time of the event rather than explain the event. The question prompts were open-ended to reduce bias in participants' responses. Participants selected whether to conduct the stimulated recalls in English or Turkish, and interviews were conducted in both languages according to the personal preferences of the lecturer.

3.4.8 Focus group discussions with students

Focus group discussions provide insight into factors relating to complex social behavior (Krueger, 1994, p. 44) and allow researchers to explore how phenomena are interpreted from the perspectives of participants (Vaughn, Schumm, & Sinagub, 1996, p. 28). As such, they were used to collect data related to students' perceptions of EMI (RQ3). Krueger (1994) notes that the aim of a focus group discussion is not to reach a consensus but to explore participants' thoughts on a topic. The data emerges from participants' interaction and opinions, which may change throughout the discussion.

Following the classroom observations, students were invited to volunteer for focus group interviews. The participating students were thus undergraduate students enrolled to an EMI course. Because the aim of the focus groups was to generate data related to students' experiences and opinions *in the EMI classes observed* for this study, the students were classmates who were familiar with each other. In order to increase the validity of the data, the

focus groups were generally conducted in Turkish so that students would be more comfortable interacting with their peers.

Excluding the two smaller interviews with international students (see Section 3.3.3), the average focus group size was 6.4 students, and the focus groups ranged in size from 4-9 students. In the focus group interviews, background information was collected from the students, and they were asked to discuss classroom language use, including code-switching patterns and language preferences. As with the lecturers, the purpose of these interviews was to explore perceptions of language use in the classroom.

The interview structure followed a pre-determined guide (Appendix A.7), which was prepared following the suggestions of Krueger (1994, p. 54-57) and Vaughn et al. (1996) and piloted before the main data collection. The focus group interviews began with a short welcome statement, in which I introduced myself and the study. During this stage, the ground rules for the focus group were stated and oral consent was obtained from the participants, after which the recorder was turned on. Opening questions were asked to produce quick, factual responses from each of the participants. Next, introductory questions were used to introduce the topic and transition to the key question stage, which included questions related to language use in EMI. I concluded the focus groups with a short summary and provided an opportunity for participants to add additional comments. Throughout the discussion, I used pauses, probes, and follow-up questions to prompt more in-depth responses (Krueger, 1994, p. 115).

The average length of the focus group interviews was approximately 20 minutes (M = 19.2 minutes; SD = 9.55). Although this is shorter than desired, practical time and logistical constraints limited the students' availability. Focus groups were typically conducted between classes, following an observed class, as this was most convenient for the students and ensured the highest degree of student participation. However, because students often had other

commitments—such as subsequent classes to attend—several interviews were shortened by time constraints.

The focus groups were audio-recorded, as students expressed hesitation to video-recording during the pilot study. The audio-recordings were supplemented by field notes: after each focus group, I drew a seating diagram, numbered the participants, and noted their behaviors, gestures, and contributions to the discussion. The field notes were used to guide the transcription process, particularly in terms of numbering the students' voices on the transcripts. The interviews were carried out in a neutral location, most commonly a classroom or café on campus, with chairs arranged so that participants were facing each other during the discussion (Krueger, 1994, p. 48; Vaughn et al., 1996, p. 50).

3.5 Data analysis

3.5.1 Transcription

The data collected from classroom observations, interviews, and focus groups were transcribed for analysis. Transcription is an essential stage of data analysis that transforms visual and audio data into written text (Marvasti, 2014). The process of transcription is selective in that no notation system is capable of conveying with accuracy what was said and the manner in which it was said (Kowal & O'Connell, 2014). To this end, all data were transcribed in full to include verbal and non-verbal components as necessary for analysis. False starts, fillers, pauses, and repetitions were included in the transcriptions, since their deletion "may lead to the loss of information crucial for purposes of interpretation" (Kowal & O'Connell, 2014, p. 70). Similarly, Gass and Mackey's (2000) suggest that transcription data is more accurately coded when it is transcribed in full rather than edited for clarity.

Although the data were transcribed in full, some of the excerpts from interviews and focus groups included in the findings of this dissertation have been edited for clarity to increase readability. The decision to edit quoted excerpts was made in line with Roulston's

(2014) statement: “In cases in which data are analysed for topical content, to respect participants who are frequently reluctant to have the stumbles and slips that take place in everyday interaction included in representations of findings, I edit transcripts for reports with an emphasis on readability” (p. 299). Excerpts from classroom observations have not been edited for readability or clarity but were reproduced in full.

Data were transcribed and analyzed in the language in which they occurred, meaning that interviews conducted in Turkish were transcribed and analyzed in Turkish, and interviews conducted in English were transcribed and analyzed in English. The classroom observation data occurred in Turkish, English, and a blend of both. All translations from Turkish to English in this dissertation are my own.

3.5.2 Qualitative content analysis of interview and focus group data

The data collected from semi-structured interviews and focus group discussions were analyzed using qualitative content analysis, which offers a systematic description of data through coding. In this way, qualitative and quantitative content analyses are similar in that both follow controlled, replicable procedures (Mayring, 2000). However, qualitative content analysis differs from quantitative content analysis because it explores textual meaning through analyses other than frequency counts. Kuckartz (2014) summarized the difference between quantitative and qualitative content analysis as follows:

> While the atomizing manner of quantitative analysis aims to convert the verbal data into precise categories (represented by numbers) and then to statistically evaluate the resulting data matrix, qualitative text analysis is interested in the text itself, notably based on the text in its entirety. Even after categories have been assigned, the text itself, i.e. the wording of the statements, is relevant and also plays an important role in the preparation and presentation of results. (p. 65-66)

Thus, rather than equate coding frequency with the relevant importance of a particular theme, qualitative content analysis provides detailed descriptions of the themes in a text and requires the researcher to focus on aspects of meaning related to the research question (Schreier, 2014;

Mayring, 2000). Through a process of double coding, data are reduced and sorted using a comprehensive coding frame. The coding frame is essential to qualitative content analysis and includes categories of abstraction in order to understand connections between different aspects of the data. Data are double-coded to test the quality of category definitions. Categories "should be so clear and unambiguous that the second coding yields results that are very similar to those of the first coding" (Schreier, 2014, p. 171). Qualitative content analysis is also known as thematic coding (Boyatzis, 1998) and thematic qualitative text analysis (Kuckartz, 2014), and it is commonly used to analyze data collected from interviews and focus groups (Kuckartz, 2014). It has been used to analyze policy documents and interview data in studies on EMI (e.g. Rose & McKinley, 2018; Aizawa & Rose, 2019).

Although qualitative content analysis is an iterative process (Burns, 2000), it is systematic in that the steps and sequence of analysis followed are the same. The steps followed for qualitative content analysis in this study are outlined in Figure 3.2, and Appendix A.8 describes in more detail the steps the analysis applied to interview and focus group data to answer RQ3. The remainder of the section provides a brief overview of each step.

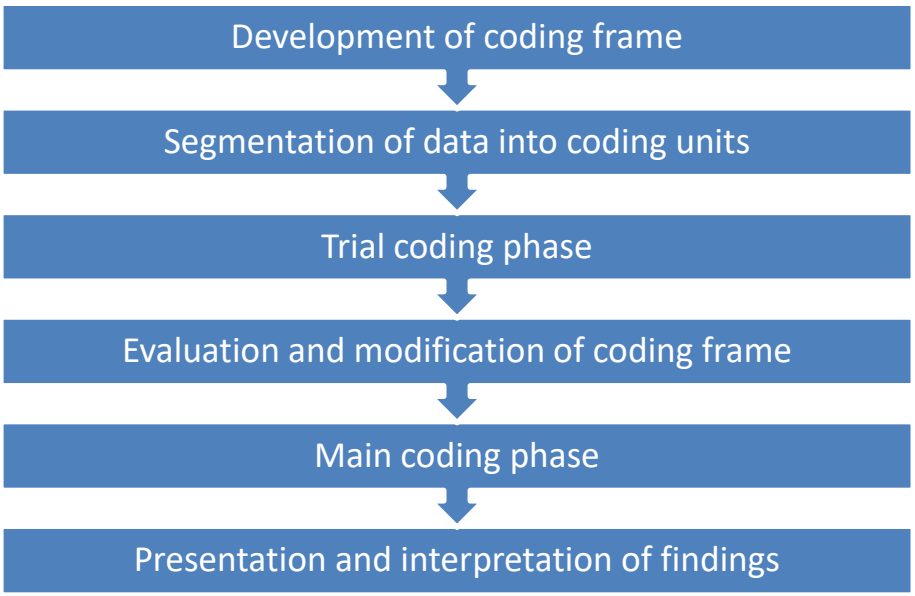


Figure 3.2: Steps of qualitative content analysis (adapted from Schreier, 2014; Mayring 2000; Kuckartz, 2014)

Qualitative content analysis begins with the development of a coding frame, and an inductive coding framing was developed to analyze interview and focus group data to address RQ3. To develop the inductive coding frame, pilot data from interviews and focus groups were analyzed through a process of open coding. The pilot data consisted of six interviews from three EMI lecturers and three focus group discussions. The codes that emerged from the opening coding of pilot data were reviewed and revised to create a coding scheme, which was then trialed on the main data. This step of developing the coding frame included structuring, defining, and refining categories through a thorough examination of all material relevant to the research questions: although the interview and focus group data were analyzed to address RQ3, I considered the emergent themes with respect to the overarching theme of this study as well as RQ1 and RQ2, in order to facilitate the triangulation of data from other sources. In developing the coding frame, I ensured that the categories and sub-categories were unidimensional and mutually exclusive, meaning that each category covered only one concept and no unit of data could be coded under multiple categories. Following the recommendations of Schreier (2014), the categories were exhaustive so that the coding frame included all elements of the data, and a residual category was created for data that did not fit within other categories.

During the open coding phase, category creation was both concept- and data-driven. Schreier (2014) notes the importance of data-driven categories in order to ensure that "the coding frame provides a valid description of the material" (p. 171). Similarly, Mayring (2000) states that the process of category creation is inductive since categories should be closely related to the textual material under examination. Data-driven categories were created from interview and focus group data from the pilot study through a process of subsumption, by which relevant concepts in the data were subsumed under existing (sub-)categories or used to create new (sub-)categories. The formation of categories continued until a point of

saturation, after which no additional categories were needed to analysis the data. Once categories were created, they were defined. “Category definitions consist of four parts: a category name, a description of what is meant by that name, positive examples, and decision rules” (Schreier, 2014, p. 176). The category description along with “typical examples” and decision rules serve to prevent confusion between sub-categories during the coding phases (Schreier, 2014, p. 177). Category definitions were created in NVivo’s Codebook, which was exported and consulted during the coding process. After the coding frame was developed, it was revised during a trial phase. The trial phase was conducted using the main data for this study.

The development and application of the coding frame occur separately and consecutively in qualitative content analysis (Schreier, 2014). Mayring (2000) describes the essential features of qualitative content analysis as the inductive development and deductive application of categories. While categories are emergent and data-driven, the process of category generation is separate from the process of coding, during which the coding frame cannot be altered. Thus, qualitative content analysis of interview and focus group data required two rounds of coding: an initial round to verify that the coding frame was appropriate for the data and a main phase of analysis in which data segments were coded according to the coding frame.

Data were segmented into coding units by dividing the data into meaningful parts such that each unit applies to only one sub-category, thus meeting the framework’s requirement of mutual exclusivity. In line with Schreier’s (2014) suggestion, segmentation was based on content and theme: “Thematic criteria are much less clear cut than formal criteria, but they often provide a better fit with the coding frame” (p. 178). The length of the data segments ranged from one sentence to a full paragraph, or multiple lines of exchange between the teacher and researcher for interview data and between students for focus group

data. The data was segmented in NVivo such that each line of the transcript referred to a specific data segment.

Data segmentation and data coding were conducted simultaneously in NVivo. After the inductive coding frame was developed, the trial coding phase was conducted using a sample of data (interviews = 4; focus groups = 3) from the main data for this study. Based on the results of the trial phase, the coding frame was evaluated and modified before the main coding phase. I evaluated the coding frame according to the frequency and fit with which data units were coded in sub-categories (e.g. to which sub-categories were data not coded, which sub-categories seemed to overlap, etc.). Once the codes were formalized, I then coded another sample of data (10 interviews from 5 teachers; 3 focus groups) to evaluate the fit of the revised coding scheme. At this stage, two categories were eliminated, and the remaining categories were retained to form the final coding scheme, which was imported into NVivo as nodes for coding and applied to the entire dataset. Appendix A.8 describes the process of trial coding and modifications made to the coding scheme for each data source.

Qualitative content analysis requires that the entirety of the data be coded in order to prevent researchers from drawing conclusions based on premature evidence or preconceived assumptions (Kuckartz, 2014, p. 69). As such, all data were coded during the main coding phase, and adjustments to the coding frame were not made at this point. Appendix A.9 presents the final coding frameworks used to analysis teacher and student interview data.

3.5.3 Analysis of policy documents

Policy documents were analyzed in NVivo using the ROAD-MAPPING framework as an analytical guide and deductive coding frame. The six dimensions of the ROAD-MAPPING framework served as deductive codes, and the codes were defined in accordance with Smit and Dafouz's (2016) explanation of the framework. The six deductive codes were:

1. RO: Role of English (in relation to other languages)
2. AD: Academic Discipline
3. M: (language) Management
4. A: Actors or Agents
5. PP: Practices and Processes
6. ING: Internationalization and Glocalization

The process of analysis generally followed the steps of qualitative content analysis, which were described in Section 3.5.2 and applied in the analysis of interview and focus group data. However, there were three differences between the deductive coding of policy documents and the qualitative content analysis of interviews and focus groups:

1. A coding frame was not developed for the deductive coding of policy documents. Instead, the ROAD-MAPPING framework was adopted and applied during the trial coding phase to evaluate the appropriateness of its dimensions for the analysis of policy data.
2. In qualitative content analysis, the coding frame should be exhaustive, and the residual category of the coding frame should be applied to only a small proportion of the data. For example, in this study, the residual category 'Background, introductory, or concluding comments' was created to categorize data from the interviews and focus groups which were outside the analytical focus of this study. During the deductive coding of policy documents, however, a residual category was not created, since large amounts of data would have been categorized as such. Instead, the ROAD-MAPPING framework was only applied to relevant aspects of the policy documents. Because many of the policy documents—especially institutional documents—were not specific to EMI or L2 MoI, much of the text was outside the scope of this study and therefore not coded.

3. The inductive coding frames used for the analysis of interview and focus group data consisted of unidimensional and mutually exclusive categories, meaning that data could not be coded to two separate categories. However, the ROAD-MAPPING framework was designed to allow for the six dimensions to intersect: "the fact that the dimensions are seen as intersecting with each other supports its arguably holistic nature in the sense that 'the whole is more than the sum of its parts' (Smit & Dafouz, 2016, p. 411). Keeping with this intention, I coded data to multiple dimensions of the ROAD-MAPPING framework when appropriate.

Aside from these three differences, the steps of the deductive coding analysis generally resembled those of qualitative content analysis. This section describes the steps followed in the analysis of policy documents, and Appendix A.8 provides a more detailed explanation of the steps involved.

First, in preparation for coding, the deductive codes were imported to NVivo as nodes, and the policy documents were arranged according to type. Separate folders were created for documents pertaining to national policy and each of the HEIs included in the study. The data were coded by source, beginning with national policy documents, to distinguish between national and institutional policies and to compare policies between HEI contexts. The majority of the files were imported as PDF documents, and data segmentation was conducted during the coding process directly on the PDF files in NVivo. Data were segmented into meaningful parts so that each data segment thematically aligned with its corresponding dimension(s) of the ROAD-MAPPING framework. In other words, data were segmented such that policy statements related to the role of English or language learning were coded as 'RO,' statements referring to a specific academic field or discipline-specific learning outcomes were coded as 'AD,' as so on. Statements which did not pertaining to any of the codes were discarded from the analysis.

After the coding frame was imported, the trial coding phase was conducted. Because pilot data were not available for the policy documents, the coding scheme was piloted using national policy documents. During the pilot stages, the three main national policy documents (Law No. 29662, Law No. 27074, and Law No. 22598) were coded twice. The rationale for using these three policy documents during the trial coding phase was that they were essential to the analysis, and the appropriateness of the ROAD-MAPPING framework as an analytical lens could be evaluating according to its fitness for purpose with respect to these central documents. The first round of coding was conducted in NVivo, and the second round of coding was conducted approximately one week later by hand on a printed version of the documents. The coding was then compared in order to evaluate the fit of the ROAD-MAPPING framework to the policy data, the clarity of the six dimensions, and the reliability of coding. The ROAD-MAPPING framework was deemed suitable for the policy documents included in this study, and an acceptable value of intra-rater reliability was calculated. The two rounds of coding were considered in agreement when the same code (e.g. dimension) was applied to the same excerpt of text, and intra-rater agreement was calculated by dividing the number of instances of agreement by the total number of codes. Through this process, the rate of agreement between the two rounds of coding was calculated as 96.67%, exceeding the cut-off mark of 80% for an acceptable level of agreement.

Next, the main coding phase was conducted. Coding was first conducted on national policy documents, beginning with the list of documents in Appendix B.1. Throughout the coding process, I kept handwritten notes in a notebook. The purpose of the notes was to summarize the policy documents. Given the large number of documents included in this study, these notes served to remind me of key details related to each policy document. The handwritten summaries were not analytical but served to contextual each piece of legislation. Following the coding process, each dimension of the ROAD-MAPPING framework (e.g.

each deductive code) was reviewed separately for analysis. While reviewing the coded data, I noted key themes related to each dimension of the framework. The process was then repeated on institutional policy documents, with each HEI's policy documents coded individually before moving on to the next HEI. The order of coding was as follows: Elite-1, Elite-2, Small-1, Small-2, Large-1, Large-2, and Large-3.

After the coding was completed, the results for each dimension of the ROAD-MAPPING framework were exported from NVivo as a Word document. Beginning with the 'RO' dimension, coded data was reviewed for thematic analysis. During this process, themes within each dimension were compared across texts. For national policy documents, this process was characterized by a comparison of various forms of policy (e.g. amendments to policy; directives replacing old policy) and by a comparison of official legislation and policy statements produced for stakeholders, e.g. information published on YÖK's website. For the analysis of institutional policy documents, this process compared coded data across HEIs. Similarities and differences between institutions and between policy texts were noted during this stage. This process was repeated for each dimension of the ROAD-MAPPING framework, and the findings presented in Chapter 4 are organized according to the six dimensions.

3.5.4 Analysis of classroom observation data

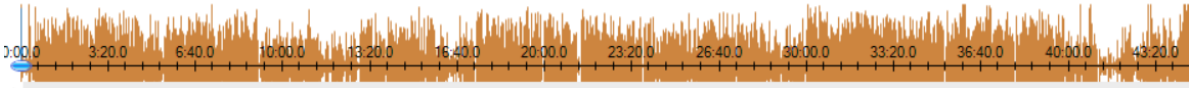
Audio-recordings of classroom observations were transcribed for analysis in NVivo 11 and analyzed using the structured coding scheme. The structured coding scheme was replicated within the NVivo software, with columns created for each category of the coding scheme (Figure 3.3). The column labelled "text" included data transcribed from the audio-recordings, and the columns labelled "language," "function," and "CS" were completed for each line of text using the appropriate coding keys. The length of time for each unit of text was measured using NVivo's synchronized transcription tool, whereby the audio-recoding

was synchronized with the transcription and each line of the transcript included a timestamp, which was used to calculate the length of each utterance in seconds.

Segmentation was carried out in NVivo, with each segment of data occupying a line on the transcription interface. The transcription interface was modified to include columns representing each category of the coding scheme: speaker, language, codeswitching, and function. Data were segmented such that each segment (e.g. line of transcription) was coded to the same sub-categories for each component of the coding scheme (e.g. each column of the transcript). When a new sub-category appeared for any category of the coding scheme, a new line was created on the transcript. The length of a coding unit therefore varied from a single word or a minimum pause of three seconds to a longer paragraph, depending on the contents of the text.

Figure 3.3 provides a screenshot of a transcript in NVivo to illustrate the process of data segmentation. As demonstrated by Figure 3.3, each line of the transcript was coded to a specific set of codes for the four categories of the coding scheme: speaker, language, codeswitching, and function. Each new line of transcription represents a new set of codes. A new line was created on the transcript each time a code changed for at least one of the categories of the coding scheme, and each line of transcription represent the same set of codes. For example, line 5 of the transcript in Figure 3.3 was created because the coded function was different from line 4. In this example, line 4 was coded '1' ('introduce new content') and line 5 was coded '6' ('present or explain new content'). The amount of text in each line of the transcript varied depending upon the nature of the coding. For example, line 2 in Figure 3.3 includes three words (*"Okay. Let's start."*), whereas line 5 contains a long paragraph of text. The timestamp was recorded automatically in NVivo in the first column of the transcript to facilitate the time analysis.

The segmentation of data was verified during the processes of both intra- and inter-rater reliability testing (see Section 3.4.4), in which coders segmented data according to their application of the coding scheme. I repeated the process of data segmentation during the intra-rating phase, and a second rater segmented data during the inter-rater reliability check of the final coding scheme. The process of segmentation was described to the inter-rater before he began the coding process, and the inter-rater was instructed to segment transcription lines according to the coding scheme. Discrepancies in data segmentation were considered as coding disagreements in the calculations of intra- and inter-rater reliability, and these discrepancies were discussed with the other rater before the main coding phase to improve reliability.



	Timespan	Content	Speaker	Language	CS	Function
2	0:29.1 - 0:30.7	T: Okay. Let's start.	T	L2	0	13
3	0:30.7 - 0:33.7	[pause]	0	0	0	0
4	0:33.7 - 0:42.3	T: The future of internet. What's going to be in the future? What's the problem?	T	L2	0	1
5	0:42.3 - 2:27.4	T: The first problem was that uh the internet was not defined for transmission of uh data, this much of data to be used, of users, so uh first we have a uh a problem with IP addresses. According to the book, they were expecting that uh in 2012 [=two thousand twelve], thirteen uh there will be, there will not be any uh available IP addresses, but so far uh we have not faced this problem. But in order to be able to get rid of this problem uh they uh the some uh institutions start to develop uh a new type of uh IP addressing. Uh now the version we are using is this one. Uh it's uh IP version four. And uh there are uh but they're developing, they are	T	L2	0	6

Figure 3.3: Sample of coded transcript in NVivo

Then, the classroom observation data was coded and analyzed according to the structured scheme directly in NVivo. The processes of segmentation and coding were carried out simultaneously, as the codes were added to their respectively columns during segmentation. After the coding fields were completed, the data were analyzed using the auto-

code feature (*"auto-code a transcript using custom fields"*), which automatically collects each line of transcription according the entries (sub-category codes) of each column (categories) added to the transcript. For example, the auto-code feature processed lines 2, 4, and 5 in Figure 3.3 as instances of teacher talk (speaker code 'T') but categorized them as different functions (function codes '13,' '1,' and '6,' respectively). After auto-coding was completed in NVivo, the codes were reviewed for errors such as missing entries or typos resulting in erroneous codes; any such errors were resolved through recoding. The preliminary coding for each category of the structured coding scheme resulted in 13240 references (e.g. coded entries, or lines of transcript) across 85 sources (e.g. classroom observation transcripts). The data were extracted from NVivo and analyzed in an Excel spreadsheet, where data were aggregated to evaluate and compare language use within and across EMI contexts, and averages and frequencies were calculated for each participant teacher. The findings from the analysis addressed RQ2 and its sub-questions.

In addition to the analysis conducted using the structured coding scheme, classroom observation data were analyzed for a more in-depth qualitative focus on language use. Marvasti (2014) notes that "the analysis of the observation in part depends on what the researcher chooses to focus on as the more revealing or the most relevant feature of the observation" (p. 362). Because this dissertation seeks to understand the variation with which EMI is implemented in terms of language practices, the second stage of analysis of the classroom observation data was guided by a more in-depth, qualitative analysis of language use and provided a cross-case analysis of EMI practices.

In the second stage of analysis, summaries were created for each participant teacher's class (e.g. each EMI class observed) based on data from teacher interviews and student focus groups to supplement the classroom observation data. For each interview and focus group, a handwritten summary of approximately one half to one-side of an A4 sheet of paper was

produced. The summaries began as a simple synopsis of key statements or incidents from the data and included my impressions, primarily written in the margins, of how these statements related to broader themes in the data. The primary focus during the process of summary creation was on participants' statements regarding classroom language use and their explanations or evaluations of the language practices they described. These statements by participants were evaluated in light of the classroom observation data. This process of initial summary creation resulted in approximately 2-3 handwritten pages of notes for each participant teacher's class when the interview and focus group summaries were combined.

I then began a process of data reduction to condense these summaries for meaningful comparison across cases. First, summaries from each case were combined into a single paragraph describing language practices in that class. During this process, the summaries created for each teacher's interviews were compared with the summaries created for the focus group from his or her class, and I noted key agreements or discrepancies between interviews with teachers and focus groups with students. I then compared these statements with patterns found in the observation data. This resulted in 21 summary paragraphs. Next, from the summary paragraphs, a short phrase describing each case was created. In reducing the paragraphs to phrases, I attempted to complete the sentence: *"In this class, the 'E' in EMI is…",* in order to conceptualize the role of language. I selected this 'starter phrase' as a simple means of addressing RQ2: *How are languages used in university-level engineering classes in Turkey?,* with a focus on English use. The purpose of creating the summary sentences was to highlight salient language practices in each class and provided a starting point for comparing classroom language practices. The single sentences were then compared with initial, longer summaries as a reliability check. I then repeated the process of reducing the summaries to single-sentences to evaluate the replicability of the resulting phrases.

Following the creation of short summaries and single-sentence synopses, cross-case analysis (Yin, 2014) was conducted according to an iterative process that involved three main steps: (1) comparison of the descriptive statistical findings from the structured coding scheme; (2) comparison of the short summaries and sentence completions; and (3) consideration of cases with respect to themes or debates in the EMI literature. Regarding the last point, case were considered with respect to the role of content and language teaching, strategies for coping with language difficulties, and the role of English in the EMI class (e.g. the 'E' in EMI).

These three steps for cross-case comparison were carried out multiple times in an iterative process. To compare findings from the structured coding scheme, graphs and scatterplots were produced in Excel and SPSS to help visualize components of the data. Patterns observed in the graphs were then compared and cross-referenced with the short case summaries. To facilitate comparisons between cases, mind maps were created using slips of papers with each teacher's class code. The slips of paper were shuffled and 'grouped' to visualize 'variations' of EMI implementation. The process of mind-mapping was carried out four times, and each time the resulting mind maps were compared to graphs, scatterplots, or tables produced from the findings of the structured coding scheme. From this process, vignettes were composed to represent variations of EMI implementation according to the recommendations of Yin (2014), Creswell (2013), and Stake (1995) for qualitative and case study research.

Throughout this process, multiple queries were run on the classroom observation data in NVivo. The queries resulted in extracts of language use which were examined and compared. The extracts were compiled in Word documents, annotated, and reviewed to provide illustrative examples of language use for each variation of EMI implementation. A similar process was repeated on the interview and focus group data by running queries on

select nodes (codes) in NVivo in order to validate the vignettes presented in Chapter 5 of this dissertation.

3.6 Ethical considerations

Minimal risks were associated with participation in the research for this dissertation, and the researcher took active steps to reduce any potential risks encountered by participants. The classroom observations did not alter the typical classroom experiences of lecturers or students. All participants were over the age of 18 and able to give free and informed consent. Consent to conduct and record the classroom observations was obtained from lecturers, and students had the option to opt out of the observation portion of the study by informing the researcher any time before the end of the second classroom observation that they did not wish for instances of their voice to be transcribed in the data, in which case they would not have been included in the data and any instances of their voice on the recordings would not have been transcribed, analyzed, or otherwise included in the study. No student chose to opt-out.

Participant burdens included the time taken to participate in the research. The researcher was sensitive to this time burden when scheduling observations and interviews with participants. Additionally, given the current political climate in Turkey, I have taken active steps to protect the anonymity of participants and institutions participating in this study. To this end, oral consent for interviews was obtained from participants in place of written consent, and all data has been anonymized and stored securely on a password-protected computer. Pseudonyms are used throughout this dissertation to protect the identity of participants, and institutions are not referred to by name. With respect to issues of access, I obtained permission from department heads and university rectorates as necessary before conducting observations and interviews with participants.

Chapter 4: Findings I: EMI policies

This chapter addresses RQ1 and its sub-questions:

RQ1: *What are the current policies for EMI engineering education at the university level in Turkey?*

RQ1a: *How are the dimensions of the ROAD-MAPPING framework enacted in national EMI policies?*

RQ1b: *How are the dimensions of the ROAD-MAPPING framework enacted in institutional EMI policies?*

RQ1c: *How do EMI policies vary across universities?*

In addressing RQ1, this chapter examines official EMI policies in Turkish HE. It summarizes national legislation regulating language education, and it traces the development of language education policy in HE since the 1980s, when the Council of Higher Education (YÖK) was founded. The findings with respect to national- and institutional-level EMI policies are analyzed and presented according to the six components of the ROAD-MAPPING framework: role of language (RO), academic discipline (AD), management (M), agents (A), practices and processes (PP), and internationalization and glocalization (ING). EMI policies are compared across the HEIs (n=7) included in this study. This chapter begins with a brief introduction of national-level EMI policy documents. It then presents the findings with respect to national policy according to the six dimensions of the ROAD-MAPPING framework (RQ1 & RQ1a). The six dimensions are then presented again for a comparison of institutional policies (RQ1b & RQ1c).

4.1 What are EMI policies?

L2 MoI at Turkish universities is regulated by Law No.[1] 29662, Regulations Concerning the Principles for Foreign Language Teaching and Teaching in a Foreign Language at Higher Education Institutions[2] (*Yükseköğretim Kurumlarinda Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara Ilişkin Yönetmelik*), which was issued on 23 March 2016. Law No. 29662 replaced an earlier directive (No. 27074), which was issued on 4 December 2008 under the same name. Three sets of amendments were made to the 2008 directive before the current regulations were passed in 2016. At the time of writing, no amendments have been made to the current legislation. Evident from the name of the policy document, national regulations refer to instruction in a *foreign language* or provisions for *foreign language* education; the regulations do not mention English education explicitly (Section 4.2.1.5).

Iterations of the directive on foreign language teaching and teaching in a foreign language date back to 1984. Additionally, the Law on Foreign Language Teaching and Instruction and the Teaching of Different Languages and Dialects to Turkish Citizens (*Yabancı Dil Eğitimi ve Öğretimi ile Türk Vatandaşlarinin Farkli Dil Ve Lehçelerinin Öğrenilmesi Hakkinda Kanun,* Decision No. 2923) was passed in 1983. Although the legislation from 1983 does not pertain specifically to HE, it forms the foundation for language education in Turkey and bestows control of foreign language education in HEIs to YÖK, which was founded in 1981 with the Higher Education Law (*Yükseköğretim Kanunu,* Decision No. 2547). Appendix B.1 summarizes the development of legislation on L2 education and L2 MoI at HEIs in Turkey. The documents listed in Appendix B.1 form the

[1] In this dissertation, 'Law No.' refers to the issue of the Official (National) Gazette in which the regulations were published. Other forms of legislation, which are also published in the Official Gazette, are referred to in this dissertation as 'Decision No.,' because they are referred to as such in Turkish (*karar numarası*).
[2] YÖK translates the name of this policy document as, "Regulations on Foreign Language Teaching in Higher Education Institutions and the Principles that will be followed in Foreign Language Teaching." I have chosen to use my own English translation of the title.

foundation of national L2 MoI policy. A complete list of the policy documents analyzed for this study (n=145) is available in Appendix B.2.

Law No. 29662 establishes three types of MoI at Turkish HEIs: full instruction in a foreign language (*tamamen yabancı dilde eğitimi*), partial instruction in a foreign language (*kısmen yabancı dilde eğitimi*), and instruction in Turkish (*öğretim dili Türkçe*, TMI). Article 4 of the directive defines partial L2 MoI programs as "education in which at least 30% of the total credits of the classes given in the program are given in a foreign language." Although a legal distinction is made between full and partial L2 MoI programs, the language proficiency requirements for staff and students as well as the processes for admission and enrolment are the same for each form of education (Section 4.2.1.4). The only policy distinction between the two forms of L2 MoI concerns the number of qualified teaching staff required for each program. For partial EMI programs, a minimum of four lecturers must be qualified to teach through L2 MoI, and for full L2 MoI programs, every member of the teaching staff must fulfill the L2 proficiency criteria. The following section analyzes national EMI policy using the ROAD-MAPPING framework.

4.2 ROAD-MAPPING analysis of national EMI policies

This section addresses RQ1, '*What are the current policies for EMI engineering education at the university level in Turkey?'* and RQ1a, '*How are the dimensions of the ROAD-MAPPING framework enacted in national EMI policies?'* National-level policy documents are analyzed through the six dimensions of the ROAD-MAPPING framework.

4.2.1 Role of English (RO)

This section addresses the role of English (RO) in relation to other languages in national-level EMI policy documents. It begins by introducing the L2 proficiency requirements for EMI students and teachers. It then notes issues with counting and labelling EMI programs in Turkey. Next, this section examines the policy aims of EMI and L2

instruction, the admissions process to EMI programs, and discourses of native-speakerism and national identity found in national policy documents.

4.2.1.1 L2 proficiency and learning

In its regulations concerning student L2 proficiency for EMI programs, Law No. 29662 establishes the foreign language preparatory program (*hazırlık)* as a requirement for students enrolled in full and partial L2 MoI program, unless they meet the exemption criteria (see Figure 4.1). *Hazırlık* is an intensive foreign language program lasting up to one year, in which students receive instruction in the L2 of the program's MoI (e.g. English for EMI, French for French MoI, etc.). While the 2008 directive stated that foreign language instruction provided through the *hazırlık* program should include no less than 20 hours of class per week and no less than 260 hours of class per semester, these provisions were removed in the 2016 document, which sets no minimum requirement for the number of hours of instruction in the *hazırlık* program for an additional year.

Law No. 29662 also outlines the requirements for mandatory MFL classes (*zorunlu yabancı dil dersleri*). According to Article 5 of Higher Education Law, Decision No. 2547, a minimum of two semesters of MFL classes is mandatory for all university students. MFL classes are one of four subjects mandated by Article 5 of the Higher Education Law, along with the history of the Turkish Republic, Turkish language, and either physical education or fine arts. Since MFL classes are mandatory for all university students, Law No. 29662 stipulates the nature of MFL courses for TMI students—although it does not stipulate which language(s) can or should be taught—as well as the requirements for students enrolled in full or partial EMI programs.

Students enrolling for the first time in a full or partial L2 MoI program must take an L2 proficiency and/or placement exam, prepared by the HEI, at the beginning of the academic year. The proficiency exam determines whether students are exempt from the

hazırlık program, meaning that their level of L2 proficiency is sufficient to begin departmental classes in the L2, or whether the student is required to enroll in the *hazırlık* program. To gain exemption from the *hazırlık* program, students must (1) pass the proficiency and/or placement exam given by the HEI; or (2) have spent the last three years studying in a foreign country where the target language is spoken as a native language at a secondary school which provides education to that country's citizens; or (3) provide an L2 exam score, from a central exam recognized by YÖK or an international exam whose equivalency is recognized by YÖK and which meets the foreign language proficiency requirements set by the HEI's senate. Students enrolled to full or partial EMI courses who do not meet one of these criteria are enrolled to the *hazırlık* program, the successful completion of which allows them to continue onto their departmental courses in English (or other L2). Students cannot begin departmental classes until they have successfully completed the *hazırlık* program, passed the HEI's proficiency exam, or gained exemption.

Students who do not successfully complete the *hazırlık* program may repeat it for a maximum of two years of *hazırlık* education in total. Students who still have not met the proficiency criteria (e.g. who have not passed *hazırlık* after two years and who fail to submit a passing exam score) are removed from the L2 MoI program. These students may then transfer to the equivalent TMI program at the same HEI (e.g. same department and same program of study), if one exists, or apply to ÖSYM to transfer to a TMI program at another university.

Students enrolled in TMI programs are required to take at least two semesters of MFL classes, unless they pass the proficiency exam issued by the HEI at the beginning of the academic year. Students enrolled in TMI programs may choose to enroll in an optional *hazırlık* program (*isteğe bağlı hazırlık sınıfı*) for up to one year in order to improve their L2 skills. While passing the *hazırlık* program is a pre-requisite for students enrolled in full or

partial L2 MoI programs, no such requirement exists for TMI students. According to Article 8 of Law No. 29662, TMI students cannot be required by their HEIs or departments to enroll in the *hazırlık* program, and passing the *hazırlık* program is not a requirement for departmental study. This clause represents a departure from previous documents, as the 1996 and 2008 directive stated that *hazırlık* could be a mandatory component of TMI programs.

Under the current policy, TMI students who choose to enroll in but fail the optional *hazırlık* program continue onto their TMI departmental courses; these students are, however, required to complete two semesters of MFL coursework, since they have not met the proficiency requirements for exemption. TMI students who pass the optional *hazırlık* program or the proficiency exam are exempt from MFL course requirements for their TMI programs.

Figure 4.1 provides an overview of the L2 education requirements for each of the three MoI programs at Turkish universities according to Law No. 29662.

In addition to the L2 learning pathways for university students outlined in Figure 4.1, Law No. 29662 stipulates the L2 proficiency requirements for EMI lecturers. According to the regulations, L2 MoI classes *"should be given in this language and by teaching staff who have command of this language"* (No. 29662, Article 8, Clause 7). The primary qualification for EMI lecturers is, therefore, that they "have command of this language." The concept of 'command' implies mastery and control, but offers little guidance in terms of L2 competencies. Article 8 outlines the criteria that lecturers must meet to teach through EMI, which are primarily achieved by passing an exam or spending time in a country where the language is spoken as a 'native' or 'official' language (Section 4.2.1.6). Table 4.1 summarizes the L2 proficiency requirements for teachers and students in EMI programs.

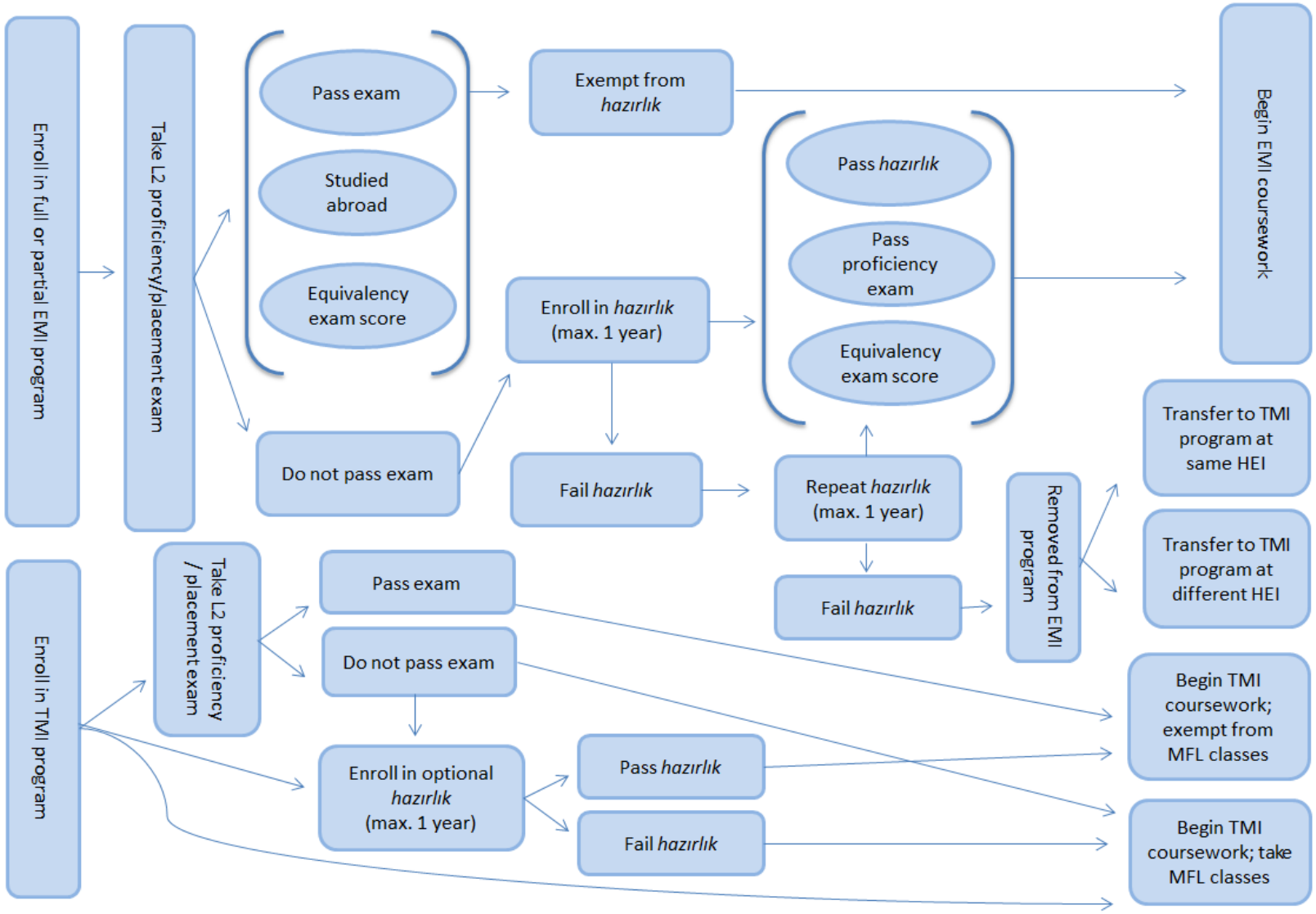


Figure 4.1. Provisions for L2 education in Turkish HE

As Table 4.1 demonstrates, there are four criteria through which teachers and students, respectively, can meet the L2 proficiency requirements for EMI programs. For both groups, these criteria include submitting exam scores or completing a period of study in a country in which the language 'is spoken as a native language' (Section 4.2.1.6). Criteria for teachers also include work experience abroad or speaking the language as a native language. The criteria for speaking the language as a native language is not provided for students, due to a language education law in Turkey which establishes Turkish as the only native language for Turkish citizens (Section 4.2.1.7). Students can also meet the proficiency criteria by passing an exam administered by the HEI or completing the *hazırlık* program, following the process outlined in Figure 4.1.

Table 4.1: Language requirements for teachers and students in EMI programs

EMI students and teachers must meet one of the following L2 proficiency criteria:	
Students	- *Pass proficiency exam:* The student passed the L2 proficiency exam administered by the HEI at the beginning of the academic year. - *Study abroad:* For at least the past three years, the student has studied and completed his/her secondary school education in the target language, in a country where the language is spoken as a native language, at a secondary school that provides education to citizens of that country. - *Exam score:* The student received the minimum points required for passing a foreign language exam administered by ÖSYM, or the equivalent score on an international language exam, as determined by the HEI's senate. - *Pass hazırlık program:* The student successfully completed the *hazırlık* program
Teachers	- *Native language*: The language of instruction is the teacher's native language. - *Study abroad:* The teacher completed his or her undergraduate or doctoral studies in the target language in a country in which this language is spoken as a native language. - *Work abroad:* The teacher worked and taught classes in this language for at least one year (two semesters) within the last two year at an HEI in a country in which this language is an official language. - *Exam score:* The teacher received a score of at least 80 percent on a foreign language exam administered by ÖSYM, or the equivalent score on an international language exam.

While L2 education is mandatory for all university students through the 1983 law on foreign language education (Decision No. 2923), specific standards of L2 proficiency or

requirements with respect to which languages may be taught are not provided in national policy documents. Law No. 29662 outlines the procedures for testing L2 proficiency but does not set a minimum proficiency requirement for L2 MoI programs; instead, minimum proficiency standards are determined by the HEI (Section 4.3.1).

4.2.1.2 The number of EMI programs in Turkey

Both full and partial EMI programs require the approval of YÖK before they can be opened, and universities must prove that they meet the requirements for opening an EMI program in terms of staff qualifications. Despite the formalized nature of this process, the labelling practices of YÖK obscure the total number of EMI programs taught at the undergraduate level.

Each year, YÖK publishes a handbook (*Yükseköğretim Programları ve Kontenjanları Kılavuzu*; hereafter, *kılavuz)* listing every undergraduate program at every public and private university in Turkey. The handbook includes information pertaining to entrance requirements and serves as a guide for prospective university students. In 2018, the handbook was expanded to include an interactive online system known as *YÖK Atlası*. While the *kılavuz* and *YÖK Atlası* include information on every bachelors degree program in the Turkish HE system, neither include an explicit category stating the program's MoI. Full EMI programs are indicated with the word 'English' written in parenthesis next to the name of the program (e.g. Mechanical Engineering(English), *Makine Mühendisliği(İngilizce)*), but there is no feature by which to sort or search programs according to MoI. Partial L2 MoI programs are indicated with a footnote in the *kılavuz* stating that they include a mandatory *hazırlık* component (Figure 4.2). No information concerning partial L2 MoI is included in the *YÖK Atlası* system. While MoI is obscured in the *kılavuz* and *YÖK Atlası*—both of which would be accessed by local Turkish students— YÖK's online university guide for international

students, ‘Study in Turkey’ (http://www.studyinturkey.gov.tr), allows prospective students to filter programs according to MoI.

Because YÖK’s labelling practices obscure the EMI component of partial L2 MoI programs, it is difficult to determine the exact number of EMI programs offered at Turkish universities. A word count search for ‘(English)’ listed as the MoI in the *kılavuz* suggested that there were upwards of 2925 undergraduate programs taught entirely through EMI at Turkish universities in 2017, and a search for the footnote indicating a mandatory *hazırlık* component indicated that there were as many as 4109 undergraduate programs taught at least partially through L2 MoI. By 2019, these numbers had increased slightly, with the same search yielding 2943 undergraduate programs taught through full EMI and 4129 undergraduate programs through at least 30% L2 MoI. However, these numbers are misleading as they over-represent the number of EMI programs at private universities, where the *kılavuz* counts scholarship schemes at private universities as separate programs (e.g. full scholarship, partial scholarship, and no scholarship paths are listed as three separate programs). The footnote search also prevents an accurate count of partial EMI programs, as it does not distinguish between languages or full/partial programs. According to a search of university programs offered through YÖK’s website for international students, ‘Study in Turkey’, there were 1196 full EMI programs and 423 partial EMI programs at the undergraduate level in 2019. Of the full EMI programs, 704 (58.9%) were listed at private universities and 492 (41.1%) at public universities. The website lists 6226 TMI undergraduate programs. However, the ‘Study in Turkey’ website likely underestimates the number of EMI programs, as not every undergraduate program appears listed in its system.

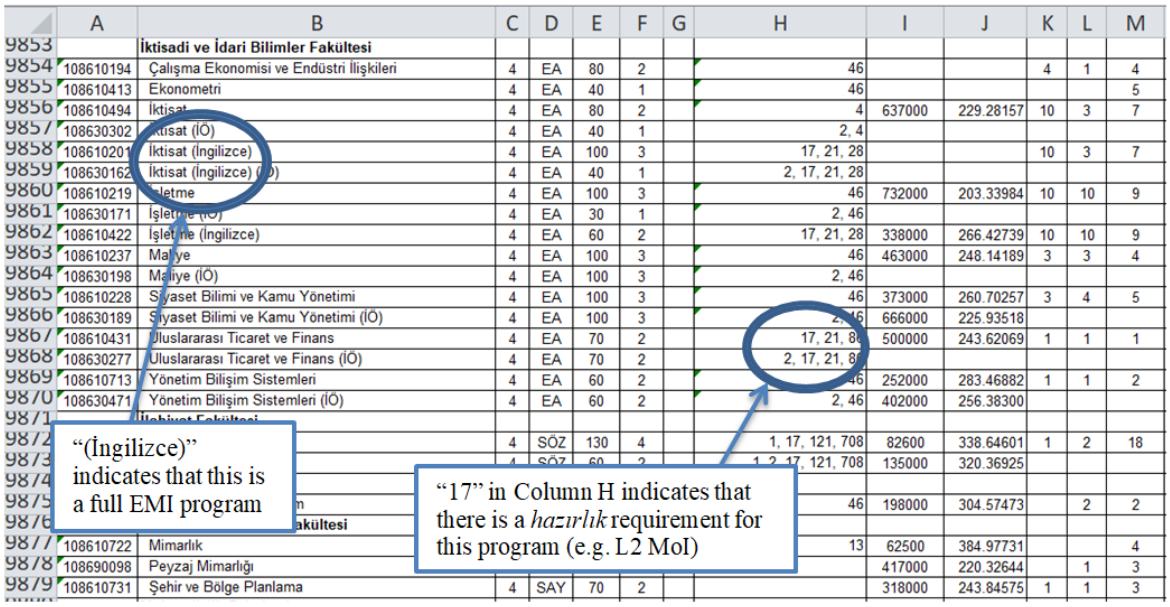


Figure 4.2. Annotated screenshot from kılavuz (2019-2020)

While neither of these sources provides conclusive statistics regarding the number of full and partial EMI programs, there is a clear distinction in YÖK's presentation of MoI information for domestic and international students, with information concerning MoI more readily available to international students (Section 4.2.6). The implications of not presenting MoI prominently in resources for domestic students are discussed in Chapter 6 with data from student focus groups, in which some students stated that they were unaware that their program included EMI courses until *after* they had enrolled to the program.

4.2.1.3 Aims & Purposes of EMI

Article 5 of Law No. 29662 outlines the aims of foreign language education and education in a foreign language in Turkish HE. According to the document, "the aim of instruction in a foreign language is to ensure that graduates of associate[3], undergraduate, and graduate degree programs gain foreign language competences related to their fields" (Article 5, Law No. 29662). EMI instruction, therefore, has explicit language learning aims which are tied to the students' area of study (Section 4.2.2). This specific focus on language

[3] Two-year degree programs (*önlisans*)

competencies with respect to academic discipline for instruction *in* the L2 is in contrast to the aims of L2 instruction (e.g. MFL classes):

> the aim of foreign language instruction is to teach students the basic rules of the foreign language they are taking, develop their foreign language vocabulary, ensure that they are able to understand what they read and hear in the foreign language, and ensure that they are able to express themselves orally and in writing. (Article 5, Law No. 29662)

The aims of EFL classes, therefore, are more closely related to general English competencies rather than academic skills. This statement pertaining to the aims of MFL instruction is nearly identical to the statement of aims in previous policy documents, including a verbatim statement in the 2008 document (Law No. 27074). However, the statement on the aims of L2 MoI is a new addition to the regulations in 2016; previous versions of the directive did not specify the aims of EMI.

Although the aims of L2 MoI are stated in the current policy document, the directive provides no provisions for *how* students are to develop foreign language competency with respect to their academic discipline through EMI. The only clause in Law No. 29662 pertaining to language use for teaching and learning in EMI courses states: "In programs in which classes are given in a particular foreign language, exams must be conducted in this foreign language, and homework and dissertations must be written in this foreign language" (Article 6, Clause 14). The clause stipulates that assessment should be conducted in the L2, but it does not specify guidelines for lectures or class discussions. Although developing language competency is an aim of EMI study, policy directives do not outline practices for language learning *through* EMI courses, after the *hazırlık* program has been completed.

4.2.1.4 Admission to EMI programs

The process for university entrance in Turkey is controlled by ÖSYM, the central examination body. Prospective students are required to take the university entrance exam (*Yükseköğretim Kurumları Sınavı,* YKS), which is typically done during the final year of

secondary school. The exam consists of two parts and is offered in multiple specialties (*puan türü*), pertaining to the academic discipline the student intends to study at university. Based on their exam scores, students are placed to university programs through the ÖSYM system. The process of undergraduate admission to public HEIs is thus centrally controlled by ÖSYM through this process of allocation.

The university entrance exam does not include a foreign language section, unless students are applying to a program whose academic content is related to languages, such as literature, translation, or foreign language teaching. For language programs, a 'Foreign Language Test' (*Yabancı Dil Testi)*, contributing to a 'language point type' (*DİL puan türü*), is administered in the second part of the exam. However, the foreign language test and a 'language point type' are not required for EMI programs in non-linguistic fields, such as the engineering departments included in this study. Students are accepted to undergraduate programs based on their *subject knowledge:* language proficiency is not a criterion for admission, except for departments in which the academic content is related to the target language and culture.

As such, there is no language requirement for acceptance to EMI programs. National policy appears to assume that students lacking L2 proficiency will develop language skills through *hazırlık,* after they have been admitted to EMI programs. In other words, HEIs are tasked with teaching students L2 skills for EMI; students are not expected to enter university with them. In this way, English proficiency is not a gatekeeper to university entry, including admission to EMI programs, but the *hazırlık* program serves as a gatekeeper to EMI departmental studies.

4.2.1.5 Invisibility of English

Although I have used the term 'EMI' throughout this chapter, the word '*English'* is rarely mentioned in the policy documents. *English* and *EMI* are absent from Law No. 29662,

which instead refers to teaching a *foreign language* or teaching *in a foreign language.* Similarly, English is absent from the Higher Education Law of 1981 (Decision No. 2547). Although Article 5 of the Higher Education Law makes foreign language courses a requirement in HE, it does not specify which foreign languages should be taught. Turkish is the only language named in Law No. 29662 and Decision No. 2547.

While Turkish is the only language named in the current regulations, other languages were mentioned in previous versions of the directive, including English. In these instances, English was mentioned: (1) alongside French and German, and (2) in the context of international language proficiency exams. Thus, when English was *not* made invisible in the policy documents, it was positioned alongside other foreign (Western European) languages and used to establish proficiency standards with respect to countries in which it was 'spoken as a native language.' According to Article 5 of the former, 2008 directive (Law No. 27074), students were exempt from university language requirements if they had completed their secondary education "in a country where English, French or German are spoken as a native language" (Article 5(3)(a)) or passed a foreign language proficiency exam "which is conducted with the intended aim of determining the minimum foreign language proficiency level needed for foreigners to study at higher education institutes in a country where English, French, or German are spoken as a native language" (Article 5(3)(b)).[4] Similar specifications were made in the 1996 directive (Law No. 22598) regarding proficiency exams for EMI teachers. Article 11(2) of the 1996 directive stated that lecturers could present "a proficiency certificate that is recognized at an international standard (such as TOEFL, IELTS, Cambridge) issued by a German, American, French, or English Cultural Center or similar institution." The clause listed multiple countries, alphabetically in Turkish, but provided examples of acceptable certificates only for English language proficiency exams.

[4] Three tests are mentioned as examples of acceptable exams (TOEFL for English; the *Diplôme Approfondi de Langue Française* (DALF) for French; and the *Prüfung für die Nachweis Deutscher Sprache* (PNDS) for German).

Thus, in policy directives prior to 2016, English was placed alongside French and German as a foreign language through which classes could be taught in Turkey. The English language also appeared tied to American and 'English' culture in the policy discourse. References to English (along with French and German) have been omitted in the current, 2016 policy directive, making English (and other languages) invisible in current MoI policies. The deletion of these named languages could be seen as an opportunity to expand the scope of acceptable foreign languages in the Turkish HE system; however, given that English is the most common language in the HE system, the omission of English from current policy directives appears to conflate 'English' with 'foreign language,' thus masking the *Englishization* of HE.

4.2.1.6 Native-speakerism in EMI policy

Elements of native-speaker ideology can be found throughout the policy documents, particularly with respect to standards for language proficiency. As discussed in the previous section, earlier policy directives established proficiency requirements for English, German, and French as the minimum exam scores required in countries where those languages are 'spoken as a native language.' Similar references to countries in which the language is 'spoken as a native language' appear in the current policy directive with respect to the proficiency standards of both teachers and students (e.g Article 8 of Law No. 29662), although the directive provides no definition of what it means to speak a language 'natively,' nor is a list of 'native-speaking' countries offered. Further, the concept of 'native' is complicated in Law No. 29662 with the introduction of 'official language' as a seemingly lesser but distinct category from 'native language.' Clause c of Article 8(7) states that a teacher may lecture in a foreign language if he or she has taught at an HEI "in a country where the language is accepted as the official language." Here, 'official language' is used in contrast to 'native language,' which appears in the proceeding clause. Framed as it is in the

directive, the category of ‘official language’ appears less prestigious than ‘native language,’ because an ‘official language’ must be accepted and recognized by YÖK whereas a ‘native language’ appears self-evident, needing no external validation.

Similar elements of native-speakerism can be observed in the language proficiency requirements for students: Article 6(3)(a) of the 2016 directive states that students are exempt from *hazırlık* if they completed their secondary schooling in a country where the language is spoken as a native language. By including the concept of ‘native,’ the criterion disqualifies students who completed their secondary schooling through EMI in Turkey; these students would have to pass the HEI’s L2 proficiency exam in order to be exempt from the *hazırlık* program. Here, policy discourse ties together the concepts of native language and citizenship—a theme that is evident in the role of Turkish in language policy documents.

4.2.1.7 Turkish in EMI policy documents

As mentioned earlier in this chapter, Turkish is the only language mentioned by name in Law No. 29662. With respect to the positioning of Turkish in EMI policy documents, elements of native-speaker ideology and national identity are evident in policy discourse. Article 3 of the Constitution establishes Turkish as the official language of Turkey: “The Turkish State, with its territory and nation, is an indivisible entity. Its language is Turkish.” Similarly, the Higher Education Law (Decision No. 2547) links national identity and language by invoking the principles of Kemalism (the teaching of Ataturk), and the 1983 law on foreign language teaching (Decision No. 2923) forbids the teaching of certain subjects through a language other than Turkish (Section 4.2.2). The 1983 law (Decision No. 2923) also distinguishes between foreign languages (*yabancı diller)* and ‘different languages’ (*farklı diller),* with the latter referring to language other than Turkish spoken in Turkey.

With respect to language proficiency criteria for teachers and students in EMI programs, Law No. 29662 states that teachers are qualified to teach through a language other

than Turkish if that language is their native language. A 'native-speaker' exemption clause is not included for students, an omission which serves to reinforce the position of Turkish as *the* language of Turkey. This idea is codified in the 1983 law on language education, which asserts that "no language other than Turkish can be taught to or studied by Turkish citizens as a native language" (Article 2(a), Decision No. 2923). Thus, Turkish is positioned as the only 'native' language of Turkish citizens.

The role of Turkish in the HE system was asserted in previous MoI policy documents. Article 10 of the 1996 directive (Law No. 22598) included a clear statement of the role of Turkish in HE: "The language of instruction at higher education institutions in Turkey is Turkish." The article then stated that, with certain permissions, L2 MoI programs could be established. Article 7(2) of the 2008 directive (No. 27074) softened this discourse but continued to assert the role of Turkish in HE: "Notwithstanding that Turkish is generally the language of instruction at higher education institutions, some elective courses can be partially or entirely studied in a foreign language." A statement concerning the language of HE in Turkey does not appear in the current policy directives.

4.2.2 Academic Disciplines (AD)

This section addresses the second dimension of the ROAD-MAPPING framework: academic discipline (AD). From its analysis, this section concludes that L2 learning is largely framed as separate and distinct from AD content learning in EMI policy documents.

References to AD in national policy documents are limited, in part because the directives address HE broadly: the same policies regulate EMI for the Natural Sciences, Social Sciences, and Humanities. References to AD are therefore generic, referring to students' academic field (*alan*), subject (*konu*), or vocation (*meslek).* The current policy directive, Law No. 29662, references AD as a policy aim of L2 MoI, stating that graduates should have "foreign language competences related to their fields" (Article 5). Discipline-

specific policy aims also appeared in the 1996 policy directive, which stated that students should be able to "understand texts on their own subjects" (Law No. 22598, Article 4).

The 2016 policy directive distinguishes between the aims of learning English and learning *in* English (Section 4.2.1.3). However, Law No. 29662 does not provide learning outcomes for the *hazırlık* program. The aim of *hazırlık* is to prepare students for EMI classes, but the types of L2 competencies required for EMI study and the kind of English that should be taught in *hazırlık* (e.g. EAP, ESP, general English, etc.) are not stated in the directive. Also absent is a description of the relationship between *hazırlık* and the academic discipline.

In the provisions for establishing the *hazırlık* program, the directive makes no reference to AD: it does not, for example, state that *hazırlık* students should be separated by department or that the *hazırlık* curriculum should be prepared in consideration with the language needs of the AD. Thus, *hazırlık,* in its implementation, is not necessarily AD-specific. As such, the relationship between the type of language skills taught in *hazırlık* and those needed in the EMI department is unclear. Moreover, although Article 8 of Law No. 29662 states twice (in Clause 2 and Clause 8) that discipline-specific L2 courses (*mesleki yabancı dil dersleri;* e.g. ESP classes) can be offered to TMI students, the directive does not mention discipline-specific L2 courses for EMI students.

In policy discourse, foreign languages are often framed as ADs rather than an integrated component of ADs taught *through* a foreign language. An evaluation of L2 MoI programs listed in the *kılavuz* and on the 'Study in Turkey' website suggests that, when the MoI is a language *other than English*, the L2 used is either directly related to the area of study or the HEI at which the program is offered. Programs offered through an L2 *other than English* are often language or literature programs, such as Russian literature, French language teaching, or German translation. Arabic is offered as a MoI for theology programs, in which Arabic language skills are necessary for Quranic study. As language is an essential

component of the academic content in these programs, they can be described as 'soft' L2 MoI programs (Macaro, 2018; Ball, Kelly, & Clegg, 2015). Few 'hard' L2 MoI programs—in which the academic subject material is *not* related to the language itself—are offered through a language other than English, unless they are offered by HEIs with ties to foreign countries. For example, Galatasaray University is a French MoI HEI, with historical ties to France, and the Turkish-German University in Istanbul, which offers a selection of German MoI and EMI programs, is the product of a bilateral agreement between the Turkish and German governments. Other than these two HEIs, few 'hard' L2 MoI programs are offered in a language other than English at either public or private HEIs in Turkey. Exceptions include a history program taught through Arabic at Mardin University, a public administration program taught in French and a business program taught in German at Marmara University, or a few dual-degree programs with connections to HEIs in France or Germany offered at other universities. In contrast, the number of full and partial 'hard' undergraduate EMI programs exceeds 1000 (Section 4.2.1.2).

The relationship between MoI and AD is also expressed in policies limiting L2 MoI. The 1983 law on foreign language education in Turkey (Decision No. 2923) forbids certain subjects from being taught in a foreign language at the primary and secondary school level. According to Article 2(b) of the law, subjects related to the history of the Turkish Republic, Turkish language and literature, social sciences, theology, and ethics cannot be taught or learned through a language other than Turkish. Although restrictions on teaching these subjects through L2 MoI do not apply at the tertiary level, they reinforce discourses of national identity related to language and education, particularly for ADs concerning society and culture.

In sum, the teaching of content through an L2 other than English is largely limited to ADs related to that language and culture. National policies provide provisions for language

learning in *hazırlık* and MFL classes but not through EMI courses, which reinforces a distinction between language learning and ('hard') content learning, despite policy aims for L2 development in EMI programs.

4.2.3 Management (M)

This section addresses the third dimension of the ROAD-MAPPING framework: language management (M). National policy documents primarily *manage* language education through L2 proficiency assessment and the *hazırlık* program, rather than describe academic study in EMI classrooms. YÖK has the authority to audit and terminate EMI programs, in which case the MoI would be changed to Turkish and students would have the option of transferring to an equivalent EMI program through ÖSYM. Although Law No. 29662 gives YÖK the authority to audit EMI programs, the regulations do not specify how or through what processes YÖK is to monitor EMI programs. Within an HEI, the university senate has the authority to establish EMI programs and criteria for language learing. The university senate establishes the *hazırlık* program and the conditions according to which L2 proficieny exams are conducted.

The L2 proficiency requirements for students in EMI programs have been examined through the RO dimension of the ROAD-MAPPING framework (Section 4.2.1.1). When considered from the perspective of management (M), the regulations define the structures by which and through which student language proficiency is ensured in EMI programs. Article 6 of Law No. 29662 states that a language proficiency test arranged by the HEI will be given at the beginning of the academic year to students registering for the first time to full or partial EMI programs; the regulations thus specify by whom, to whom, and when an exam should be administered. However, the regulations do not provide additional guidelines concerning a minimum L2 proficiency threshold for EMI, nor do they include provisions for continuous language support after students are enrolled in EMI programs.

Instead, language management in L2 MoI programs is largely focused on *hazırlık* education. National policy mandates the creation of a *hazırlık* program for universities offering full or partial L2 MoI programs (Law No. 29662, Article 8; Decision No. 2547, Article 49). However, the directives offer no guidelines for teaching and learning *after hazırlık,* in L2 MoI departmental classes. Law No. 29662 includes only one clause pertaining directly to teaching and learning in EMI contexts: Clause 14 of Article 8 states that assessment should be conducted in the L2 (Section 4.2.1). The rest of the document pertains to language proficiency requirements, conditions of the *hazırlık* program, and transferring between programs. Thus, language management in L2 MoI policy documents primarily concerns procedures for assessing proficiency, but not processes of teaching and learning (Section 4.2.5).

National policy does not provide incentives for EMI teaching with respect to workload or additional compensation for lecturers. According to Article 36 of Higher Education Law, Decision No. 2547, academic staff members are required to teach a minimum of 10 hours per week during term time, and teaching fellows or instructors (who are less senior in rank) are required to teach at least 12 hours per week. Although teaching requirements can be reduced in accordance with other professional obligations, such as administrative duties or thesis supervision, reductions in teaching load are not offered for EMI courses, nor are financial incentives offered for EMI lecturers.

4.2.4 Agents (A)

This section addresses the fourth dimension of the ROAD-MAPPING framework: agents (A). In this section, I argue that macro-level actors are framed as key decision-makers, while micro-level actors (e.g. teachers and students) are given less agency in decision-making processes for EMI programs. Table 4.2 summarized the actors referenced in the 2016 EMI policy directive, Law No. 29662, and the context in which each actor is referenced.

Table 4.2: Actors and agency in L2 MoI policy directive, Law No. 29662

Actor in policy document	**Actions and responsibilities**
Foreign language instructors	- Teach in the *hazırlık* program
Higher education institution	- Arrange L2 placement or proficiency exam - Set additional conditions for hiring EMI lecturers, e.g. higher exam score requirements or demo lessons - Determine the credit hours for the *hazırlık* program
Lecturers	- Give lessons in the L2 - Meet L2 proficiency requirements
ÖSYM	- Transfer EMI students who do not meet L2 proficiency requirements to TMI programs - Transfer EMI students whose EMI programs have been shut down by YÖK to EMI programs at other universities
Students	- Register to TMI, full EMI, or partial EMI programs - Take L2 proficiency exam (or meet exemption criteria) - Take *hazırlık* course, if necessary
University senate	- Decide whether to issue L2 placement/proficiency exam as one exam or separate exams - Decide whether EMI and TMI students take the same L2 proficiency exam - Decide whether to offer L2 MoI programs - Establish *hazırlık* program, or arrange agreement with *hazırlık* offered at another university - Decide whether to establish an optional *hazırlık* program for TMI students - Specify the exam points required from international L2 proficiency exams
YÖK	- Decide which international exams are accepted and set equivalence scores with central (domestic) exams - Determine how long exam scores are valid, unless already specified by the testing company - Approve HEI senate decisions to offer L2 MoI programs - Approve HEI senate decisions to establish *hazırlık* programs - Determine number of lecturers required for graduate and undergraduate programs and the criteria for teaching positions - Appoint L2 instructors to teach in the *hazırlık* program - Oversee the quality of instruction in L2 MoI programs - Revoke right to teach through L2 MoI if quality of instruction is insufficient

As can be seen from Table 4.2, the primary agents mentioned in Law No. 29662 are the HEI senates, rectorates, and YÖK. Key decisions concerning EMI policy are made by these three actors, including the decision to open an EMI program, while content and language teachers are absent from MoI decision-making processes. For example, arranging

an L2 proficiency exam is the legal responsibility of the university rectorate, not language instructors. EMI department lecturers are also absent from the L2 proficiency assessment process, despite their role as key stakeholders in understanding students' needs for EMI study. While the university senate might consult with or delegate responsibility to content and language instructors—as was the case for the HEIs in this study[5]—there is no standard concerning how, to what extent, or in what capacity EMI content lecturers and L2 language instructors are included in EMI policy decisions. Further, while decisions concerning the L2 proficiency exam and *hazırlık* program are determined by the HEIs, this is an *institutional* decision, not a departmental one. As such, the standards determined by the HEI might not be tailored to a specific program or AD.

Teaching staff and students have a lack of agency in official EMI policymaking: rather than *making* decisions, they follow the regulations set by the HEIs and YÖK. When students are referenced in Law No. 29662, their agency is manifested in the rights they have to certain educational provisions or the requirements they must fulfill. Departmental lecturers and language instructors are mentioned less often than students in the EMI policy directive, with the latter of these two actors mentioned only once in Law No. 29662. For both content and language teachers, they appear in Law No. 29662 with reference to the criteria for opening an L2 MoI or *hazırlık* program, respectively. While teachers and students are not granted explicit avenues by which to shape EMI policy, they exercise agency as policy implementers in the classroom, as will be seen in Chapters 5. The following section describes policy regulations for the practices and processes (PP) of teaching and learning in EMI classrooms.

[5] At each of the HEI (n=7) included in this study, responsibilities for preparing the L2 proficiency exam were delegate to language instructors working in the *hazırlık* program.

4.2.5 Practices and Processes (PP)

The PP dimension of the ROAD-MAPPING framework refers to 'ways of doing' and 'ways of thinking' in EMI programs. It includes activities related to teaching and learning in EMI classrooms. Because the analysis in this chapter is limited to explicit EMI policies in official policy documents, this section describes the PP of EMI education envisioned by national policy; findings related to classroom practices are presented in Chapter 5.

Overall, regulations concerning PP were largely absent from national policy documents, which provided few guidelines for teaching academic content in L2 MoI classrooms. Law No. 29662 includes only one provision that pertains directly to teaching and learning in EMI classrooms. Clause 14 of Article 8 states that exams, homework, and dissertation should be written in the L2 (Section 4.2.1). Similar versions of this clause exist in previous directives, with the 2008 directive using almost identical language and the 1996 regulations specifying only dissertations in post-graduate programs (e.g. omitting homework and exams). While Clause 14 provides guidance in terms of which language should be used for EMI assessment, the regulations do not describe the language(s) that should be used in the classroom. Article 8(7) of the 2016 directive suggests that national policy might envision an implicit one-language-at-a-time form of instruction; the clause states: "Classes that are given in a foreign language in higher education institutions will be given in this language by a lecturer who has command of the language." Here, EMI is described as lecturing in English. As no additional regulations are provided with respect to language practices in EMI classes, the assumption appears to be that classes will be conducted *only* in this language. Further, partial EMI programs are defined with respect to course credits, with "at least 30% of the total credits of the classes for these programs" given through L2 MoI (Law No. 29662, Article 4(1)(b)). In quantifying language use with respect to course credits, the directive appears to imply that each class should be conducted in (only) one language.

Processes described in Law No. 29662 related to (1) establishing foreign language proficiency (Figure 4.1), (2) opening an L2 MoI program, and (3) transferring students to another undergraduate program. These processes concern the administrative structures regulating EMI programs, but they do not inform classroom practices for teaching and learning, and they do not describe processes that occur *after* students begin their EMI classes, e.g. after they have passed the *hazırlık* program. As such, national policy documents describe the *management* of language education through administrative processes and procedures (Section 4.2.3), but the directives do not offer guidelines for teaching and learning through a foreign language.

4.2.6 Internationalization and localization (ING)

This section examines national-level EMI policy through the final dimension of the ROAD-MAPPING framework: internationalization and localization (ING).

References to internationalization are largely absent from national policy documents. Law No. 29662 makes no reference to international students, nor do previous iterations of the regulations concerning L2 MoI. Instead, the regulations are primarily (although implicitly) directed at domestic students. This orientation toward domestic students is evident in policy discourses of citizenship and 'native' language (Section 4.2.1.7). With respect to citizenship, Article 3 of Law No. 29662 links L2 MoI regulations to Decision No. 2923, which governs language education for *Turkish citizens* and states that Turkish is the native language of Turkish citizens (Article 2). The assumption that Turkish is the 'native' language of students enrolled in HEIs is evident in Article 8, Clause 15 of Law No. 29662, which establishes the procedures by which a student who fails to meet the L2 proficiency requirements is transferred to a TMI program in a related field. The assumptions here appear to be that Turkish is the default language of HE and TMI poses no linguistic barrier to study.

An orientation toward domestic students in national HE policy is reinforced in the university admissions process, which is controlled centrally by YÖK in coordination with ÖSYM. These central governing bodies determine the allocation of students to university programs and set quotas for both domestic and international students at public universities (e.g., Law No. 27561; *2018 Yurt Dışından Kabul Edilecek Öğrenci Kontenjanları*). Thus, public HEIs, such as those included in this study, have little control over undergraduate admissions, limiting the potential of EMI as a recruitment tool for international students.

The admissions process for international students follows a separate set of procedures, also overseen by YÖK and ÖSYM. While universities have some autonomy in terms of establishing application requirements for international students, YÖK sets a quota on the number of international students that can be admitted to each program at every state university (e.g. *2018 Yurt Dışından Kabul Edilecek Öğrenci Kontenjanları*). Furthermore, YÖK limits the number of state scholarships (*devlet bursları*) that can be awarded to international students enrolled to L2 MoI programs. The aim of the state scholarship program is to place international students in TMI programs, and only 5% of scholarships awarded at the undergraduate level can be for study through L2 MoI (Section A, Article 7; YÖK, 2011, *Türkiye Cumheriyeti Tarafından Verilen Yükseköğretim Bursları ile ilgili Yönerge*). The scholarship scheme includes explicit Turkish language learning aims, and funds are allocated for international students to study Turkish. Thus, EMI is not necessarily a central component of national-level schemes to attract international students.

Although internationalization is not explicitly referenced in Law No. 29662, a connection between internationalization and the aims of EMI may be implied in Article 5, which states that the purpose of EMI is "to ensure that graduates… gain foreign language competences related to their fields," the implication being that graduates, in their professional lives, may need to communicate with international colleagues who do not speak Turkish.

When internationalization appears (explicitly) in higher education policy discourse, it is often removed from language learning. For example, internationalization appears in texts produced by YÖK related to the Bologna Process and integration into the European higher education system. It should be noted that these documents are not policy documents but rather promotional materials prepared for university stakeholders, lecturers, and students (e.g. *Yükseköğretimde Yeniden Yapılanma: 66 Soruda Bologna Süreci Uygulamaları*). In these texts, language learning outcomes are described according to the standards of the European Higher Education Area. However, statements regarding EMI for purposes of internationalization in HE are absent from policy documents and other texts produced by YÖK.

4.2.7 Summary of national-level policies

At the national level, EMI policy is shaped by central government actors (A), which issue regulations governing HEIs across the country (M). National policies are primarily concerned with regulating L2 proficiency and learning through the *hazırlık* program (RO). However, the regulations provide little direction or guidance for EMI implementation in departmental courses (M). While there is no proficiency requirement for admission to EMI programs, students who do not meet the L2 proficiency requirements of their HEIs are enrolled in *hazırlık*, a year-long intensive English language program designed to prepare students for EMI study (RO). As such, content and language learning are treated separately in EMI policy documents, with language learning delegated to the *hazırlık* program rather than integrated into EMI departments (AD).

National policy provides provisions to support L2 learning through the *hazırlık* program, prior to EMI coursework, but does not provide additional language support mechanisms for staff and students *after* they have met the minimum threshold of L2 proficiency required for EMI programs. In other words, national policies do not appear to

support L2 learning *through* EMI but rather support L2 learning *prior* to EMI. In this way, there is a tension between policy aims (e.g. L2 learning *through* EMI) and the mechanisms in place for EMI education (e.g. L2 learning *before* EMI).

4.3 ROAD-MAPPING analysis of institutional EMI policies

This section explores the institutional-level EMI policies of the HEIs (n=7) included in this study. Institutional policies are analyzed and compared using the six dimensions of the ROAD-MAPPING framework. This section addresses RQ1b, '*How are the dimensions of the ROAD-MAPPING framework enacted in institutional EMI policy?'* and RQ1c, *'How do EMI policies vary across universities?'*

4.3.1 Role of English (RO)

This section discusses the role of English in relation to other languages at the HEIs included in this study. Table 4.3 provides an overview of the types of MoI programs offered at each HEI. The table indicates whether *at least one* undergraduate program was offered for each MoI during the 2017-2018 academic year.

Table 4.3: Medium of instruction types offered at HEIs (for 2017-2018 academic year)

HEI	**TMI**	**EMI**		**Other L2 MoI**	
		Full	*Partial*	*Full*	*Partial*
Small-1	X	X			
Small-2	X	X	X		
Elite-1		X			
Elite-2		X			
Large-1	X	X	X		X
Large-2	X	X	X		X
Large-3	X	X	X		X

At the elite universities, education was offered exclusively through EMI for programs at the undergraduate and graduate levels; Turkish was not used as a MoI. While the elite universities taught entirely through EMI, the other HEIs offered education in a combination of EMI and TMI programs. At Small-1 and Small-2, full and partial EMI programs were

offered for various engineering programs. Small-1 offered engineering programs through full EMI, while Small-2 offered both full and partial EMI programs in Mechanical Engineering and several other partial EMI programs in its engineering faculty. Large-1 and Large-3 offered a number of engineering programs with an EMI component. For many engineering programs at Large-3, parallel programs were offered in full and partial EMI. The majority of EMI programs offered at Large-1 and Large-3 were in the engineering faculty, although a few EMI programs were offered in other disciplines (Section 4.3.2) Of the universities included in this study, Large-2 offered the fewest options in terms of EMI programs across faculties, with EMI courses available only for programs related to biology and environmental engineering.

The large universities also offered programs taught partially through a MoI other than Turkish or English. These programs were 'soft' L2 MoI programs, as the academic subject area was related to the language of instruction (Section 4.3.2).

In conjunction with its EMI programs, each university had a *hazırlık* program, housed in the School of Foreign Languages (SFL), a separate unit of the HEI. SFLs were typically divided into two units, with one administering the *hazırlık* program and the other responsible for MFL classes. While each university had a *hazırlık* program, the size and scope of the program varied according to the proportion of EMI programs offered on campus. For example, at Large-2, approximately 5.5% of undergraduate students received *hazırlık* education (Large-2, Annual Activity Report); this percentage is small in comparison to the elite universities, at which every undergraduate student was required to pass the *hazırlık* program or meet its exemption criteria. Table 4.4 summarizes the languages taught through the *hazırlık* programs and as MFL courses at each HEI.

At the elite and small universities, the *hazırlık* program was only offered in English, while the large universities offered *hazirlik* programs corresponding with other MoIs used at

the HEI (see Table 4.6). Although Large-2 offered a theology program taught partially through Arabic MoI, an Arabic-language *hazırlık* program was not listed on the SFL website. In terms of MFL courses, French and German appeared to be the most commonly offered languages, and Elite-1 and Elite-2 offered the widest selection of MFL courses. Languages other than English did not appear to be taught regularly at Small-1 and Small-2.

Table 4.4: Languages offered at the School of Foreign Languages

HEI	**Languages taught in *hazırlık***	**MFL courses offered**
Small-1	English	English
Small-2	English	English
Elite-1	English	Armenian, English, French, German, Greek, Italian, Korean, Portuguese, Russian, Spanish
Elite-2	English	Arabic, French, German, Greek, Italian, Japanese, Russian, Spanish
Large-1	English, German, French, Arabic	English, German, French, Arabic
Large-2	English, Japanese	English, German, French, Arabic
Large-3	English, German, French, Arabic, Russian	English, German, French, Arabic, Russian

Although multiple languages were offered in the SFLs, English courses dominated the information available on SFL websites and information guides. For example, the mission statement of Large-3's SFL stated that it aimed to "contribute to students' acquisition and development of the… skills necessary to be able to follow the teaching and learning activities in departments where the language of instruction is partially English" (Large-3, SFL website). The mission statement specified aims for English learning but omitted other languages (e.g. Russian, German, French, Arabic) for which *hazırlık* education was offered.

The proficiency standards for EMI courses, including passing or gaining exemption from *hazırlık*, are determined by HEIs in Turkey. At each HEI, an internal English proficiency exam was prepared and administered by the SFL and equivalency scores were set by the HEI for external exams. Table 4.5 compares the proficiency standards for enrollment in EMI programs at each HEI.

The point conversions between exams presented in Table 4.5 were reported by the HEIs, often in conjunction with the equivalency scores provided by ÖSYM. Evaluating the validity of these conversions or the quality of the internal exam is beyond the scope of this study. Generally, the HEIs appeared to require proficiency scores for EMI study corresponding to about a B2 level of proficiency on the CEFR.

Table 4.5: Language proficiency standards at each HEI

HEI	Internal exam	TOEFL IBT	Academic IELTS	PTE Academic	YDS/YÖKDİL
Small-1	70	75	n/a	n/a	n/a
Small-2	70	78	n/a	67	65
Elite-1	60	79	6.5	n/a	n/a
Elite-2	60	75	6.0	55	n/a
Large-1	70	72	n/a	55	60
Large-2	70 (full EMI); 60 (partial EMI)	84 (full EMI); 72 (partial EMI)	n/a	71 (full EMI); 55 (partial EMI)	70 (full EMI); 60 (partial EMI)
Large-3	60	79	6.5	58	n/a

Large-2 set separate proficiency standards for its full and partial EMI programs, requiring a higher passing score from students enrolled in full compared to partial EMI programs. While Large-2 was the only HEI in the sample to require higher L2 proficiency from students enrolled in full EMI programs, Large-1 required a higher passing score from students enrolled in its ELT department compared to other EMI programs. (Table 4.5 reports the standards for students enrolled in an EMI department other than ELT at Large-1.)

Despite the proficiency standards indicated in Table 4.5, many of the institutional documents indicated concerns about students' L2 English proficiency. One of the strategic aims listed in the Annual Activity Report of Elite-1 was to "develop students' command of the English language," including by developing "an atmosphere in which English can be used outside of the classroom throughout undergraduate education." While Elite-1's Strategic Plan—which was prepared by university administrative staff—included strategies to improve the *hazırlık* program, it did not include strategies to support teachers and students engaged in

EMI classes or to provide language support to administrative staff and non-academic personnel. Elite-2 also identified English learning as an area for improvement, stating in its Strategic Plan: "Even though education is given in English, the foreign language proficiency of graduates is not as advanced as the level targeted." To improve the academic writing and speaking skills of students, Elite-2 called for "better communication between the SFL & departments to identify students' academic English needs" (Elite-2, Strategic Plan). However, the mechanisms by which coordination might occur were not identified in the report.

Large-1 also listed among its weaknesses a "lack of opportunities for foreign language learning presented at the university" (Large-1, Strategic Plan). In contrast, Small-1, Small-2, and Large-3, stated in their strategic documents that they provided high quality foreign language education. Both Small-1 and Small-2 stated that their *hazırlık* programs provided effective English education and boasted of the number of foreign instructors working in their SFLs (Small-1, Annual Activity Report; Small-2, Annual Activity Report), thereby appearing to connect international staff with high quality language teaching.

4.3.2 Academic Disciplines (AD)

This section compares the ADs for which EMI programs are offered at each HEI. Table 4.6 provides an overview of the MoI used for different ADs at each HEI.

Table 4.6: Academic disciplines taught through L2 MoI (for 2017-2018 academic year)

HEI	TMI	Full EMI	Partial EMI	Other partial L2 MoI
Small-1	-Business -Architecture -Engineering	-Business -Architecture -Engineering		
Small-2	-Engineering -Social Sciences	-Engineering	-Engineering	
Elite-1		-Education -Arts and Sciences -Engineering -Business & Public		

		Administration		
Elite-2		-Education -Arts and Sciences -Engineering -Business & Public Administration		
Large-1	-Agriculture -Business & Public Administration -Communication -Education -Engineering -Arts and Sciences -Law -Medical & Health Sciences	-International Relations	-Archeology -Chemistry -Psychology -Engineering -Veterinary Sciences -English language teaching	-Language teaching (German, French) -Theology (Arabic)
Large-2	-Agriculture -Business & Public Administration -Communication -Education -Engineering -Arts and Sciences -Medical & Health Sciences -Social Sciences	-Biology -Engineering	-Biology -English language teaching	-Language teaching (Japanese) -Theology (Arabic)
Large-3	-Business & Public Administration -Communication -Education -Fine Arts -Law -Literature -Medical & Health Sciences -Natural Sciences -Technology -Tourism	-Business -International Relations -Medicine -Engineering	-Architecture -Engineering -English language teaching	-Literature (French, Russian) -Language teaching (German, French, Arabic) -Theology (Arabic)

The HEIs in this study were selected because they offer EMI engineering programs. At the large universities, many faculties did not offer EMI programs; rather, EMI tended to be offered for select programs within departments or faculties that otherwise taught through

TMI. The engineering faculty at Large-3 did not offer TMI courses, making it the only large university in the sample not to offer a TMI program within its engineering faculty.

Across HEIs, engineering, business, and international relations appear to be commonly taught through EMI. Programs taught through an L2 other than English were offered for ADs related to that language or culture. At each of the large universities, a theology program was offered partially through Arabic (e.g. for Quranic studies), and students were required to complete an Arabic language *hazırlık* program before commencing their departmental classes. Language teaching and literature programs for language other than English (e.g. German, French, Russian, and Japanese) were also offered at the large universities. These programs—along with ELT programs at the large universities—were taught partially through the L2 in which they specialized, meaning that students received some of their tuition in Turkish rather than the target language.

An examination of the engineering department websites for the HEIs included in this study revealed that EMI was often framed as advantageous for a career in engineering. The 'Message from the Department Head' on the Mechanical Engineering Department's website at Small-2 promoted its dual-degree program by emphasizing the importance of EMI study for a successful career:

> It has become exceptionally important in the competitive work life of our times that our graduates earn a prestigious diploma that is accepted in Europe and America. To this end, a joint degree program [with a university in America] has been opened. The English-medium program begins with the *hazırlık* program.… We recommend that our youth prefer [through the university application process] this prestigious program in order to plan for a good career. (Small-2, Department website)

The RO and ING dimensions of the ROAD-MAPPING framework are invoked in this statement to underscore the EMI department's assertion that English and an internationally recognized degree are necessary for mechanical engineers. In this statement, the importance of EMI for mechanical engineering as an AD is connected to discourses of a globalized

economy. Similarly, the Engineering Faculty of Elite-1 *"deliver[s] programs with the aim of training youth who aim for engineering careers at an international level"* (Elite-1, Annual Activity Report). While English is not explicitly mentioned in this statement, the connection between EMI and an international career is implicit, given that Elite-1 is an entirely EMI university. Similar discourses emphasizing the importance of English for engineers were found in interview and focus group data (Chapter 6).

4.3.3 Management (M)

This section addresses language management (M) in HEI policy documents. The analysis primarily drew upon two sources: each HEI's hiring and promotional criteria and their directives for teaching and learning published in the Official Gazette. The directives published in the Official Gazette represented guiding constitutions for each HEI and were approved by the university rectorate before publication. The directives included official language policy statements, which have been translated and quoted in Table 4.7 for a comparison between HEIs.

In general, the language policies consisted of two statements: first, they established the official language of instruction at the university; second, they outlined the conditions under which an additional language may be used as a MoI. Elite-1's policy statement differed from this format in that it established English as the language of instruction but provided no clause for the use of Turkish as a MoI. At Elite-2, the official MoI was also English but 'mandatory courses' could be given in Turkish. The language of instruction at Small-2, Large-1, Large-2, and Large-3 was Turkish. Small-1's policy statement allowed for both English and Turkish to serve as official MoIs and specified that L2 MoI courses were taught through English, unless the courses related to a language other than English.

Table 4.7: Comparison of language policy statements published in the Official Gazette

HEI	**Language policy statement (note: direct quotes, translated by researcher)**
Small-1	The language of instruction at the university is English for programs given in a foreign language and Turkish for other programs; language programs are given in their relevant languages. With the recommendation of the Senate and the approval of the Council of Higher Education, some courses in certain programs can be given in Turkish or another foreign language.
Small-2	The language of instruction at the university is Turkish. However, with the recommendation of the relevant faculty council, the decision of the Senate, and the approval of the Council of Higher Education, programs in which the language of instruction is fully or partially a foreign language may be opened.
Elite-1	The language of instruction at [Elite-1] is English.
Elite-2	The language of instruction in [Elite-2's] undergraduate programs is English. However, mandatory courses can be given in Turkish or another language with the decision of the Senate.
Large-1	The language of instruction at the university is Turkish. However, with the recommendation of the relevant council, the decision of the Senate, and the approval of the Council of Higher Education, programs can be fully or partially conducted in a foreign language.
Large-2	The language of instruction at the university is Turkish. However, according to the provisions of the Regulations Concerning the Principles for Foreign Language Teaching and Teaching in a Foreign Language at Higher Education Institutions published in the Official Gazette, numbered 29662 and dated 23/3/2016, programs for which it is seen as appropriate to teach in a foreign language may be conducted in the relevant foreign language.
Large-3	The language of instruction for classes is Turkish. However, for programs conducted in a foreign language the language of instruction is determined by the Senate.

The directives also established the *hazırlık* program within the SFL. However, additional information concerning language policy was not provided. The language of assessment in EMI courses was mentioned only in the policy directive of Large-1:

> Exams are also given in the foreign language for mandatory and elective classes taught through a foreign language in programs for which the mandatory foreign language *hazırlık* program is applied in accordance with the Regulations Concerning the Principles for Foreign Language Teaching and Teaching in a Foreign Language at Higher Education Institutions. (Large-1, Official Gazette)

No other statements concerning the language of assessment in EMI were found in the policy directives or other institutional documents.

The visibility of official language policy in institutional documents varied across HEIs. Statements indicating that English was the language of instruction at Elite-2 were reproduced in various documents and promotional materials. For example, Elite-2's Strategic Plan stated that "English is the language of instruction at [Elite-2]. English education is given by the School of Foreign Languages." In its introductory brochure, Large-3 also noted that English was used as a MoI in its Engineering Faculty (Large-3, Introductory Catalogue). Language policy statements, however, did not appear in the institutional documents of the other HEIs or in material produced by the departments. The Mechanical Engineering department at Large-1 acknowledged a mandatory *hazırlık* requirement for its undergraduate program but did not explicitly state on its website that courses were taught through EMI.

In addition to the directives published in the Official Gazette, HEIs regulated language policy through their hiring and promotion criteria, which were approved by the HEI Senate and published on YÖK's website. Table 4.8 summarizes the language requirements for hiring and promotion at each HEI.

Elite-1 and Elite-2 specify English, as opposed to any foreign language, in their proficiency requirements. Large-3 has codified national requirements for EMI teaching (Section 4.2.1.1) in its hiring and promotion criteria, presumably as a means of ensuring that its teaching staff can support its EMI departments. Small-2 has codified the exemption criteria from national policy (e.g. living or working abroad) into its institutional policies, although it has not replicated the minimum exam scores required for EMI teaching as Large-3 has done.

Table 4.8: Language Requirements for Hiring and Promotion

HEI	L2 proficiency requirements	Method for assessing L2 proficiency
Small-1	- Applicants must give a seminar in English - For tenure and professorship in EMI departments, min. 80 points on an English exam approved by YÖK.	- Seminar in English - National exam
Small-2	- For assistant professorship: min. 55 points on a foreign language exam approved by YÖK (except if the applicant speaks the foreign language natively or has studied/worked in a country where the language is spoken natively)	- National exam
Elite-1	- A 'language jury' evaluates demo lecture - A language exam is administered during the application process	- Demo lecture in English - In-house language exam
Elite-2	- Applicants must give a seminar in English - Applications must meet English exam requirements	- Seminar in English - National exam score or in-house language exam
Large-1	- For tenured positions: min. 65 points on a foreign language exam approved by YÖK	- National exam score
Large-2	- For assistant professor: a language exam consisting of a 150-200 word translation to/from Turkish and a foreign language is administered	- In-house language assessment
Large-3	- For tenure and professorship: min. 80 points on a foreign language exam approved by YÖK. For EMI departments, the foreign language must be English. As supporting criteria, applicants need min. 65 points on a foreign language exam approved by YÖK for an additional foreign language. - For assistant professor: min. 65 points on a foreign language exam approved by YÖK. For EMI departments, min. 80 points required and the foreign language must be English.	- National exam

In addition to the criteria described in Table 4.8, criteria for promotion at the HEIs implicitly favored English (or L2) proficiency through point systems that privileged international publications and conference presentations over their national (or L1) counterparts. In some cases, the implicit connection between 'international' and 'English'

was made explicit in the point system, such as in Small-2's criteria for "scientific, technical, or course text books published in a foreign language by an international publishing house" (Small-2**,** Appointment Criteria). According to Small-2's criteria, such publications 'in a foreign language' were worth three times as many points as equivalent publications in Turkish. Both the RO and ING dimensions of the ROAD-MAPPING framework are invoked in language management policies that require or reward L2 proficiency and international professional activity.

4.3.4 Agents (A)

As described in Section 4.2.4, a number of agents were identified in national-level EMI policy documents, with decision-making processes tending to involve macro-level organizations (e.g. YÖK, ÖSYM, the HEI senate) rather than micro-level actors (e.g. teachers and students). By analyzing institutional documents and departmental resources, this section explores the agents involved in EMI programs and compares the responsibilities of these agents across HEIs. Table 4.9 presents demographic information from each HEI, including the number of teachers and students in each department.

Table 4.9: Students and staff at HEIs in study (2017-2018 academic year)

HEI	Number of undergraduate students enrolled to HEI	Engineering departments included in study	Number of teaching staff in Department	Number of students enrolled in Department
Small-1	< 3,000	Civil	< 10	200 – 250
		Industrial	< 10	100 – 150
Small-2	< 3,000	Mechanical	10 – 20	250 – 300
Elite-1	10,000 – 20,000	Mechanical	10 – 20	400 – 450
Elite-2	10,000 – 20,000	Mechanical	40 – 50	1,000+
Large-1	40,000+	Mechanical	30 – 40	850 – 900
		Industrial	10 – 20	450 – 500
Large-2	40,000+	Environmental	< 10	250 – 300
Large-3	40,000+	Mechanical	20 – 30	750 – 800
		Electrical	10 – 20	550 – 600

Small-1 and Small-2 each had less than 3,000 undergraduates students enrolled during the time of data collection, and the engineering departments at these universities were also the smallest in the sample. The Mechanical Engineering department at Elite-2 was the largest in terms of both student enrollment and teaching staff. The teaching staff numbers reported in Table 4.9 do not include teaching assistants or research assistants but only staff members with full qualifications including a doctoral degree.

The organizational structure of HEIs in Turkey is defined by national policy, Higher Education Law, Decision No. 2547. As such, there was little variation in the organizational structure of each HEI. Large-2 summarized its organization structure as follows: "[Large-2's] administration and organization is determined by the directives of Decision No. 2547. The administrative organs of the university are the Rector, the Assistant Rectors, the University Senate, and the University Administrative Council" (Large-2, Strategic Plan). Since HEIs were bound by national policies in terms of organization and leadership, the key decision makers across HEIs were those listed in Decision No. 2547.

Among these key institutional actors, the rector of the HEI is "appointed by the President of the Turkish Republic and selected from three candidates who have held the title of professor for at least three years and are recommended by the Council of Higher Education" (Large-2, Annual Activity Report). The Senate consists of representative chosen from each academic unit, and the University Administrative Council consists of three professors chosen by the senate.

While the actors named above are responsible for decisions concerning the HEI as a whole, individual academic units are governed by deans (faculty heads), department heads, and directors. Deans are recommended by the rector and appointed by YÖK for three-year terms. Department heads are chosen from among the teaching staff in their respective units, with priority given to the highest ranking members (e.g. staff holding the title of professor),

and the approval of the rector. Deans are responsible for coordinating among departments within the faculty and have additional responsibilities such as budgeting and hiring. The department head is responsible for tasks related to teaching and learning in the department, including arranging the curriculum and course schedule. Furthermore, in many departments included in this study, committees consisting of content lecturers were formed to coordinate academic and administrative issues, such as the academic program, exams, Erasmus, and student internships. Language specialists were not found on any of the committees at the department- or faculty-level. Student representation also appeared to be absent from these committees. Elite-1 had an English Education Policy Commission, formed at the institutional level, although the activities and scope of the commission were undefined on the HEI's website and in policy documents.

Decision making with respect to admissions, hiring, and budgetary matters were largely controlled by YÖK, meaning that HEIs had limited flexibility in terms of establishing institutional policies. Elite-2 stated in its Strategic Plan that it would like to hire more international teaching staff members but was hindered by national regulations:

> It is important that state universities like [Elite-2] with many international research and collaboration projects, a large number of international students, and at which the language of instruction is a foreign language employ international teaching staff. There are no problems in recruiting these staff positions. However, the provisions for International Teaching Personnel need to be revised. A report has been presented to YÖK concerning this matter. (Elite-2, Annual Activity Report)

The statement above regarding YÖK's role in the hiring process suggests that a tension exists between the aims of the HEI and national regulations. Similarly, Large-2 noted in its Strategic Plan that it was limited in supporting international projects due to budgetary constraints set by YÖK (Large-2, Strategic Plan). The tension between institutional and national policymakers can be summarized by the following statement from Large-1's Strategic Plan: "New legal regulations should be made by the government and YÖK to ensure

that universities are able to differentiate themselves." The statement suggests that HEIs have limited agency in developing institutional identities or policy agendas due to national oversight. Nonetheless, decisions made at the departmental level shape the practices and procedures of EMI education, as illustrated in the following section.

4.3.5 Practices and Processes (PP)

This section examines the practices and process (PP) of EMI programs by examining course curricula, including the arrangement of EMI classes in partial EMI programs and the inclusion of additional English courses to supplement the *hazırlık* program. As stated in the previous section with respect to Agents (A), the department head is responsible for arranging the academic program. Thus, partial EMI departments have a degree of autonomy in determining which courses will be taught through EMI and how these courses will be distributed throughout the students' four years of study. Table 4.10 summarizes the arrangement of EMI and additional English courses in the EMI programs included in this study. The findings presented in Table 4.10 were collected from department websites, course catalogues, and other documents prepared by the department.

The EMI component of the Mechanical Engineering program at Large-1 appeared 'frontloaded' in that courses were arranged such that students took the majority of their EMI classes during the first two years of the program. The EMI courses required for the program were foundational courses in math and science (e.g. calculus, physics), which served as prerequisites for engineering classes (e.g. thermodynamics, heat transfer, hydraulics), the majority of which were taught through TMI. The only EMI courses required in the program after students had completed their foundational classes were related to project management and laboratory work.

Table 4.10: Arrangement of courses in EMI programs (for the 2017-2018 academic year)

HEI	Engineering departments included in study	Full or Partial	Arrangement of EMI courses	Additional English courses
Small-1	Civil	Full	Full	0
	Industrial	Full	Full	2
Small-2	Mechanical	Partial	Throughout	2
Elite-1	Mechanical	Full	Full	0
Elite-2	Mechanical	Full	Full	3
Large-1	Mechanical	Partial	Frontloaded	2
	Industrial	Partial	Throughout	3
Large-2	Environmental	Full	Full	2
Large-3	Mechanical	Both	Throughout	4
	Electrical	Partial	Throughout	4

Although located in the same faculty as the Mechanical Engineering program, the Industrial Engineering program at Large-1 distributed EMI classes evenly throughout the students' four years of study. In the Industrial Engineering program, students took approximately 2-3 EMI courses per semester, including core engineering classes. Evident from the example of these two partial EMI programs at Large-1, the arrangement of EMI classes within partial EMI programs was determined at the departmental level, suggesting that departmental lecturers had agency (A) in shaping the implementation of EMI programs. Because department lecturers decided the MoI of each course, students enrolled to partial EMI programs did not have a choice in selecting which classes would be taught through EMI or TMI, although they had some flexibility in choosing the MoI of their elective courses.

In addition to determining *which* classes would be taught through EMI, departments with partial EMI programs also decided *how many* classes would taught through EMI. For example, the partial EMI program in the Electrical Engineering Department at Large-1 exceeded the 30% minimum threshold: the department website reported that approximately 80% of courses were delivered through EMI, and students took more than four EMI courses per semester.

Similarly, exceptions to EMI requirements in full EMI programs could be made with respect to the mandatory Turkish language and history courses required by Decision No. 2547. At Large-3, even in its full EMI programs, these required courses were taught in Turkish. The course curricula of other full EMI programs (e.g. Large-2 and Elite-1), however, indicated that these courses—including the Turkish language courses—were taught through EMI.

In terms of additional English courses included in the curriculum, the Mechanical Engineering program at Elite-1 and the Civil Engineering program at Small-1 are the only two EMI programs in the study that did not require additional English courses following the completion of *hazırlık,* according to the curriculum requirements provided on their department websites. Furthermore, at Elite-1, foreign language courses, including academic English courses, were not counted as elective courses for degree credit (Elite-1, Department Website).

For the other EMI programs in this study, students took a minimum of two semesters of English classes during the first year(s) of their program, typically EAP courses. At Large-3, students were required to take English classes during their first four semesters, consisting of two advanced English courses and two academic English courses. For the Mechanical Engineering program at Elite-2 and the Industrial Engineering program at Large-1, three advanced English courses were built into the curriculum, including two EAP courses and one presentation skills course.

Each of the engineering programs included in this study had an internship requirement for students to complete during their final two years of study, including an internship report submitted for course credit. Although internships could be completed abroad, the expectation in each program appeared to be that students would complete their internships at a company located in the same city as the HEI. Thus, even for full EMI programs, it appeared acceptable

for internships to be conducted in Turkish, given linguistic constraints with local industry. The Mechanical Engineering Department at Large-3 stated on its website that the language of the internship and the internship report was Turkish, even for its full EMI program. The full EMI programs at Elite-1, Elite-2, Small-1, and Large-2 required that internship reports be submitted in English, although they did not specify the language in which the internship should be conducted. Small-2 and Large-1 (Mechanical Engineering) stated that reports for internships completed abroad must be in English, suggesting that reports for internships completed locally could be done in Turkish.

4.3.6 Internationalization and localization (ING)

This section begins by presenting descriptive statistics on the number of international staff and students in each department. It then summarizes discourses on internationalization found in institutional and departmental documents. In doing so, the analysis focuses on discourses connecting EMI and internationalization.

Of the engineering departments included in this study, only two employed full-time international staff members during the 2017-2018 academic year: the Civil Engineering department at Small-1 and the Mechanical Engineering department at Elite-2 each employed one international lecturer. Full-time international students were enrolled to every department, with the Mechanical Engineering departments at Large-1 (n=53) and Elite-2 (n=49) enrolling the most international students; these were also the two largest departments included in the study. At six of the departments, the number of full-time international students enrolled was less than 10 (Small-1, Civil; Small-1, Industrial; Small-2; Elite-1; Large-2; Large-3, Mechanical).

Each of the HEIs included in this study was integrated into the European Higher Education Area through the Bologna Process, and each HEI offered Erasmus exchange programs for staff and students. Through the Erasmus program, each department was able to

send or accept exchange students through agreements with HEIs in Europe. While each university participated in the Erasmus scheme, not every department benefited from the exchange in the 2017-2018 academic year. The Mechanical Engineering department at Large-3 sent the most students on exchange (n=9), and the Mechanical Engineering department at Large-1 received the most international exchange students (n=6). Outside of the Erasmus program, none of the EMI programs in this study sent or received exchange students during the 2017-2018 academic year.

The full EMI program at Small-2 included in this study was a dual-degree program through which students completed two years of coursework at the HEI in Turkey and two years at a partner HEI in the U.S. The Mechanical Engineering department at Small-2 was the only department in the sample to offer a dual degree program, although the Engineering Faculty at Large-3 offered a dual degree program for another engineering department.

Although themes of internationalization appeared, to various degrees, in the mission and vision statements of each HEI and their respective EMI departments, EMI rarely appeared alongside discourses of internationalization in institutional policy documents. Only Large-2 cited EMI as strategy for attracting more international students (Large-2, Annual Activity Report). Otherwise, internationalization was described in terms of mobility and international rankings, particularly in the institutional documents of Elite-1, Elite-2, and Large-3. EMI was not mentioned with respect to student mobility or university ranking. Large-1's Strategic Plan stated that one of the HEI's aims was to increase the number of publications in international journals; however, language (e.g. English as a language of publication) was not mentioned. Similarly, Small-1 and Small-2 listed increasing the number of international staff and students as strategic aims but did not reference EMI.

When English was mentioned within strategies for internationalization, it was often framed as a language of communication. In their Strategic Plans, Elite-2, Large-2, and Large-

3 set the aim of maintaining English-language versions of their HEI websites. In Elite-2's Strategic Plan, internationalization was tied to increasing English use on campus by "conducting every form of communication by academic units, administrative units, student clubs, etc., at the university in English" (Elite-2, Strategic Plan). Despite being a full EMI university, Elite-2 had identified lack of communication in English as an obstacle to internationalization.

While internationalization emerged as a strategic aim, the HEIs also asserted local identities in their institutional documents. In its mission statement, Large-3 expressed pride in being a long-established university in Turkey, stating that it strived "to be a respected and leading university on the national and international stage" (Large-3, Annual Activity Report). The juxtaposition of global and local was common in the institutional policy documents. Large-1 emphasized its ties to local industry, which it described as important for graduates entering the job market (Large-1, Strategic Plan). Although many of the local companies with which it works are international firms, Large-1 did not emphasize industry collaboration on a global scale. Rather, Large-1 emphasized ties with local firms. Furthermore, Large-1 and Small-2 identified their biggest competitors as local universities in the same city or region, against whom they were competing for high quality students and staff (Large-1, Strategic Plan; Small-2 Strategic Plan). As such, local identities and aims were evident alongside discourses of internationalization.

4.3.7 Summary of institutional policies

Institutional policies established an official language for the HEI, along with standards of L2 proficiency for EMI programs and the hiring of academic staff. At HEIs, the EMI department and the SFL were distinct academic units, thus separating content and language learning (AD). Content and language lecturers were removed from formal policy making processes related to EMI (M). Even at the institutional level, policy was largely

determined by macro-level actors including national governmental agencies (A), which regulated and provided oversight of institutional-level decisions (M). However, EMI departments had influence in shaping their EMI curricula (PP), especially in partial EMI programs, in which departmental lecturers (or at least department heads) could determine which classes and how many classes were offered through EMI. Furthermore, departments could require additional English classes as a means of ongoing language support to students (RO). If additional English classes were offered, the decision to include these courses in the curriculum was made by department lecturers (A), not mandated by national or institutional policy (M).

The HEIs included in this study varied in the *amount* of EMI offered on campus (RO) and which subjects were offered through EMI (AD). Both elite universities were full EMI institutions, at which every program was taught through EMI. Thus, every student enrolled to the university was engaged in EMI coursework, and every member of the teaching staff was expected to lecture through EMI. In contrast, the other HEIs in the sample are not full EMI institutions. At the large universities, the majority of faculties appeared to teach through TMI. Small-1 and Small-2 primarily taught technical subjects related to engineering, for which programs were offered in EMI and TMI.

The HEIs determined their own L2 proficiency requirements for students enrolled to EMI programs. However, there did not seem to be great variation in the standards set by HEIs, with each requiring about a B2 level of proficiency according to the CEFR. In their hiring criteria, only Elite-1, Elite-2, and Small-2 required an oral 'examination' of prospective academic staff's L2 proficiency in the form of a demo lecture or seminar.

While English was the official (and only) language of instruction at Elite-1 and Elite-2, both elite universities identified low student proficiency as a weakness in their institutional documents. In both cases, they identified strategies to support the *hazırlık* program and

encourage English use outside of class. Among the HEIs in the sample, only Elite-2's strategic documents suggested strategies to encourage collaboration between language specialists and content teachers. In general, institutional policies did not provide mechanisms to support the language needs of teachers and students enrolled in EMI content classes.

Across HEIs and within HEIs, EMI departments varied in their arrangement of EMI program curricula. The Electrical Engineering department at Large-3 offered the majority of its classes through EMI, exceeding the 30% minimum threshold for partial EMI programs. The Mechanical Engineering department at the same university conducted its internship and mandatory Turkish language and history courses in Turkish, even for its full EMI program. The full EMI program at Large-2's Environmental Engineering department, however, taught its mandatory Turkish language and history courses through EMI. The Mechanical Engineering department at Large-1 arranged its EMI curriculum such that students took foundational math and science classes through EMI and their engineering courses through TMI, while the Industrial Engineering department at the same university distributed EMI classes (relatively) evenly throughout the students' four years of study. Thus, EMI (and TMI) classes were integrated into the curricula of undergraduate engineering programs in various ways (PP).

4.4 Summary of findings

Key themes from the findings presented in this chapter are summarized in Table 4.11. Overall, EMI policy at both the national and institutional level was found to be primarily concerned with L2 learning through the *hazırlık* system, which was administered by the SFL as a prerequisite for EMI programs. Thus, support for L2 learning occured *prior* to EMI coursework, but official policy did not provide measures for L2 learning *after* students—and teaching staff—had met the L2 proficiency requirements and were *engaged* in EMI coursework. National policy also did not provide guidelines for teaching and learning in EMI

classes, other than to specify that classes should be taught in the target language by lecturers with command of that language. At the departmental level, EMI department heads could include additional English classes in the curriculum. However, the degree to which these courses were integrated or aligned with content teaching was unclear. Language instructors were employed by the SFL, a separate unit from EMI departments. Policy did not provide avenues for collaboration between content and language specialists, nor did such practices appear common at the HEIs. Only Elite-2 identified activities related to collaboration between language and content instructors in its strategic documents. As such, content and language learning were not found to be integrated in EMI policy.

Table 4.11: Summary of ROAD-MAPPING analysis

Dimension	**Summary**
RO	Although English was the most commonly used L2 MoI across HEIs, it was made invisible in policy documents, which refer to *foreign language* education.
AD	Content and language learning were separated in EMI policy. For languages *other than English* used as L2 MoIs, the academic content was typically related to the L2.
M	National policy managed EMI through regulations concerning language learning: it mandated the *hazırlık* program and outlined L2 proficiency criteria. HEIs also managed language in EMI by establishing L2 proficiency exam requirements for students and through their hiring and promotion criteria for lecturers.
A	Marco-level actors determined policies related to language management (M), while micro-level actors had influence over the practices and processes (PP) in EMI programs.
PP	Content lecturers had flexibility in shaping EMI programs at the departmental level.
ING	In both national and institutional policy documents, EMI did not appear to be a key component of internationalization strategies.

It was difficult to determine the exact number of EMI programs offered at the undergraduate level in Turkey, particularly the number of partial EMI programs. The EMI classes and *hazırlık* requirements of (partial) EMI programs were hidden in national documents, including in the *kılavuz* handbook used by students applying to university. A program's language of instruction was often not stated in institutional or departmental

documents. The implication of this is that students may enroll to (partial) EMI programs without realizing their programs include EMI classes or a mandatory *hazırlık* requirement.

Although it was made invisible in policy documents, English was the most commonly taught foreign language and the most commonly used L2 MoI across HEIs. Foreign language coursework was required by law for all undergraduate students, and the *hazırlık* system was mandated by national law. Nonetheless, national policy documents did not mention English by name, instead referring to *foreign language* teaching and teaching in a *foreign language.*

National and institutional policy documents did not appear to frame EMI as a strategy for internationalization. With the exception of Large-2, the HEIs did not describe EMI as a tool for attracting international students and staff. In part, this was likely due to national policies for admissions and hiring at state universities, which limited the ability of HEIs to recruit international staff and students.

In terms of agency, macro-level actors such as YÖK, ÖSYM, and HEI senates controlled decision-making processes with respect to language management—in other words, formal EMI policy was determined centrally. However, department-level actors shaped the practices and processes (PP) of EMI programs by determining the course content and curriculum. The agency of content lecturers in shaping EMI practices is explored further in Chapter 5.

Chapter 5: Findings II: Languages use in EMI classrooms

5.1 How are languages used in university-level EMI engineering classes in Turkey?

This chapter addresses RQ2 and its sub-questions:

RQ2: *How are languages used in university-level EMI engineering classes in Turkey?*

RQ2a: *What functions do languages serve in EMI classrooms?*

RQ2b: *How do the functions of these languages vary across EMI classrooms?*

RQ2c: *What functions does codeswitching have in EMI classrooms?*

In addressing this research question, data collected through classroom observations were audio-recorded, transcribed, and analyzed using a structured coding scheme. The findings presented in this chapter first focus on classroom language use, teacher and student talk, codeswitching patterns, and language functions in order to describe patterns of language practices in and across EMI university-level engineering classes. Building on these findings, variations of EMI implementation are presented in the second half of this chapter.

The findings in this section are presented based on two types of analyses from the classroom observation data: (1) average time proportion per lesson and (2) frequency counts across the entire dataset. The data were collected in naturalistic settings from seven different universities and 10 engineering departments comprising five branches of engineering: mechanical (n=5), industrial (n=2), electrical (n=1), civil (n=1), and environmental engineering (n=1).

As each department has its own policies concerning the scheduling of classes, there was a large degree of variation in terms of the **total time** observed for each teacher's lessons. For each teacher, two 'blocks' of lessons were observed; however, some teachers' classes were scheduled as multiple-hour blocks (e.g. a 3-hour class) while others were scheduled as single-hour sessions. Additionally, the **length of each observation** varied greatly between teachers:

the standard practice was for teachers to break their 'blocks' down into 1-hour segments, with approximately 45-50 minutes dedicated to teaching (what is referred to in this chapter as a lesson) and a 10-15 minute break in between lessons. Thus, the **average class time** for each lesson observed was 47 minutes 44 seconds (M = 47.74, SD = 12.52), although the length of a single lesson varied from 15 minutes 13 seconds to 85 minutes 53 seconds. In the case of the former (the 15-minute lesson), the teacher used this time to prepare students with a brief introductory lecture before taking them to the laboratory. Although I accompanied the class to the laboratory, the background noise of heavy equipment rendered the recording inaudible and I had to discard it from the corpus of classroom observation data, as it could not be transcribed for analysis. The longest lesson (85 minutes) was approximately twice the length of an average lesson because the teacher preferred to lecture continuously without a break and end the class early, accounting for the time that would have been spent as a break (e.g. 45-minute + 45-minute).

To account for this variability in time while analyzing the classroom observation data **with respect to proportion of time** in a lesson, the time distribution of each code was first calculated as a percent of each lesson (e.g. the percent of teacher talk in a lesson). Average percentages were then calculated for the lessons observed for each teacher in order to obtain an overall 'average lesson' for that teacher (e.g. average percent of teacher talk in a lesson for teacher X's lessons), which could then be compared to the average proportion of time per lesson of other teachers' lessons (e.g. compare average percent of teacher talk per lesson for teacher X and teacher Y). The decision was made to treat each lesson as an individual unit for analysis, rather than take the overall proportion found within the total time recorded per teacher, as each lesson consisted of an introduction, middle, and concluding section and could serve as a 'standalone' lesson. Because similar patterns were observed in each of these lessons, such as beginning with a recap of the previous lesson and ending with time for

student questions, it was decided that each lesson should represent its own unit so that an average proportion of coding with respect to time could be taken across lessons.

In total, 85 lessons were observed from 21 lecturers, resulting in an average of four lessons per teacher. For each teacher, a minimum of two lessons (arranged as two ‘blocks’ on separate days) were observed, and the maximum was six. An average of 3 hours 10 minutes 8 seconds was observed per teacher (M = 190.13 minutes, SD = 51.95). The shortest total time observed was 1 hour 46 minutes 34 seconds (106.57 minutes), and the longest time observed was 4 hours 43 minutes 23 seconds (283.38 minutes). The median value was 3 hours 14 minutes 29 seconds (Md = 194.47 minutes). Across the whole sample, the length of the average lesson was 47 minutes 44 seconds (M = 47.74 minutes), with large variation in lesson time (SD = 12.52; Md = 47.31 minutes). Table 5.1 provides an overview of the findings presented in Section 5.1.

Table 5.1: Overview of analyses from structured coding scheme

What was examined?	**How was it analyzed?**	**What does this mean?**	**What does this answer?**
Language use	Average time proportion per lesson	Percent of average time spent in each language in each teacher's lessons	On average, how often is each language used in class?
Speaker	Average time proportion per lesson	Percent of average talk time for each speaker category in each teacher's lessons	On average, who is speaking how much in class?
Language use by speaker	Frequency count across dataset	Number of times each language was used by each speaker	How often do teachers and students use each language?
Codeswitching patterns	Average frequency per lesson	Average number of times codeswitching occurred in each teacher's lessons	How often does codeswitching occur in class?
Codeswitching by language	Frequency count across dataset	Number of times codeswitching occurred for each language category across the entire dataset	For what languages is codeswitching used?
Functions of language use	Average time proportion per lesson	Percentage of time spent on average in each function for each teacher's lessons	What are the most common language functions in class?
Functions by language	Frequency count across dataset	Number of times each function occurred in each language across the entire dataset	For what functions is each language used?
Functions by speaker	Frequency count across dataset	Number of times each function was used by each speaker across the entire dataset	Which functions are most commonly used by each speaker?
Functions of codeswitching	Frequency count across dataset	Number of times codeswitching occurred for each function across the entire dataset	For what functions is codeswitching used?

5.1.1 Languages used

Data were analyzed according to language use in order to understand language preferences in EMI classrooms. The structured coding scheme consisted of six language categories: pause (0), English (L2), English with Turkish lexical items (E-t), inter-sentential codemixing (L1/L2), Turkish with English lexical items (T-e), and Turkish (L1).

The proportion of English used in EMI classrooms varied greatly across classroom contexts. Table 5.2 shows the overall distribution of language use in EMI classrooms

according to the proportion of class time spent in each language[6]. On average, 56.42% of a lesson was conducted in English, although there was great variation across classrooms (*SD* = 32.95). While English accounted for 89.30% of one teacher's average lesson, no English utterances were recorded in two other teacher's classes. This should not be interpreted to mean that English was not used at all in these teachers' lesson, as English technical terminology appeared in the form of intra-sentential codeswitching (language category '*T-e'*) and English appeared in written or visual form to label figures on the board.

Table 5.2: Proportion of language use in EMI classrooms

	Mean (%)	**SD**	**Median value (%)**
Pauses (0)	15.93	8.78	14.94
English (L2)	56.42	32.95	69.57
English with Turkish lexical items (E-t)	0.66	0.71	0.32
Inter- sentential codeswitching (L1/L2)	3.66	2.43	3.25
Turkish with English lexical items (T-e)	8.18	13.67	1.74
Turkish (L1)	15.35	19.55	7.58

English utterances with Turkish terms (E-t) were not frequently found in the data (*M* = 0.66%, *SD* = 0.71). However, the same cannot be said about intra-sentential codeswitching practices in predominantly Turkish speech (T-e), which accounted for an average of 8.18% of a lesson (*SD* = 13.67). While the language category 'T-e' accounted for nearly half (47.65%) of one teacher's average lesson (Teacher 20, Large-3), it did not appear in another teacher's class (Teacher 16, Large-2). These 'T-e' utterances primarily consisted of Turkish sentences with English technical terminology, as in Extract 5.1.1 below:

Extract 5.1.1

T: Buradaki temperature ve şuradaki temperature exactly aynı olmaz, bir taraf daha hızlıysa, yalnız şöyle oluyor. Temperature'lar yani voltajda olduğu gibi nolur, yani akıştada geçerlidir, bir taraf daha conductive iken bir taraf daha az conductive'ysa ısınma çoğu buradan gider, buradan birşey olur, ama gene temperature'ler balance eder. Buradaki assumption'lar.
[The temperature *here and the* temperature *here won't be* exactly *the same, if on one side it's faster, actually it's like this. The* temperatures*, so what happens like it happens to the voltage? So it also happens with the current, if one side is more*

[6] The full versions of all tables presented in Section 5.1 are available in Appendix C.

> conductive *and one side is less* conductive, *most of the heat is lost from here, something happens here, but still the* temperatures *will* balance. *These are the* assumptions *here.]*
>
> *(T-10, Elite-1, Observation 1)*

In Extract 5.1.1, the teacher used English terminology (*temperature, conductive, balance,* etc.) to explain properties of heat transfer in Turkish. English terms, including less technical words such as 'exactly,' were adopted into scientific explanations of class content and incorporated into the grammatical structures of Turkish speech. In Extract 5.1.1, the teacher conjugated the English verb 'balance' as a Turkish loanword ('*balance eder*') and added the Turkish plural ending *(-lar/-ler)* to English terms such 'temperature' and 'assumption.'

Extract 5.1.1 occurs at the end of a lesson at an elite university, when the teacher opens the discussion to student questions before a short break. Particularly in classes that were predominantly Turkish-medium, the use of English terms blended into Turkish explanations was common throughout the lecture. Similar patterns of intra-sentential codeswitching by which Turkish terms were used in English utterances, however, were less common and more limited with respect to linguistic complexity: most commonly, Turkish words were inserted into English utterances when they were used to name mathematical symbols or variables and to provide fillers or question tags (e.g., *yani* – 'so,' *şey* – 'like,' *değil mi* – isn't it). That intrasentential codeswitching largely occurred in one direction (T-e rather than E-t) suggests that, even in Turkish-dominant lectures, English facilitated the discussion of academic content. In interviews with teachers and students, this practice of using English terms in Turkish explanations was described with respect to the role of English as an academic lingua franca (ELFA; Mauranen, 2006) and the limitations of Turkish terminology and resources in engineering; these themes are developed further in Chapter 6, which addresses RQ3 through the analysis of interview and focus group data.

Just as large variation in the proportion of English use was observed in the data, so too was there great variation in Turkish use (L1). On average, 15.35% of a lesson was conducted in Turkish (*SD* = 19.55), ranging from a maximum of 66.22% to a minimum of 0.96% of class time. While this appears to suggest that Turkish was used far less frequently than English, Turkish use (T) often appeared alongside high levels of intra-sentential codeswitching in Turkish (T-e). When an aggregated Turkish language category (L1+T-e) was calculated, the findings suggested that on average approximately one-quarter of a lesson was conducted through Turkish (M = 23.53%, SD = 29.90), although the highest proportion of aggregated Turkish use was 82.12%.

In sum, these results suggest that language use varied greatly in EMI classes. While some EMI lessons were conducted almost entirely in English, others were carried out almost entirely in Turkish with English terminology appearing to discuss scientific topics. When language preferences were examined by university type, a clear pattern could not be observed across or within the large and small universities, although the lessons at elite universities tended to be characterized by high levels of English use and low levels of Turkish use. There also appeared to be less variation in language preference between classes at elite HEIs compared to small or large universities. Figure 5.1 shows the average proportion of English use in each of the 21 lecturers' EMI classes according to university, and Figure 5.2 shows the average proportion of Turkish use (using an aggregated measure that includes instances of intra-sentential codeswitching) found on average in each lecturer's class.

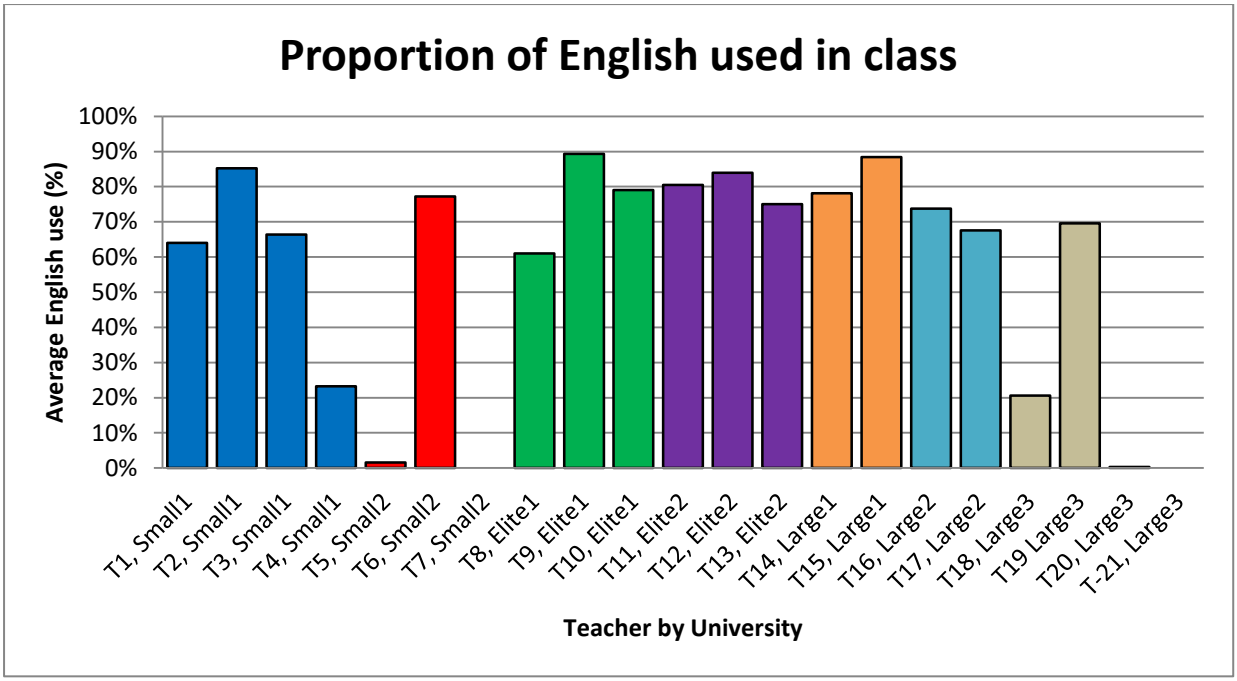


Figure 5.1: How much English is used in EMI classrooms?

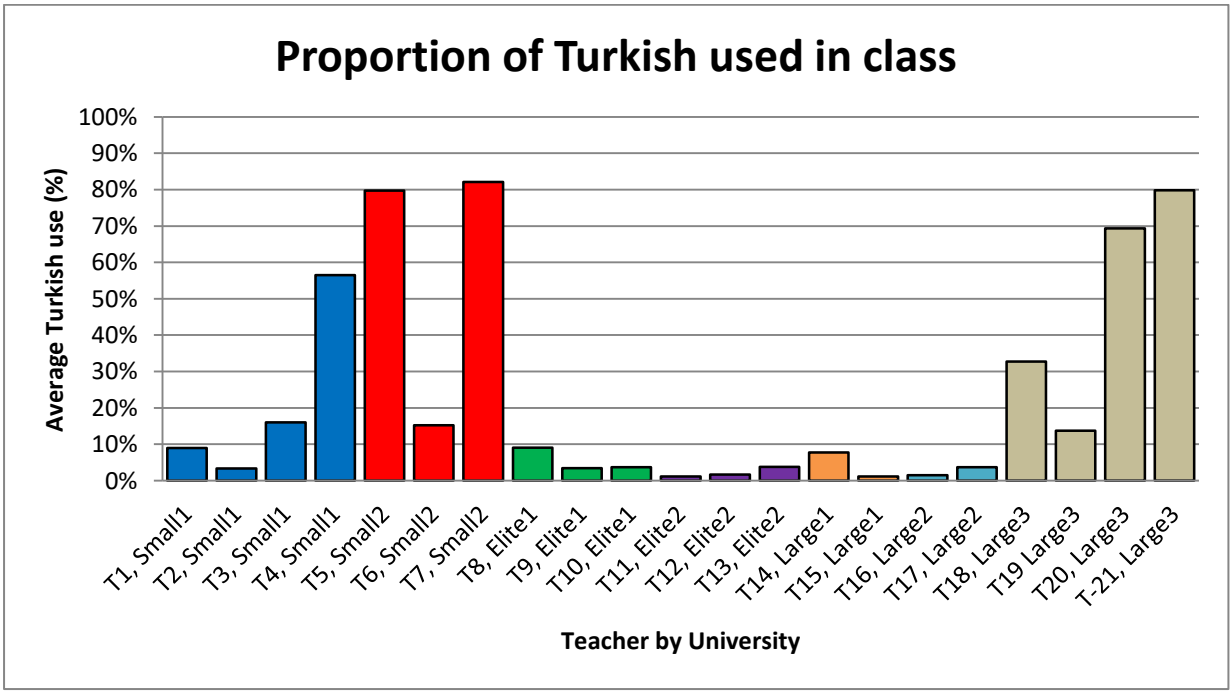


Figure 5.2: How much Turkish is used in EMI classrooms?

Higher levels of Turkish use were observed in some of the EMI lessons at universities Small-1, Small-2, and Large-3, although there appeared to be variation between the EMI classes at each of these universities. The lecturers at elite universities used less Turkish compared to lecturers at other university types. This tendency was confirmed by a Kruskal-

Wallis test, which showed that there was a statistically significant difference in the distribution of Turkish use in EMI classes by university type ($H(2)=6.917$, $p = 0.031$), with a mean rank of 5.83 for elite universities, 11.50 for large universities, and 14.86 for small universities. Pairwise comparisons with adjusted *p*-values showed that there was a significant difference between the proportion of Turkish used in elite and small universities ($p = 0.027$, $r = 0.725$). No other significant differences in language use were found between groups. From this, it appears that EMI classes at elite universities are predominantly conducted through English, although English is not necessarily the primary MoI in EMI classrooms at other universities.

5.1.2 Speaker and teacher-student interaction

Unlike other studies in which classroom interaction was examined through a 5-second sampling technique that coded data either as teacher- or student-talk (e.g. Lo, 2015; Pun & Macaro, 2019), this study captured patterns of classroom interaction by coding larger segments of data and including a separate coding category for teacher-student interaction. The process of data segmentation was presented in Chapter 3. The transcripts of the classroom observation data were segmented according to the categories of the structured coding scheme such that each new line on the transcript represented a new code for at least one of the categories of the coding scheme. The coding category for teacher-student interaction captured teachers and students engaged in dialogic exchange (as opposed to extended utterances by either speaker). In doing so, it intended to measure student participation in class, since short student utterances may have been missed through a time-sampling measurement. Moreover, interaction was considered important because the degree to which students are actively involved in their lessons may have an effect on both content learning and language development (Morton, 2012). A distinct category for teacher-student

interaction also allows me to examine patterns of classroom discourse through questions and responses (Mortimer & Scott, 2003). The findings are summarized in Table 5.3.

Table 5.3: Proportion of classroom talk according to speaker

	Mean (%)	**SD**	**Median value (%)**
Pauses (0)	15.93	8.78	14.94
Student talk (S)	0.81	1.38	0.13
Teacher talk (T)	62.38	17.15	64.17
Teacher-student interaction (T-S)	20.66	11.67	16.04

On average, 15.93% (*SD* = 8.78) of class time was spent on 'pauses,' or periods during which no one was speaking as part of the lecture. The proportion of pauses in the lecture varied from nearly half the lesson (*Max* = 44.14%) to very little of the lesson (*Min* = 3.35%). Student-talk independent from teacher-student interaction accounted for less than one percent of the lessons on average (*M* = 0.81%, *SD* = 1.38), and this was found to be relatively consistent throughout the dataset. The lessons were structured as lectures with few opportunities for pair or group work, which would have contributed to extended student-talk not involving the teacher. Student presentations, summaries, and explanations were uncommon in the EMI engineering lectures, although in one class (Teacher 6, Small-2), students were selected to provide summaries of the previous lesson at the beginning of class. Extract 5.1.2 provides an example of a student summary from this teacher's class:

Extract 5.1.2:

S: Okay. Hi. My name is Yusuf,[7] and I'm gonna recap last week's lesson. Uh. We started to examine the vectors and first of all we, uh we determined the magnitude of the resultant vector uh x [=*TR*] as a thermal, x [=*TR*] and y axis. <writing> For example, we have like this force and uh we have to determine the uh equal--

T: Determine! <corrects pronunciation>

S: Determine. We have to determine the components of this force. Uh. As a form of x *[=TR*] and y axis. And uh how can we uh how we can do this? Uh we specify the, this angle and for example thirty degrees. And uh we <writing> we completed this at the head of the force vector uh. Y and x [=*TR*] axis. And we draw this, and this is F-x [=*TR*]. It is called F-y, and we can, uh we can find out this uh by doing this equation.

(T-6, Small-2, Observation 1)

[7] Pseudonym has been used.

This extract provides an example of extended student-talk in English[8], which occurred in this class because students were asked to present a 'recap' at the start of class. Although the recap provided an opportunity for extended student talk, the teacher interrupted the student's summary to ask questions and provide additional information. Here, in Extract 5.1.2, the teacher interrupted the student's summary to correct his pronunciation of the word 'determine.' He did not, however, comment on the student's pronunciation of the letter 'x' in Turkish, which the student did throughout the summary; the student pronounced all other letters in English.

Teacher-talk accounted for the largest proportion of the EMI lessons (*M* = 62.38%), although there was variation across classrooms (*SD* = 17.15) and teacher-talk was not the category with the largest proportion of coding for two of the teachers' classes. Teacher-student interaction was also found to vary across classrooms (*M* = 20.66%, *SD* = 11.67), ranging from 5-45% of the lesson. As teacher-talk and teacher-student interaction were the two largest speaker categories found in the data, Figures 5.3 and 5.4 highlight the variation with which these codes occurred in the EMI classrooms. Figure 5.3 shows the average time spent on teacher-talk for each teacher's class. As can be seen, teacher talk typically accounted for more than half of the lesson, although it varied across classrooms. Figure 5.4 shows the average proportion of teacher-student interaction in each class.

[8] Note: Multiple lines of transcript coding are combined in the extracts presented in this chapter. For example, in Extract 5.1.2, the teacher's interjection was not included in the segment of data coded as student talk.

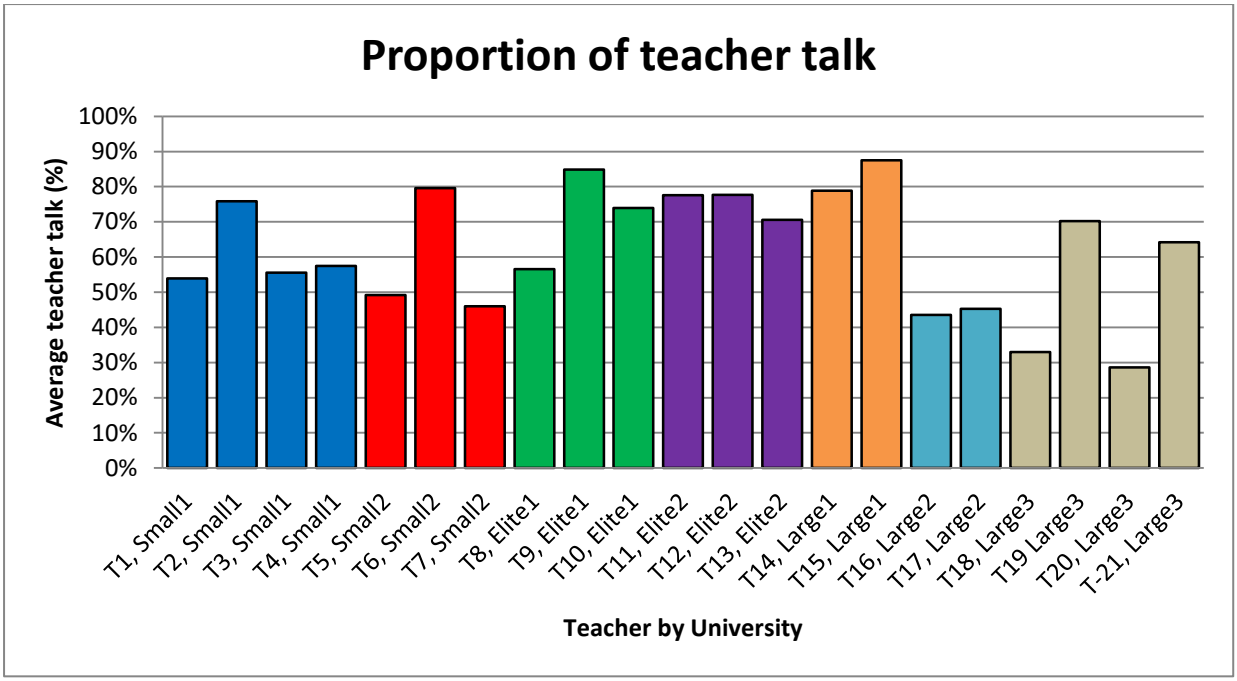


Figure 5.3: How much time is spent on teacher-talk in EMI classrooms?

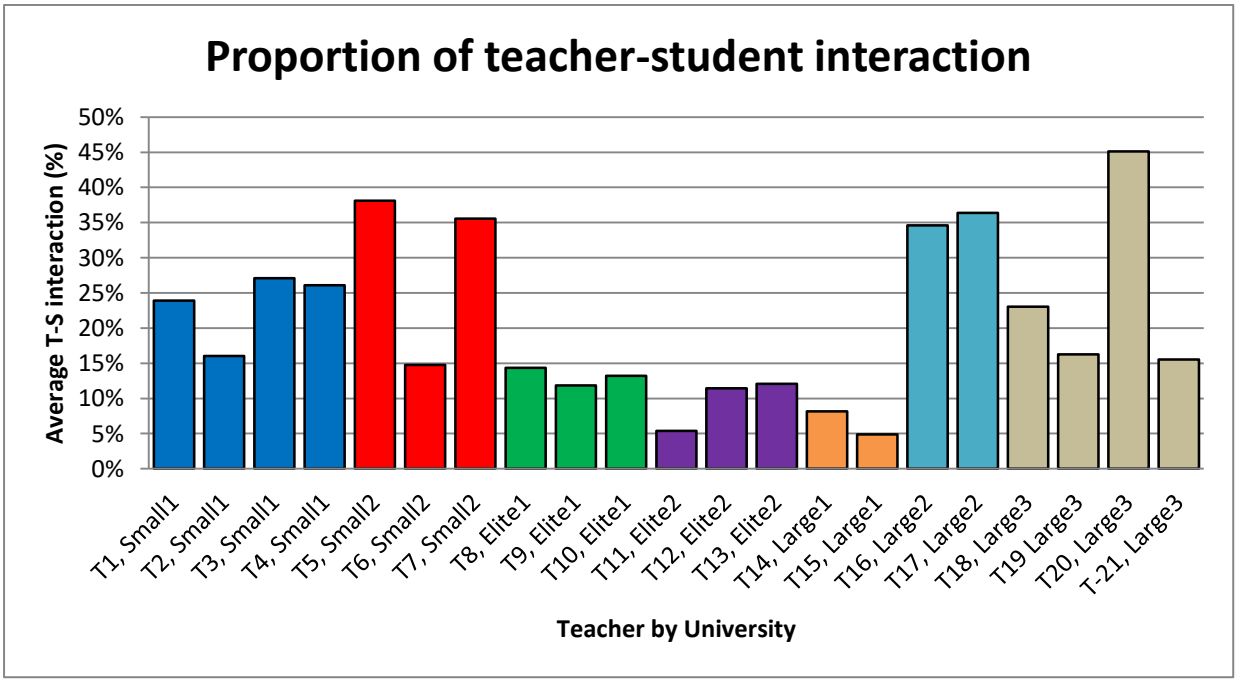


Figure 5.4: How much time is spent on student-teacher interaction in EMI classrooms?

When the proportion of speaker talk time was compared across university types, less teacher-student interaction was found on average in classes at elite universities and at Large-1, compared to other universities in the sample. One of the lectures at Large-1 was a 100+ person lecture hall, making it the largest of the classes observed, which may have contributed to the low levels of teacher-student interaction. A Kruskal-Wallis test showed that there was a

statistically significant difference in the proportion of teacher-student interaction in EMI classes by university type (H(2)=7.720, p = 0.021), with a mean rank of 5.33 for elite universities, 12.00 for large universities, and 14.71 for small universities. Pairwise comparisons with adjusted p-values showed that there was a significant difference between the proportion of teacher-student interaction in elite and small universities (p = 0.020, r = 0.754). No other significant differences were found for speaker categories between university types.

These findings suggest that the majority of EMI classes are teacher-centered lectures with limited opportunities for student participation, which may raise questions about student learning of both content and language. However, relatively high proportions of teacher-student interaction were observed in some EMI lectures, and certain teachers appeared to create opportunities for student participation in their classes, as illustrated in Extract 5.1.2.

5.1.3 Language use by speaker

This section provides an analysis of language use by speaker, or how often each speaker (e.g. speaker category) used each language. Table 5.4 describes the number of utterances by speaker according to language (e.g. number of utterances in English by teachers) for the entire dataset. The findings presented in this section examine the number of utterances (e.g. transcription lines) by each speaker, in each language.

Table 5.4: Language by speaker: frequency of utterances by speaker according to language

	Teacher talk		**Teacher-Student**		**Student talk**	
Language	*f*	*%*	*f*	*%*	*f*	*%*
English (L2)	5669	78.00	883	39.54	31	30.10
English with Turkish lexical items (E-t)	33	0.45	41	1.84	4	3.88
Inter-sentential codeswitching (L1/L2)	98	1.35	381	17.06	8	7.77
Turkish with English lexical items (T-e)	397	5.46	272	12.18	1	0.97
Turkish (L1)	1071	14.74	656	29.38	59	57.28
Total	7268	100	2233	100	103	100

As can be seen from Table 5.4, the majority of teacher-talk occurred in English (L2), accounting for 78% of utterances in the dataset. Turkish (L1) accounted for about 15% of teacher utterances, and Turkish with English lexical items account for just over 5% of teacher utterances.

Looking at teacher-student interaction, no single language code accounted for the majority of utterances: approximately 40% of teacher-student utterances occurred in English (L2), 30% in Turkish (L1), 17% in a mix of Turkish-English characterized by inter-sentential codeswitching (L1/L2), and 12% in Turkish with English lexical items (T-e). Teacher-student interactions rarely consisted of English utterances with Turkish lexical items (E-t), as this language category accounted for less than 2% of all instances of teacher-student interaction. While the largest proportion of teacher-student interaction occurred in English (L2), the contribution of student-talk in these interactions was often limited to short responses consisting of numerical or one-word answers. Comparatively, when teacher-student interaction occurred in Turkish, students often asked more elaborate questions and formulated longer responses. When teacher-student interactions consisted of inter-sentential codeswitching, this typically involved the student speaking Turkish and the teacher responding in English, as in Extract 5.1.3:

Extract 5.1.3:

T: So you will have ten days, enough time to do the homework. You will be using computer aided tools. Solid works and Atoms, for homework three, alright?
S1: Başka bir yazılım kullanabiliyor muyuz? [*Are we able to use another computer program?]*
S2: Kaç tane soru? [*How many questions?]*
S3: Başka bir yazılım— [*Another computer program--]*
T: Hm?
S1: Başka bir— [*Another--]*
S3: Başka bir yazılım kullanabiliyor muyuz? [*Are we able to use another computer program?]*
T: Which one, for example?
S3: [name of CAD software]
T: Huh?
S3: [repeats name of CAD software]

T: I think it should be fine as long as uh you feel comfortable and if the corrections, the uh answer is correct.

(T-9, Elite-1, Observation 2)

Here, the students asked questions related to their homework assignment in Turkish while the teacher responded in English. This extract was taken from a lecture at an elite university (Elite-1) in which the lesson was taught predominantly in English. Interactions consisting of inter-sentential codeswitching were typically characterized in this manner, with teachers speaking English and students responding in Turkish.

Instances of extended student-talk occurred infrequently in the data, with a total of 103 utterances (e.g. transcription lines) coded as student-talk, or an average of 1.2 instances of student talk per lesson. Student-talk tended to occur in Turkish (L1; 57.28%), although 30% of student-talk occurred in English (L2). Thus, although students rarely spoke for extended periods in the classroom, they tended to so in Turkish. Many instances of student-talk in the data occurred when students were speaking to each other, such as during pair work or group to solve a problem.

Taken together, these findings suggest that in the overall dataset teacher-talk tended to occur in English. Turkish use was relatively more common for teacher-student interaction and student-talk than it was for teacher-talk.

5.1.4 Codeswitching patterns

Before presenting patterns of codeswitching behavior found in EMI classrooms, an important note should be made concerning coding conventions: due to the high levels of intra- and inter-sentential codeswitching, particularly in lectures that tended to be Turkish-medium lectures, these patterns of language use were considered as separate language categories (Section 5.1.1). For example, because the practice of using Turkish with English technical terms was observed consistently and for long stretches throughout the lectures, I made the decision to include it as its own language category (T-e) rather than count each

instance of a technical term in English as a codeswitch, since the latter would negate the fluidity with which lecturers shuttled between codes while teaching content material. Instead, codeswitching in this study measures shifts between language categories (e.g. L2 to L1, T-e to L2, etc.). Thus, in my coding, I recorded a codeswitch when the medium of instruction (operationalized as language categories in the coding scheme) changed. Continuous stretches of speech recorded as, e.g., 'T-e' were not categorized as codeswitching, since this appeared to be a 'stable' medium of instruction (Turkish with English terms). As stated in Section 3.4.3, the decision to include categories for mixed language use (e.g. 'T-e') was made because high proportions of intra-sentential codeswitching were observed in the data. These instances of intra-sentential codeswitching, in which English words were used in Turkish utterances, were often sustained for extended periods of time (see Section 5.2.3 & Extract D.2 in Appendix D for examples). However, switches between explanations fully in Turkish (L1) to explanations in Turkish with English technical terms (T-e) were categorized as codeswitches.

The category of codeswitching in this study provided an analysis of *who* controls classroom language decisions and *who* switches the MoI. The structured coding scheme accounts for four types of codeswitching behavior: student-initiated, student-induced, teacher-initiated, or teacher-induced instances of codeswitching. Teacher- and student-initiated instances of codeswitching refer to instances in the data in which the speaker switches the language of instruction, while teacher- and student-induced instances of codeswitching refer to instances in which the speaker uses one language to encourage (or induce) a response in another language code (Üstünel & Seedhouse, 2005; see Appendix A.3). Table 5.5 below shows the frequency with which each type of codeswitching behavior was observed, on average, across EMI classes.

On average, codeswitching occurred 26.83 times per lesson (*SD* =20.11), or once every 1.78 minutes (1 minute 47 seconds). However, there was great variation in the prevalence with which codeswitching occurred, ranging from an average of about 10 times per lesson to nearly 80 times per lesson (*Md* = 16.80).

The most frequent type of codeswitching behavior observed in the data was teacher-initiated codeswitching (*M* = 19.41, *SD* = 18.17). While in part likely due to the fact that teacher-talk accounted for the largest proportion of speech in the EMI lessons (Section 5.1.2), this finding suggests that some teachers shuttled between language codes frequently during their lectures. Moreover, the large variation with which teacher-initiated codeswitching occurred, ranging from an average of 6 to 75 times per lesson, suggests that some teachers were more fluid in their language use than others.

Student-initiated codeswitching was the second most prevalent codeswitching behavior (*M* = 7.2, *SD* = 7.47) observed in the data, suggesting that students (at least in some classes) switched the medium of instruction to engage in discussions or ask questions. The categories of student-induced (*M* = 0.02, *SD* = 0.07) and teacher-induced (*M* = 0.21, *SD* = 0.40) codeswitching rarely occurred in the data; in other words, teachers and students rarely asked for or encouraged responses from their interlocutor in a language other than that which was being used.

Table 5.5: Frequency of codeswitching in EMI classrooms

	Mean	**SD**	**Median value**
Student-initiated (SA)	7.2	7.47	5.00
Student-induced (SB)	0.02	0.07	0.00
Teacher-initiated (TA)	19.41	18.17	11.00
Teacher-induced (TB)	0.21	0.40	0.00
Total number of codeswitching instances	**26.83**	**20.04**	**16.80**

While Table 5.5 provides an overview of codeswitching patterns across classrooms, it does not suggest which languages resulted from teacher- or student-led codeswitches. Table

5.6 below describes the frequencies with which codeswitching occurred for each language category across the entire dataset.

Table 5.6: Codeswitching patterns by language across the dataset.

	Student-initiated (SA)		**Teacher-initiated (TA)**		**Teacher-induced (TB)**	
Language	*f*	*%*	*f*	*%*	*f*	*%*
English (L2)	19	3.54	603	38.00	2	13.33
English with Turkish lexical items (E-t)	31	5.78	36	2.27	1	6.67
Inter-sentential codeswitching (L1/L2)	289	53.92	116	7.31	12	80.00
Turkish with English lexical items (T-e)	48	8.96	359	22.62	0	0.00
Turkish (L1)	149	27.80	473	29.80	0	0.00
Total	536	100	1587	100	15	100

More than half (53.92%) of all student-initiated codeswitches resulted in a situation of mixed or inter-sentential language use. Looking at the transcription data, this appears to have led to situations of teacher-student interaction in which the student switched to Turkish while the teacher responded in English, thus producing dialogues of mixed language use (see Extract 5.1.3). The next most common language for student-initiated codeswitching was L1 Turkish (27.80%), and 8.96% of student-initiated codeswitches resulted in Turkish with English terminology. Together, these findings suggest that students tended to codeswitch to Turkish, regardless of whether or not the teacher continued with uptake in this language (e.g. resulting in the coding of 'L1,' 'T-e,' or 'L1/L2' language use following the codeswitch). Student-initiated codeswitching rarely took the form of L2 English (3.54%), although about 6% of student-initiated codeswitches involved English use with Turkish lexical items. Only one instance of student-induced codeswitching appeared in the dataset; this resulted in a switch to L2 English and consisted of the student asking the class to speak English.

Teacher-initiated codeswitching resulted in switches to English (38.00%), Turkish (29.80%), and Turkish with lexical terms (22.62%), suggesting that teachers shuttled between linguistic codes in their teaching. Across the dataset, teacher-initiated codeswitching was therefore not necessarily used to 'police' the language of instruction or return to English as

the MoI, but it included a high number of instances in which teachers brought the local language into the lesson.

Teacher-induced codeswitching occurred rarely in the sample (n =11); however, when it did, it often resulted in codemixing between English and Turkish (80.00%). Teacher-induced codeswitching was primarily used to elicit translations of technical terms or allow Turkish explanations from students, such as in the form of teachers granting students permission to speak Turkish. No instances of teacher-induced codeswitching to Turkish or Turkish with English lexical items were found in the dataset, implying that teachers did not ask students for explanations or summaries of content material in Turkish as a means of scaffolding material or checking comprehension.

Kruskal-Wallis tests were conducted to see whether there were any statistically significant differences between groups with respect to codeswitching; the results revealed no statistically significant differences between university types. In all, the findings presented in this section reveal that codeswitching was a common occurrence across EMI classrooms, with teacher-initiated codeswitching accounting for the largest proportion of codeswitching instances found in the data. Student-initiated codeswitching tended to result in switches to the L1, even though these codeswitches did not necessarily result in teacher uptake of the L1. The follow sections describes the functions that languages and codeswitching served in the EMI classrooms in order to contextualize the linguistic practices described so far in this chapter.

5.1.5 Functions of language use

The most common functions of language use are presented in Table 5.7, which shows the average proportion (e.g. average percent of each teacher's lessons) and the average frequency (e.g. number of times it appears) with which each function occurred in the EMI lessons.

The most common function was ‘present or explain new content,’ which accounted for about half of each lesson (*M* = 50.09%, *SD* = 13.28). The next most common language function was ‘ask (or answer) questions related to content’ (*M* = 16.45%, *SD* = 7.83). ‘Pauses’ accounted for 15.93% (SD = 8.78) of class time on average, and ‘provide “off-content” information related to the course’ comprised 5.61% (SD = 2.81) of the lesson. The majority of an average lesson appears therefore to have been spent on the presentation of content material.

Table 5.7: Most common functions of language in EMI classrooms (% of class time)

		Proportion *% of class time across classroom averages*	**Frequency** *Times appearing per class*
Rank	**Function**	*M (SD)*	*M (SD)*
1	Present or explain new content	50.09 (13.28)	53.06 (16.32)
2	Ask question related to content	16.45 (7.83)	28.31 (18.01)
3	Pause	15.93 (8.78)	45.05 (23.83)
4	Provide “off-content” information related to the course	5.61 (2.81)	9.30 (4.40)
5	Explain, clarify, or summarize presented content	2.96 (1.54)	3.43 (2.28)
6	Give math-based example to explain or apply concept	1.75 (1.64)	2.97 (4.56)
7	Introduce new content or concepts	1.54 (0.76)	4.43 (2.85)
8	Give instructions or procedural commands	1.19 (1.40)	2.75 (2.77)
9	Give daily-life example to explain or apply concept	1.11 (1.44)	1.03 (1.05)
10	Check student comprehension	1.01 (0.80)	5.16 (3.96)

Table 5.8 shows the most common functions found for each language category, measured as the frequency with which functions were identified in the dataset with respect to each language category (rather than time proportion).

What emerges from the findings is that each language category served a variety of pedagogical purposes. English was predominantly used to ‘present or explain new content’ (50.27%); it was also commonly used to ‘ask questions related to content’ (20.53%) as well as to ‘provide “off content” information’ (5.88%), ‘check student comprehension’ (4.75%), and ‘introduce new content or concepts’ (4.49%).

English with Turkish insertional codeswitching was most commonly used to ‘ask questions related to content’ (34.62%), ‘present or explain new content’ (21.79%), and ‘translate technical vocabulary’ (16.67%), although this final category of language use was rarely seen in the data, appearing less than once per class (n = 78).

Inter-sentential codeswitching most commonly occurred to ‘ask questions related to content’ (58.82%), such as during exchanges between teachers and students. L1/L2 codemixing was also used to ‘present or explain new content’ (12.58%), such as by providing simultaneous translation. However, intra-sentential codeswitching occurred more frequently in the dataset than inter-sentential codeswitching, and Turkish with English lexical items was most commonly used to ‘present or explain new content’ (50.82%). This form of instruction consisted of Turkish explanations with English (rather than Turkish) technical terms to name the concepts under discussion (see Extract 5.1.1). Similarly, Turkish with English lexical items was used to ‘ask questions related to content’ (27.57%), again with teachers and students constructing their utterances in Turkish but using English technical terminology; it was also used to ‘provide “off-content” information’ (5.81%) and ‘translate technical vocabulary’ (4.32%), although far less often than it was used to ‘present new content’ and ‘ask questions related to content.’ Looking at the primary functions of intra-sentential codeswitching, the results suggest that the use of Turkish with English lexical items was primarily used for pedagogical purposes directly related to teaching and learning. Moreover, Turkish with English lexical items was not used to build rapport, the only function for which this language category does not appear.

Table 5.8: Functions by language according to frequency and percentage of coding

Function	English (L2)		English with Turkish lexical items (E-t)		Inter-sentential code-switching (L1/L2)		Turkish with English lexical items (T-e)		Turkish (L1)	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Introduce new content or concepts	296	4.49	0	0.00	6	1.22	15	2.24	49	2.72
Check student comprehension	313	4.75	1	1.28	9	1.83	13	1.94	86	4.77
Explain, clarify, or summarize presented content	190	2.88	7	8.97	8	1.62	28	4.17	58	3.22
Ask question related to content	1354	20.53	27	34.62	290	58.82	185	27.57	454	25.18
Translate technical vocabulary	4	0.06	13	16.67	23	4.67	29	4.32	4	0.22
Present or explain new content	3316	50.27	17	21.79	62	12.58	341	50.82	612	33.94
Give instructions or procedural commands	144	2.18	4	5.13	5	1.01	8	1.19	65	3.61
Provide “off-content” information related to the course	388	5.88	1	1.28	48	9.74	39	5.81	288	15.97

Finally, Turkish (without English lexical items) was used most frequently to ‘present or explain new content’ (33.94%), ‘ask questions related to content’ (25.18%), and ‘provide “off-content” information’ (15.97%). Thus, when comparing functions of language use, there do not appear to be clear differences in the functions or purposes that different languages serve in the classroom, as each language code was primarily used for content teaching, both to ‘present or explain new content’ and ‘ask question related to content.’

With the exception of the category of English with Turkish lexical items (which appeared least frequently in the dataset and an average of less than once per lesson), and with the exception of Turkish with English lexical items to ‘build rapport,’ each language category was coded for every language function at least once. Notably, the categories of English (without Turkish lexical items) and Turkish with English lexical items show similar trends in the functions for which they were used, with each language category used to present content about half the time and ask questions related to content about a quarter of the time.

Further analysis of language functions was conducted with respect to speaker in order to provide an overview of how frequently each language function occurred for each speaker or speaker group. In other words, the analysis provides an overview of the purposes for which each speaker used language in EMI classrooms by examining the frequency with which each function appeared. Table 5.9 presents the frequency of language function by speaker group.

Table 5.9: Frequency of language functions by speaker across dataset

Function	**Student-talk (S)**		**Teacher-talk (T)**		**Teacher-Student (T-S)**	
	f	*%*	*f*	*%*	*f*	*%*
Introduce new content or concepts	0	0.00	356	4.90	10	0.45
Check student comprehension	0	0.00	353	4.86	69	3.09
Explain, clarify, or summarize presented content	11	10.68	245	3.37	35	1.57
Ask question related to content	49	47.57	788	10.84	1473	65.97
Present or explain new content	17	16.50	4082	56.17	249	11.15
Provide “off-content” information related to the course	9	8.74	492	6.77	235	10.52
Build rapport	12	11.65	33	0.45	40	1.79

Student-talk appeared in the dataset in relation to seven functions, the most frequently occurring of which was to ‘ask questions related to content’ (47.57%). Student-talk also served to ‘present or explain new content’ (16.50%) and ‘explain, clarify, or summarize presented content’ (10.68%). However, although students were occasionally invited to take an active role in the explanation of content material, these two functions (‘present’ and ‘summarize’ content) accounted for a total of 28 instances of student-talk, or on average 0.33 times per lesson across the dataset.

Teacher-talk served a variety of functions in the classroom: each of the 16 functions (‘pause’ excluded) appeared multiple times within teacher-talk. ‘Present or explain new content’ (n = 4082, 56.17%) was the most common function of teacher-talk in the dataset; it was also the category found to occupy the largest proportion of classroom time (see Table 5.7). On the whole, the teachers provided more math-based examples (n = 206, 2.83%) than daily-life examples (n = 70, 0.96%), which corroborates teachers' description of class content

and the importance of math in EMI engineering courses (see Chapter 6). ‘Build rapport' was the least frequent function of teacher-talk (n = 33, 0.45%).

As with teacher-talk, teacher-student interaction appeared with respect to every function category in the coding scheme (excluding ‘pause’). Teacher-student interaction most frequently occurred to ‘ask questions related to content’ (65.97%), ‘present or explain new content’ (11.15%), and ‘provide “off-content” information’ (10.52%).

The findings with respect to functions of language use suggest that teachers used both English and Turkish—as well as Turkish with English terminology—for similar purposes, the primary of which were to ‘present new content’, ‘ask questions related to content,’ and ‘discuss “off content” topics related to the course.’ Student utterances, including instances of teacher-student talk, primarily served to ‘ask (or answer) questions related to content.’ The language function ‘ask questions related to content’ was the top or second most frequently occurring function across all language groups and for all speakers.

The analysis of language functions revealed that the translation of technical terminology occurred infrequently in the EMI lectures. In this study, the function ‘translate technical vocabulary’ was applied to direct instances of translation in which a speaker stated or elicited the equivalent of one term in another language, such as in Extract 5.1.5:

Extract 5.1.5

T: And also there's another word in here. Tendency, okay? Eğilim. *[Tendency.]*
(T-6, Small-2, Observation 3)

In the example presented in Extract 5.1.5, the teacher provided a direct equivalent of the term ‘tendency’ but did not describe or explain the concept. The function ‘translate technical vocabulary’ occurred 73 times in the dataset, or less than once per lesson (M = 0.86 times per lesson). Therefore, although language fluidity appeared to be a common feature of (at least some of) the EMI classes and codeswitching was found to occur frequently across the dataset, direct translation was rarely used as a pedagogical technique for introducing, clarifying, or

explaining technical terms. Of the 73 instances in which the function 'translate technical vocabulary' appeared in the dataset, 49 instances involved the translation of a word from English to Turkish, and 24 instances involved translating a lexical item from Turkish to English.

Furthermore, when Kruskal-Wallis tests were conducted to see whether there were any differences between groups with respect to language functions, the results showed that there was a statistically significant difference in the translation of technical terms in EMI classes by university type ($H(2)=7.183$, $p = 0.028$), with a mean rank of 6.00 for elite universities, 11.12 for large universities, and 15.14 for small universities. Pairwise comparisons with adjusted *p*-values showed that there was a significant difference in the translation of technical terms between elite and small universities ($p = 0.022$, $r = 0.743$). No other significant differences were found between groups for functions of language use. The translation of technical terminology appears to have occurred more commonly in EMI classrooms at small universities compared to elite universities; small universities were also found to use more Turkish compared to elite universities (Section 5.1.1).

5.1.6 Functions of codeswitching

A total of 2139 instances of codeswitching were identified in the dataset. Table 5.10 below summarizes the functions of codeswitching across EMI classrooms.

Table 5.10: Functions of codeswitching in EMI classrooms (frequencies and percentages)

	Student initiated (SA)		**Teacher initiated (TA)**		**Teacher induced (TB)**	
Function	*f*	*%*	*F*	*%*	*f*	*%*
Check student comprehension	7	1.31	78	4.91	0	0.00
Explain, clarify, or summarize presented content	12	2.24	74	4.66	0	0.00
Ask question related to content	394	73.51	243	15.31	4	26.67
Translate technical vocabulary	5	0.93	50	3.15	8	53.33
Present or explain new content	30	5.60	715	45.05	1	6.67
Provide praise or feedback	4	0.75	32	2.02	1	6.67
Encourage participation	0	0.00	7	0.44	1	6.67
Provide "off-content" information related to the course	58	10.82	141	8.88	0	0.00

The most common functions of codeswitching by teachers (teacher-initiated) were to 'present or explain new content' (45.05%) and 'ask or answer questions related to content' (15.31%). In other words, taken from the overall dataset, codeswitching occurred an average of 8.4 times per lesson to 'present new content' and 2.9 times per lesson to 'ask questions related to content,' although there was great variation in the amount of codeswitching that occurred in each teachers' lessons (Section 5.1.4). Codeswitching primarily served pedagogical functions, as four of its top five most frequently occurring functions related directly to teaching and learning: present content, ask or check to see whether students have understood content, and clarify meaning when necessary.

Looking at the functions of student-initiated codeswitching, it appears that the top three functions of student codeswitching are similar to those of teachers, albeit in a different order. About 75% of student-initiated codeswitches were to 'ask questions related to content,' which was also the most frequently occurring function for teacher-student interactions and student-talk (Section 5.1.5). On average, students codeswitched while asking or answering questions 4.6 times per lesson, and student-initiated codeswitching was found in 25.89% of all utterances involving teacher-student interaction or student-talk for the purpose of asking questions related to content.

Overall, when codeswitching and language function are considered together, it appears that codeswitching was primarily used by both teachers and students for pedagogical purposes, such as presenting content and asking questions related to content. Codeswitching therefore appears to be integrated into content teaching rather than reserved for classroom management or socio-affective purposes.

5.1.7 Summary of findings from structured coding scheme

The main findings from the analysis of classroom observation data using the structured coding scheme are:

- Language use, including the primary MoI, varied across classrooms:
    - EMI lectures at elite universities tended to be taught predominantly in English with little Turkish. There appeared to be more variation in language practices at small and large universities, with some lectures involving high(er) levels of Turkish. The findings suggest that, particularly at non-elite universities, patterns of language use vary at the classroom level, rather than according to university type.
- The lectures tended to be teacher-centered, although the amount of teacher-student interaction varied across classrooms:
    - Overall, higher proportions of teacher-student interaction were found in EMI classes at large and small universities compared to elite universities, where the proportion of teacher-student interaction was relatively low.
- In the dataset as a whole, the majority of teacher-talk occurred in English (78.00%). Student-talk, although less frequent, was most likely to occur in Turkish (57.28%). Teacher-student interactions took place in English (39.54%), Turkish (29.38%), a mix of English and Turkish (17.06%), and Turkish with English terms (12.18%).
- Codeswitching occurred frequently in the EMI classes, with the majority of codeswitching instances initiated by teachers.
- The three most common functions of language use were 'present or explain new content,' 'ask questions related to content,' and 'provide "off content" information related to the course.' These functions were found to be the top three functions regardless of speaker or language, with the exception of the language category, 'English with Turkish lexical items,' in which a discussion of off-content information occurred only once in the dataset.

These findings reveal that the EMI engineering courses in this study were neither English-only nor English-always in their implementation, although variation in language

practices was found across classrooms. With respect to language use and proportion of speaker talk time, the findings suggest that EMI lessons at elite universities tended to be teacher-centered and English-dominant; however, clear patterns of language use were not found between or within small and large universities, where great variation was observed in terms of language choice and teacher-student interaction. Rather, at these universities, language practices appeared to vary according to individual classrooms.

Given the differences observed with respect to language choice and interaction, Section 5.2 provides further qualitative analysis to describe and interpret the different language practices observed across classrooms.

5.2 How does EMI implementation vary across engineering classes in Turkey?

This section builds upon the findings presented in Section 5.1 to understand how EMI implementation varies across engineering classes in Turkey. In doing so, it provides further evidence to answer RQ2: *How are languages used in university-level EMI engineering classes in Turkey?* Following the institutional-level comparison, data were analyzed at the level of individual classrooms in order to explore variations in EMI language practices. The findings presented in this section primarily draw from the analysis of classroom observation data, although interview and focus group data was used to supplement the analysis of observation data by contextualizing classroom practices.

Using the data from classroom observations, language practices were compared across university types: elite, large, and small state universities. Kruskall-Wallis tests were conducted to see whether statistically significant differences existed between groups with respect to language use, codeswitching, speaker, and function—the categories of the structured coding scheme. As reported in Section 5.1, the results revealed that there were statistically significant differences in terms of the proportion of Turkish use ($H(2)=6.917$, $p = 0.031$), teacher-student interaction ($H(2)=7.720$, $p = 0.021$), and the translation of technical

vocabulary (H(2)=7.183, $p = 0.028$) in EMI classes by university type. Pairwise comparisons showed that there were significant differences in the proportion of Turkish use ($p = 0.027$, $r = 0.725$), teacher-student interaction ($p = 0.020$, $r = 0.754$), and the translation of technical vocabulary ($p = 0.022$, $r = 0.743$) at elite and small universities. No other statistically significant differences were found between groups with respect to the categories of the structured coding scheme.

Moreover, when classroom language practices were compared by university type, the proportion of language use and speaker talk time at large and small universities appeared to vary both within and across institutions (Sections 5.1.1 and 5.1.2). Comparatively, there appeared to be less variation in the language practices of EMI lessons at elite universities, which were English-dominant, teacher-centered lectures with little teacher-student interaction. Because clear patterns of behavior were not observed according to university type at small and large universities, the data from classroom observations were plotted for each participant teacher in order to explore visually language practices at the level of the classroom. Figure 5.5 shows the average proportion of Turkish use (including Turkish with English lexical items) and teacher-student interaction for each teacher's class.

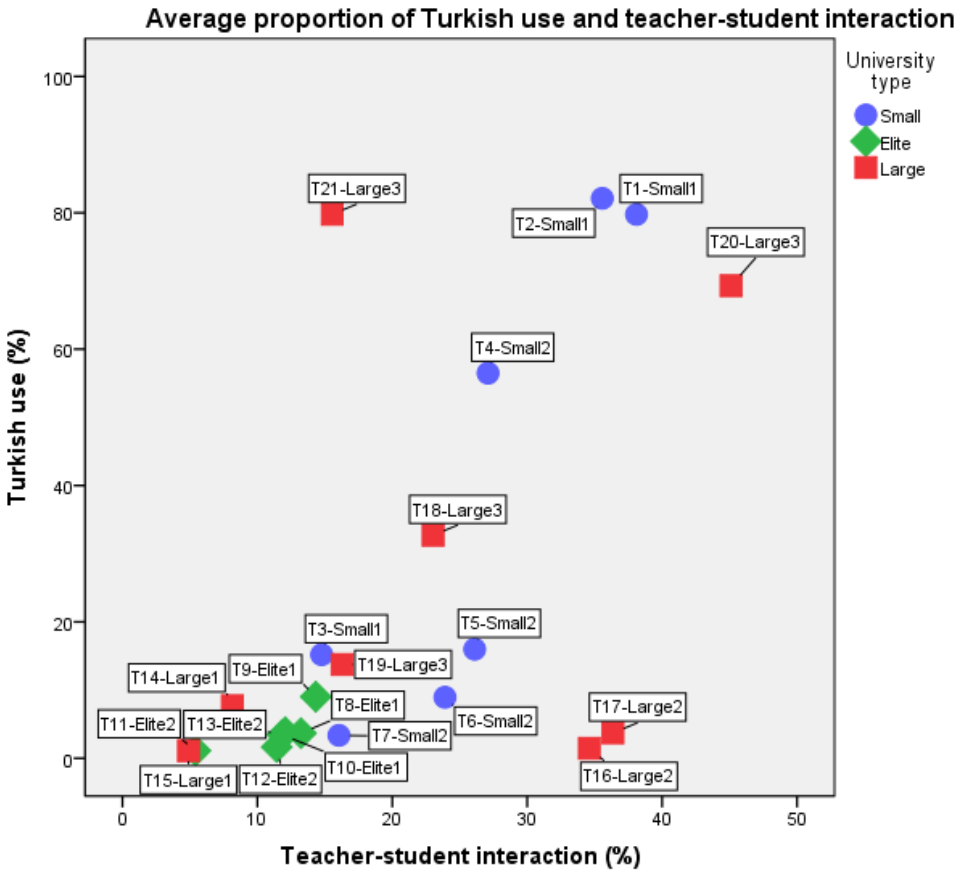


Figure 5.5: Proportion of Turkish use and teacher-student interaction in EMI classroom

In Figure 5.5, L1 use and interaction were compared, since the results of the analysis from the structured coding scheme (Section 5.1) revealed them to be major sources of variation in classroom practices. Moreover, L1 use and interaction were selected as two key categories of analysis because language choice reflects the de facto MoI of the lessons (e.g. EMI or TMI), and teacher-student interaction "is probably the most significant pedagogical resource that contributes to learning" (Macaro, 2018, p. 187). In Figure 5.5, Turkish use is aggregated to include instances of intra-sentential codeswitching (categories L1 and T-e), and points are labelled according to teacher and university.

The aim of plotting proportions of Turkish use and teacher-student interaction for each class was to explore patterns in the data with respect to other classes in the sample. As Figure 5.5 shows, the language practices at elite universities appear to be characterized by

low levels of Turkish use and low levels of teacher-student interaction. However, L1 use and interaction varied at small and large universities, which appear ‘scattered’ across the graph. The following sections describe patterns of language use in EMI classrooms with respect to language choice (e.g. English-dominant, Turkish-dominant) and teacher-student interaction (e.g. teacher-centered, interactive).

In addition to variations in EMI implementation with respect to Turkish use and interaction, a higher proportion of pauses was observed in one teacher’s class (Teacher 18) compared to others in the sample, as illustrated in Figure 5.6. Further analysis of the language practices in this classroom revealed that the higher proportions of silence resulted from the teacher copying lecture notes in English onto the board for students to write in their notebooks. The language practices in this classroom were characterized by reading from lecture notes in English and discussing them in Turkish. Given the uniqueness of these practices with respect to language choice and interaction compared to others in the sample, this form of EMI implementation is discussed separately in Section 5.2.5.

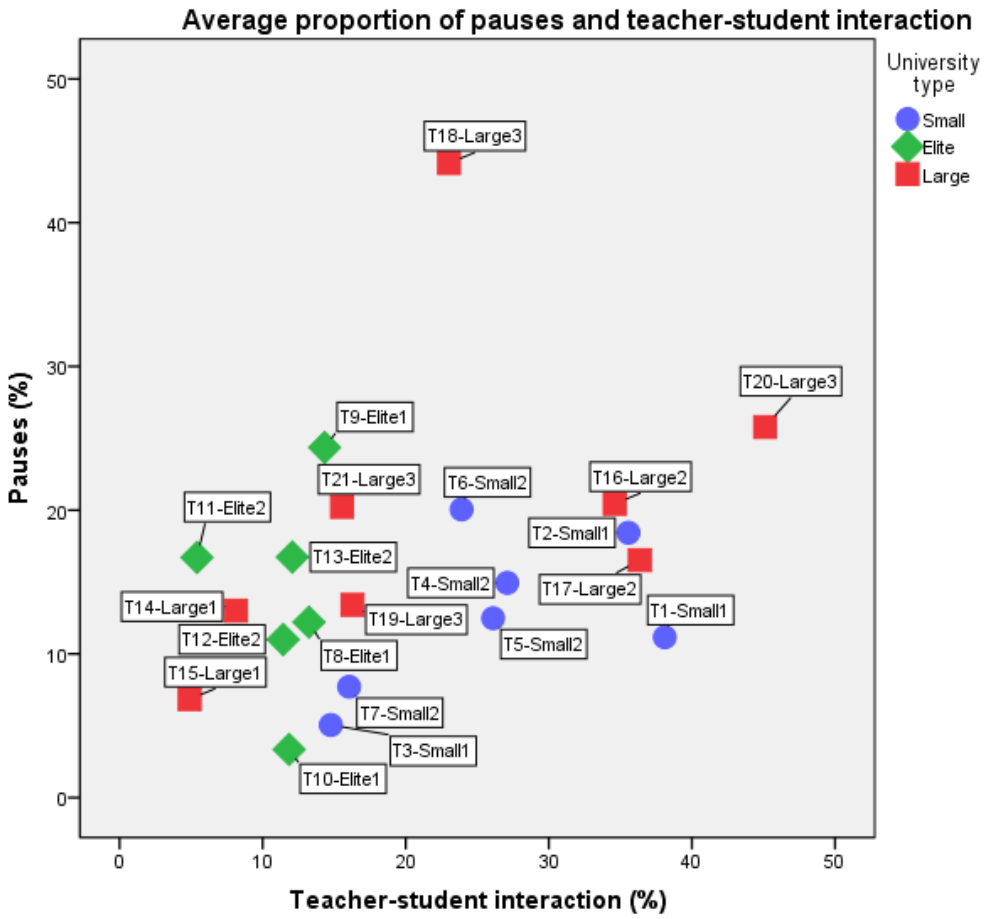


Figure 5.6: Proportion of pauses in EMI classrooms

Four variations of EMI implementation were identified with respect to language use and interaction, situated along these two key dimensions. Along these dimensions, a fifth single case outlier became apparent when pauses were considered in terms of language use. The four variations of EMI implementation, along with the fifth case identified in the data, are illustrated in Figure 5.7 and described in the remaining sections of this chapter.

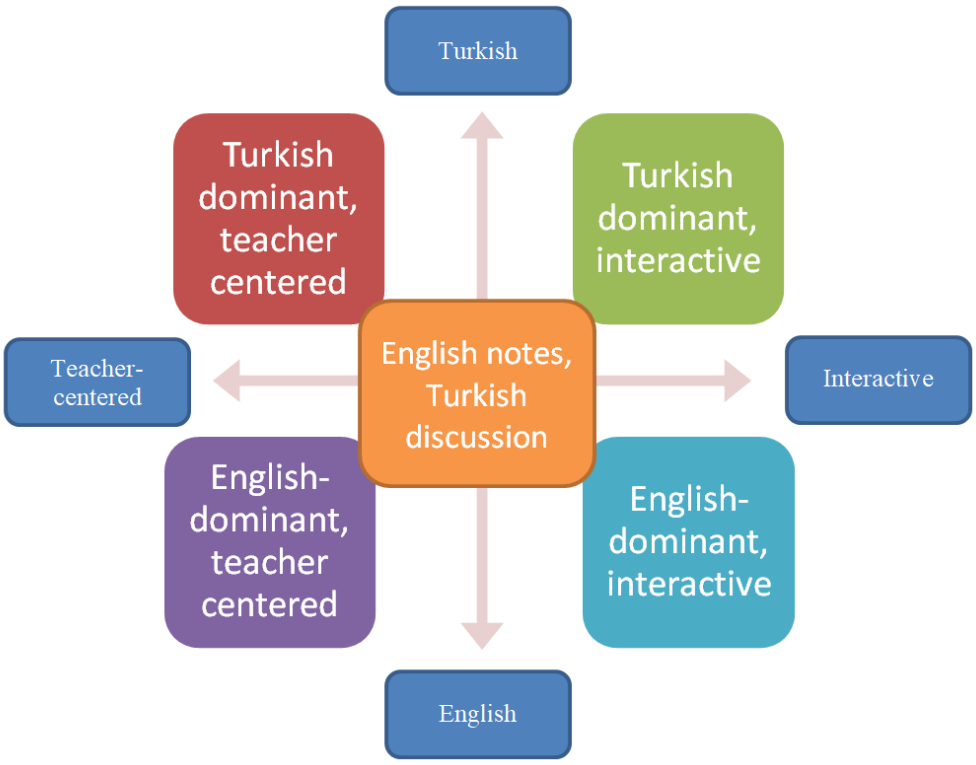


Figure 5.7: Variations of EMI implementation

5.2.1 English-dominant, teacher-centered lectures

The majority of EMI classes observed (n=11) were English-dominant, teacher-centered lectures. In other words, in these classes, the majority of the lecture was taught in English with teacher-talk comprising the greatest proportion of speaker time. These classes were characterized by relatively low levels of teacher-student interaction and L1 use. EMI classes taught in this manner were observed at six of the seven universities, at all but university Large-2. Notably, each of the six classes observed at elite universities was characterized by this variety of EMI implementation. However, this does not necessary imply that EMI lessons at elite universities are uniformly implemented in this way, as focus group discussions with students suggested that there were variations in EMI implementation at the elite universities (see Extract D.1 in Appendix D).

English-dominant, teacher-centered lectures often involved problem-solving and the presentation of content on the chalkboard or white board, with the teacher commonly drawing

figures or diagrams on the board. The teachers primarily taught in English, using Turkish sparingly: the average proportion of English used in these classes was 78.8%, compared to an overall average of 56.4%, and the average proportion of Turkish use (including insertional codeswitching) was 5.80%, compared to an overall average of 23.5%. In these classes, Turkish was rarely used for extended periods of time or to present academic content. Instead, Turkish was most commonly used to draw students' attention, check comprehension, and discuss 'off-topic' aspects of the course, such as homework and exam dates. While these teachers appeared to adhere to a (mostly) English-only policy during the 'official' boundaries of the lesson, i.e. when they were lecturing in class, many were willing to use Turkish *outside* the 'official' boundaries of the lesson, such as after the lecture had ended, during office hours, or during breaks between class. Table D.1 in Appendix D summarizes when Turkish was used in English-majority, teacher-centered lectures.

While less teacher-student interaction was observed in these classes compared to others in the sample (11.7%, compared to an overall average of 20.7%), student participation occurred in both the L1 and the L2. However, the *quality* of student participation in these languages differed, with English responses typically limited to a single word or short phrase, and Turkish used to ask or answer more complex questions. While students commonly articulated full-sentences in Turkish (often inserting technical terms in English, as in Extract 5.2.1b), instances of students formulating full sentences in English were less common. Instead, student utterances in English were typically numerical or mathematical expressions in response to a problem on the board. In focus groups, students indicated that they used Turkish for complex ideas because *"when you are trying to ask really complicated questions, confusing things, uh to the teacher, it's really hard to explain in English"* (Student 2, Teacher 8, Elite-1). However, regardless of student language choice, teachers in these classes typically

responded in the L2, such as in Extract 5.2.1a, taken from a 3rd-year Mechanics of Materials course:

Extract 5.2.1a:

T: This is v max, is P-L-Q cubed over three.
S: Türevi alıp sıfıra eşitledik ama. [*But we took the derivative and set it equal to zero.*]
T: Sorry?
S: Türevi alıp sıfıra eşitledik ama, ama üstte– [W*e took the derivative and set it equal to zero, but, but on top*--]
T: Which one?
S: Üstteki denklemde v'yi bulurken, iki bolu üç olması gerekmiyor mu? [*When finding v in the equation on top, doesn't it have to be two divided by three?*]
T: Uh. It should be third. Which is also in the handout, so I don't see any problem with that.

(T-8, Elite-1, Observation 3)

In this extract, the student asked a question in Turkish about the equation on the board. The teacher asked him to repeat his question, which he did in Turkish (*'doesn't it have to be two divided by three?'*). The teacher responded, in English, by directing the student to the handout but provided no elaboration on this point. Throughout the exchange, the teacher ignored the student's codeswitch to Turkish. Rather than respond in Turkish or ask the student to repeat the question in English (e.g. in an attempt to police the language of instruction), the teacher ignored the change in language and proceeded with her lecture in English. When asked about the students' use of Turkish to ask questions in class, Teacher 8 stated: *"I don't know [why they ask in Turkish], I think that they're more comfortable asking in Turkish, or maybe they're shy and they don't want to ask in English or they don't think they can. I, I really don't know."* Here, the teacher seems to be drawing a distinction between *understanding* content in English and *participating* in English. From the students' question and the teacher's response in Extract 5.2.1a, however, it is unclear to what degree the student actually understood the content, as the teacher's response implied that the equation was self-evident from the handout.

While some teachers did occasionally respond to student questions or provide clarifying summaries in Turkish, this practice was not the norm in English-dominant, teacher-centered lectures. Instead, most teachers responded in English, even when students asked questions in Turkish. Extract 5.2.1b below, from a 4th-year course on Mechanisms, further illustrates the teachers' commitment to using English in class; the extract also illustrates how students incorporate English terminology into their Turkish utterances.

Extract 5.2.1b:

T: Like this. Okay? So this is theta. As cam rotates, uh, the, the follower will follow this path. Do you see any problem with this path? Hm?

S: Yani yüksek değerde teması kaybetmeye başlayacaklar. [*I mean, they'll start to lose the way at a high value*.]

T: Why?

S: Hani, ani bir hareket değişim olduğu için follower'ına tepki veremeden cam'ını uzaklaşmış gitmiş tam tersi bir impact olarak— [*Well, because there was a sudden change in motion, the* cam *moved away, it went without a reaction to the* follower*, as an impact in the exact opposite direction*--]

T: Where, where do you see that sudden movement change?

S: Koşelerde. [*In the corners*]

T: Yes, so if you plot the velocity of the follower, this will be, so here it's stationary zero, then it's constant, certain amount.

(T-9, Elite-1, Observation 2)

Although the student answered the teacher's question in Turkish, he used English terms to describe technical concepts (e.g., *follower, cam, impact),* perhaps because he had been taught these concepts in English. Words such as '*follower'* and '*impact'* could easily be translated to Turkish, as they have daily-life equivalents that would be used in non-scientific conversations; nonetheless, the student selected English terms in his exchange with the teacher. Thus, although the student was taught *through* English and appeared to understand the concepts under discussion *in* English, he appeared to be *processing* and *participating* in knowledge construction (to some degree) in Turkish. However, as in Extract 5.2.1a, the teacher did not acknowledge the student's use of Turkish in this exchange but responded to the student in English.

Of the 11 teachers whose classes were found to be English-dominant, teacher-centered lectures, four teachers provided L1 support and offered summaries in the L1 when needed at least once during the classroom observations. In Extract 5.2.1c the teacher makes his willingness to provide support in the L1 explicit by asking the students whether they require a Turkish summary. The extract comes from a 1st-year Physics course at a Mechanical Engineering department at a large university:

Extract 5.2.1c:

T: And I mean, if those people do not use the electricity, do not use the materials, they cannot find what is best for those circuits. I mean, it's really expensive experiments, and you just put all money to trash. In the trash. Okay? Yorulduk mu? [*Are we tired?*]

Ss: Evet, evet. [*Yes, yes*]

T: Burası biraz story kısmendi. Yani siz de ben bu kadar keyif kaldım tahmin etmiştim, notlarım yok yanımda, o haftanın notları yani o yüzden ne anlatıyordum diye düşünüyorum bir yanda, buraya kadar iyi gitmişiz. Var mı soru soran? Anladık mı peki? Türkçe özete gerek var mı? Eh, çok birşey değil zaten anlattığım.
[*This was a little bit of the* story *part. I mean, I guessed you might enjoy it as much as I do. I don't have my notes with me, I mean the notes from that week, so I'm trying to remember what I've already explained, and we've got on well up to this point. Does anyone have a question? Do we understand? Do you need a Turkish summary? Uh, what I've explained isn't really that much anyway.]*

(T-14, Large-1, Observation 1)

Up to this point in the lesson, the teacher had been providing background information on electricity, the topic to be discussed. At the end of this lengthy explanation, he switched to Turkish, first asking whether the students were tired and then asking whether they would like a Turkish summary of what he had just explained. As the students indicated that they did not need a summary, the teacher continued lecturing in English. Although asking students whether they wanted Turkish summaries was not the norm in these classes, this extract demonstrates how English served as the primary MoI, with Turkish used by these teachers primarily to engage students or check comprehension. Although Turkish summaries were rarely provided in English-dominant, teacher-centered classes, the teacher's question in Extract 5.2.1c demonstrates how Turkish was used by the teachers *outside* or *after* the main

lecture, such as to check comprehension; a Turkish explanation would only be provided if the English had not been understood.

The implementation of EMI in these classes consisted of a lecture given by the teachers in English. The majority of the class consisted of teacher-talk, and the teachers did not typically use Turkish as part of the lecture—in other words, Turkish was not used by the teachers to 'teach' content in these classes. Although students asked questions in Turkish, the teachers typically responded in English, the primary medium of instruction.

5.2.2 English-dominant, interactive lectures

This section describes the language practices in EMI classrooms that were primarily conducted in English and in which (relatively) high levels of teacher-student interaction were observed (30.2%, compared to an overall average of 20.7%). These practices appeared in four EMI classrooms at two universities, Small-2 and Large-2. These classes were English-dominant (68.0%, compared to an overall average of 56.4%), but the teaching style was characterized by high levels of student involvement and teacher-student interaction. These lectures were less teacher-centered compared to other English-dominant lectures, with teacher-talk comprising an average proportion of 50.1% of class time compared to an average of 75.7% for other English-dominant lectures (Section 5.2.1).

To increase student involvement in the lessons, resulting in higher proportions of teacher-student interaction, these teachers worked to scaffold language and content. In interviews, the teachers explained that this approach to EMI teaching allowed them to cope with low levels of student English proficiency and ensure that the students were following the lesson. In practice, this meant that teachers created opportunities for students to participate in class in English. In one teacher's class (Teacher 6, Small-2), students were asked to give recaps or summaries of the previous lesson, which provided a space for student talk in English. More commonly in these classes, the teachers structured their lectures to include a

high number of questions. Often, these questions were low-order thinking questions and required short responses. While this limited the complexity of student responses, it also limited the linguistic burden on students who learning through an L2. An example of such questioning throughout the lecture is provided in Extract 5.2.2a taken from a 2nd-year Environmental Chemistry lecture in an Environmental Engineering department.

Extract 5.2.2a:

T: By the way, uh, when I say solubility, uh, remember there was a class in Eviron-- Environmental Chemistry One, we studied solids. Suspended solids, dissolved solids, separable solids. So, which one is--
S1: Dissolved
T: Dissolved solids! Right? Anything is smaller than what diameter, do you think, we consider as solid?
S2: Zero point forty five uh--
S3: Forty five micro--
S2: Evet *[yes]*, micro.
T: Forty five or zero point forty five?
Ss: Zero point forty five.
T: So anything less zero point forty five micro we consider as a dissolved solid. What are dissolved solids? They are ions or they are particles?
S2: Particles
S1: Ions
T: Ions, mostly they are ions, right? The species which have a size less than point forty five micro we consider as ions, cations and anions, so now. If something is soluble, of course, we understand it is very tiny, very little. Less than point forty five micro.

(T-17, Large-2, Observation 1)

Although high levels of teacher-student interaction in English were observed in these classes, the complexity of the teacher's questions and the level of student output were minimal. Extract 5.2.2a illustrates the rapid, back-and-forth dialogue between teacher and students that occurred in English in these classes. The teachers prompted students with simple questions, often highly structured and presenting students with possible responses ('*What are dissolved solids? They are ions or they are particles?'*), and student responses typically consisted of one word answers (*particles; ions*) rather than full sentences. Higher order questions from

teachers or students, in the L1 or the L2, were not common in these classes. Similarly, students rarely initiated question sequences or asked for clarification of content.

Examples of teacher scaffolding can be seen in the teacher's feedback to student responses in Extract 5.2.2a ('*Forty five or zero point forty five?'*) which encouraged students to re-evaluate their answers. Similarly, Teacher 16 scaffolded content in his 4th-year Water Treatment course by engaging students through extensive questioning rather than providing lengthy explanations related to the concept. Extract 5.2.2b below shows an example of this pedagogy:

Extract 5.2.2b:

T: Manganese?
<pause, 3 seconds>
T: Okay. Tell me about the oxidation states.
S1: There's the two plus, and the four plus.
T: Manganese plus two.
S1: And the four plus.
T: Plus, manganese four plus. Okay.
T: Which one is more soluble? Four plus? Two plus?
S1: Two plus
<Ss call out answers>
T: Two plus is more soluble. What about four plus?
S2: Less soluble.
T: Less soluble. So what is the product here? Manganese?
S3: Oxide.
T: Dioxide. It is the solid form, okay? So we have black?
Ss: Sludge
T: Sludge.
<writing, pause, 4 seconds>
T: Just like ferrous iron, in the treatment of manganese, as long as it is in two plus oxidation state, what do we, what do we have to do? The main treatment is to? Go from here to here. So oxidation.

(T-16, Large-2, Observation 2)

In the example above, the teacher engaged the students in questioning, activating their existing schema and encouraging them to participate in the lecture. Although students were engaged in the presentation of content material, the teacher's questions were simple, and student output was minimal. Through this style of questioning, the linguistic burden is

decreased both in terms of output and input, as teacher-talk is typically limited to short questions or explanations, rather than lengthy monologues in English.

These teachers used scaffolding techniques in their lessons to provide opportunities to explain technical terms in English and ensure that students understood the language of the lecture. A (relatively) high frequency of vocabulary teaching—or at minimum, checking student comprehension of vocabulary—occurred in these lessons, suggesting that these teachers were more inclined to focus on language in addition to content in their lessons, compared to other teachers in the sample. An example of vocabulary teaching is provided in Extract 5.2.2c.

Extract 5.2.2c:

T: What about trace ionic species? Trace?
S: Ionic species?
T: Trace? Trace, the. Trace means, trace meaning they are found in wa--in surface and sub-surface water but at very low concentrations. Okay? Trace mean, okay.

(T-16, Large-2, Observation 1)

This extract is taken from T-16's 4th-year Water Treatment course. Here, the teacher checked student comprehension of the word, 'trace,' by repeating it as a question, with rising intonation. When the students provided no indication that they understood the meaning of the word, the teacher explained its meaning in English rather than provide a Turkish translation. In doing so, the teacher maintained English as the MoI, reasserting a language preference for English rather than codeswitching to Turkish.

In these classes, high levels of teacher-student interaction in English were made possible by lecturers accommodating their teaching style to the students. In place of a monologic lecture, the teachers incorporate frequent questions and opportunities for students to participate in class. Questions were often simple, which decreased the linguistic burden for students with (potentially) low levels of English proficiency. While this limited the complexity of student output, which often consisted of single word responses, this style of

teaching encouraged students to participate in class, provided the teacher with a mechanism to ensure that students were following course content throughout the lecture, and reasserted English as the primary MoI.

5.2.3 Turkish-dominant, interactive lectures

This section describes EMI implementation in classes in which the primary MoI was not English but Turkish, the L1 of the teacher and the majority of students, and in which (relatively) high levels of teacher-student interaction were found. In four EMI classes at three universities (Small-1 = 2; Small-2 = 1; Large-3 = 1), the classroom language practices were characterized by high average proportions of Turkish use, particularly Turkish with English technical terminology (71.9%, compared to an overall average of 23.5%), and relatively high levels of teacher-student interaction (36.5%, compared to an overall average of 20.7%). The teachers in this group recognized that their lectures were, on paper, EMI courses and acknowledged that they were deviating from official MoI policy.[9] However, they stated that they were lecturing (primarily) in Turkish for the benefit of the students, whom they described as having low levels of English proficiency.

These teachers' classes were Turkish-dominant lessons with high levels of teacher-student interaction. In one teacher's class (Teacher 4, Small-2), these high levels of student involvement took the form of pair work in a computer lab with the teacher walking around to monitor and provide support as needed.[10] In these lessons, the primary language of instruction was Turkish, although English entered the lesson in written form and in the technical terminology used to discuss scientific concepts. English slides, resources, and materials were used throughout the lessons, and the teachers commonly wrote on the board in English. Additionally, English terms were used in spoken discourse to teach and discuss

[9] When I initially approached these teachers about participating in the study, 3 of the 4 teachers told me that their classes might not be of interest to me because they taught in Turkish, rather than English.
[10] See Extract D.2 in Appendix D for example of teacher-student interaction in this content.

scientific concepts, with a Turkish translation or equivalent term rarely provided. Instead, students were expected to understand the English word within the Turkish explanation.

Because English technical terminology was used throughout these lessons, these classes were often characterized by high levels of insertional codeswitching. Extract 5.2.3a illustrates the fluidity of language use in these classes. The extract is taken from a 2nd-year Statics course in a Civil Engineering department.

Extract 5.2.3a:

T: Evet, şimdi bir soru çözelim. Değil mi? Bu free body diagram olayını artık anlayalım. Example'le daha iyi olacak diye düşünüyorum. <reading> The box weighs five, fifty newton and geometry is as shown. The forces in the ropes, find the forces in the ropes a-b and a-c. <reading ends> Çok temel bir soru, çok basit bir şey. Burada önemli olan free body diagramı çizmek. Neyi soruyor? a-b ve a-c iplerindeki?
[*Yes, now let's solve a question. Right? Let's understand this free body diagram stuff from now on. I think it will be better with an example.* <reading> The box weighs five, fifty newton and geometry is as shown. The forces in the ropes, find the forces in the ropes a-b and a-c. <reading ends> *It's a very basic question, it's a very simple thing. Here the important thing is to draw the free body diagram. What is it asking? At the ropes a-b and a-c?*]

S1: Kuvvetleri [*Their forces.*]

T: Kuvvetleri soruyor. Ne yapacağız o zaman? Çizeyim mi sizce, yoksa? Ekrandan mı bakalım? Gerek var mı?
[*It's asking for their forces. What are we going to do then? Do you think I should draw it or? Should we look at it on the screen? Is it necessary?*

S2: Ekrandan. *[On the screen*]

T: Ekrandan bakalım. [*Let's look at it on the screen*.] *(T-1, Small-1, Observation 3)*

Here, although the teacher taught in Turkish, he used the English words in his explanation, such 'free body diagram' and 'example' rather than the Turkish equivalents (*serbest cisim diyagramı; örnek*). In the extract, the teacher read aloud the slide in English before summarizing the problem in Turkish and asking the students how they would like to solve it. Although the teacher provided a short summary in Turkish, the students appeared able to comprehend the English-language slides, which they presumably must have done to engage

with the course: in addition to the English terminology used throughout the lecture, the slides used in this class were English-language slides provided by the textbook publisher.[11]

Similar practices of language fluidity were observed in the other teachers' lessons, such as in Teacher 20's 1st-year Thermodynamics course at Large-3. In Extract 5.2.3b, the teacher refers to a diagram of a feedwater heater. In his explanation, the teacher used English terminology to describe the parts of the diagram, although he taught in Turkish:

Extract 5.2.3b:

T: Arkadaşlar, figure on onyediye bakarsanız, eh, bu gerçeğe yakın bir sistem. Şimdi burada dört tane feedwater heater var bir tanesi open, diğeri, eh, diğerleri closed feedwater heater. İşte, eh, amaçta dediğimiz bu arayı q-in'i azaltmak. Burada, bunu ekleyerek—

[*Friends, if you look at* figure *ten seventeen, uh, this is very close to a real system. Now here there are four* feedwater heaters*, one is* open*, and the others, uh, the others are* closed feedwater heaters*. So, uh, and we said the goal is to reduce* q-in*, this space.]*

<pause, 3 seconds; writing>

T: Çok yani sayısını arttırdığınız zaman ne olacak?

[*What's going to happen when we increase this number, I mean by a lot?]*

<pause, 8 seconds, writing>

T: Sistem şöyleydi ya, sayısını arttırsanız şuraya kadar işte şöyle gelecek, şöyle gelecek şöyle şöyle derken şuraya kadar girme şansımız var. Ama unutmayın, her girip çıktığında bir efficiency var, ivme var. Bunu feedwater heaterli analizini yapmışlar. Yedi taneden sonra verim şöyle değişiyor. Efficiency number, verim şöyle: yedi taneden sonra hiçbir etkisi yok. O nedenle yediden fazla open feedwater heater kullanmazlar. Bunların işte genel olarak altısı closed bir tanesi open şeklinde kullanılır feedwater heaterlar.

[*So the system was like this, if we increase the number, it will go like this up until here. It will go like this. When I say like this, we have a chance of entering up until here. But don't forget, at every entrance and exit, there's* efficiency*, there's acceleration. They've done this analysis with the* feedwater heater*. The efficiency changes like this after seven of them.* Efficiency number*, the efficinecy is like this: there's no effect after seven of them. Because of that, they don't use more than seven* open feedwater heaters*. This is the form generally, six of them are* closed*, one is* open*.* Feedwater heaters *are used like that.]*

(T-20, Large-3, Observation 2)

[11] The slides included 'quiz' sections, in which students were presented with multiple choice questions to check their comprehension. The quizzes were in English, and the students appeared able to comprehend the language. See Extract D.3 in Appendix D for an example.

In these classes, the teachers explained course content in Turkish but used English terminology to describe technical concepts. Students were therefore provided with Turkish explanations of content material but often exposed to English, rather than Turkish, technical terminology.

In some classes, the insertion of English terminology into Turkish explanations occurred due to the nature of the course or a lack of technical terminology readily available in Turkish, such as in the case of T-4's class, a Computer Programming course which served as an introduction to MATLAB. Because programming commands in MATLAB are derived from their English meanings (e.g. *plot, title, leave space, nesting*), English was used to introduce and explain the commands, as in Extract 5.2.3c:

Extract 5.2.3c:

T: Leave space şu işe yarar, şimdi y maksimumuz, y vektorumuz birden üçe kadar, bir iki üç diye bir vektor. Bunu şöyle leave space de, şey yapıyor, x vektorumuz ne? Beş elemanlı, y vektorumuzu üç elemanlı. Bu ikisini çarpıması için y vektorun beş elemanlı olması lazım, dolayısıyla leave space komutu ile, ilk sayısı aynı, son sayısı aynı olmak üzere birle üç arasında beş tane elemanı at diyorum, onların arasında iki muhtemelen gelecektir. Dolayısıyla y'le beş elemanı getiriyorum, leave space komutunda.

[Leave space *does this. Now, our y maximum, our y vector is between one and three, it's a vector of one, two, three. This is what* leave space *does, like this, what's our x vector? It has five elements, our y vector has three elements. In order to multiple these two, we need a y vector with five elements. Therefore, with the* leave space *command, leaving the first number the same and the last number the same, I say give me five elements between one and three. Two is most likely going to appear between them. Therefore, the* leave space *command brings us a y with five elements.]*

(T-4, Small-2, Observation 3)

Because the computer programming command is *leave space*, an English statement of what this command does, the teacher integrated the English version of this command into his teaching and referred to it simply by its English name, which the students must know in order to execute the command in MATLAB. Although the command was given in English, the

explanation surrounding it is in Turkish. However, no direct translation of the term was provided in Turkish.

Although these lectures were taught through the medium of Turkish, English played a central role in terms of naming and referring to scientific concepts. Given the fluidity with which English terms were used in these courses—often without any Turkish translation or explicit definition—teachers and students appeared able to comprehend and understand technical jargon in English.

5.2.4 Turkish-dominant, teacher-centered lectures

This section describes EMI lectures which were Turkish-dominant and teacher-centered. Such language practices were found in Teacher 21's class at Large-3, the only class in which Turkish was the primary MoI but in which relatively low levels of teacher-student interaction were observed. Turkish use and Turkish with English lexical items accounted for an average of 66.2% and 13.6% of class time respectively, compared with overall averages of 15.4% and 8.2% respectively. No English utterances in the form of full sentences or extended phrases were recorded in this teacher's class. Teacher-student interaction accounted for 15.5% of class time on average, which is less than both the overall average (20.66%) and the average for other Turkish-dominant classes (36.5%).

T-21 stated that he was teaching this particular EMI course in Turkish because the students in this class asked him to do so, even though the official MoI was English. As he describes:

> I teach in Turkish because the students asked me to. There are no foreign students, so I said okay.… Last semester, I taught this class in English, but this time the students all asked for Turkish, so I said okay.… So, for example, last term, I taught two sections of the same course, and I taught one in English because a few students wanted it, uh, we had some foreign students, and then I taught the other in Turkish because some students wanted Turkish, and you know, I said come to whichever section you want. And so the students chose. If we can do that, I mean, the schedules have to work but sometimes I don't know what else to do. (T-21, Large-3, Interview 1)

Although the lecture was given in Turkish, Teacher 21 wrote on the board exclusively in English and labelled graphs and diagrams in English. In doing so, he provided in written form the English terms for what he was explaining in Turkish. English terms were occasionally introduced into the spoken the lecture, although this occurred less often than in other Turkish-dominant classes (Section 5.2.3). Unlike other Turkish-dominant lectures in which English scientific terms frequently appeared in place of their Turkish equivalents, T-21's use of English terminology was sparing and often used to refer specific variables or aspects of a problem rather than used to discuss a scientific concept in general. Extract 5.2.4a illustrates how the teacher integrated English terminology into his Turkish lectures:

Extract 5.2.4a:

T: Biliyoruz ki no load power dediğimiz güç uyguladığımız gerilimin karesi bölü r-c, buradan biz r'yi gerilimin karesi tani sekiz binin karesi bölü, eh, güç dört yüz watt olarak hesaplayabiliriz. Ne çıkmış bu? On altı bin on olarak bulmuşuz. On altı kiloohm'luk bir dirençten söz ediyoruz biz. Sonra şu akıma bakalım, no load current diyelim.
[*We know the square of the voltage to which we've applied the strength which we call* no load power, *divided by r-c. From here we take r-c, the square of the voltage, that's eight thousand squared divided by, uh, we calculated the strength as four hundred watts. What does this come out to? We found this as sixteen thousand ten. We're talking about a resistance of sixteen kiloohms. Then let's look at this current, let's call it* no load current.

(T-21, Large-3, Observation 2)

Here, the teacher explained how to measure the load current in a transformer. While the explanation was in Turkish, the teacher selectively introduced English technical terms: *no load power* and *no load current.* In both cases, the teacher indicated that these terms were used to refer to specific aspects of the problem (*'which we call…', 'let's call it…').* Rather than integrate English terms throughout his lecture, this teacher was selective in introducing English terminology. Turkish terms were used for key concepts related to topic (e.g. *akım*-current; *gerilim*-voltage, *direnç*-resistance*),* and the English terms he chose to introduce referred to specific conditions of the problem under consideration.

The teacher-centered nature of this class distinguished it from other Turkish-majority lectures, which were characterized by much higher levels of teacher-student interaction. Even though the lecture was conducted in Turkish and students participated in their L1, teacher-student interactions were typically characterized by short student responses. Often, student involvement consisted of short answer in response to questions asked by the teacher as in Extract 5.2.4b.

Extract 5.2.4b:

T: Yani size verilen kağıtta, soruda hangi tafarın, eh, <cough> özür dilerim hangi tarafta açık devre yapılmış hangi tarafta ölçüm yapılmış verilmeye—söylenmeyebilir. Anlayabilir miyiz? Sizce bu deney transformatörün hangi ucunda yapılmıs, yani nereyi açık bırakmışlar, nereye gerilim uygulamışlar?
[*So, on the paper you're given, in the question which side, uh, <cough> sorry, on which side the open circuit was done, on which side the measurement was taken, it might not be given—it might not be stated. Will we be able to understand? What do you think, at which point on this transformer was the experiment conducted? I mean, where did they leave it open, where did they apply voltage?*]
S1: Sekiz bin volt uygulamışlar. [*They applied eight thousand volts.*]
T: Nerede sekiz bin volt? [*Where is eight thousand volts?*]
S1: Girişte. [*At the entrance.*]
T: Primerde. O halde neresi açık bırakılmış?
[*At the primer. In that case where has been left open?]*
Ss: Sekonder. [*The secondary*]
T: Söylemeye gerek yok, sekiz bin volt nerenin anma gerilimi? Primerin.
[*It goes without saying, eight thousand volts is the rated voltage of where? The primer.*]

(T-21, Large-3, Observation 2)

While this exchange between teacher and students occurred in the L1, student output is limited. In response to the teacher's question, the student provided a simple sentence (*They applied eight thousand volts*); all subsequent student responses are one-word answers. The students do not respond to the teacher's initial question ('*Will you be able to understand?*') by explaining *how* they will understand; instead, they respond to simpler questions with clear answers (*'which point?', 'where?')*. Extract 5.2.4c illustrates another common pattern of

teacher-student interaction found in these lectures, in which students provided numerical answers to a problem:

Extract 5.2.4c:

T: Şunla ilgili de unutmadan birşey söyleyim bakın. Teta kaç derece çıktı? [*Look, let me say something about this before I forget. How many degrees did theta come out to?*]
S1: Yetmiş altı derece. [*Seventy six degrees]*
T: Yetmiş altı derece. Şunu bir hesaplaverelim lütfen, söyler misiniz bana kaç çıkıyor. [*Seventy six degrees. Let's make a calculation for this please, would you tell me how much it comes out to?]*
S2: Seksen sekiz. [*Eighty eight*]
T: Kaç? [*How much?*]
S2: Seksen sekiz nokta sekiz. [*Eighty eight point eight*]
T: Emin misiniz? [*Are you sure?*]
S3: Hayır, yetmiş sekiz nokta altı. [*No, seventy eight point six*]
T: Sanki bundan küçük çıkacak gibi geliyor bana ama, yetmiş sekiz mi çıkıyor? Olabilir peki. [*It seems to me like this should come out smaller than this, however. Was it seventy six that it came out to? Well, that's possible*.]

(T-21, Large-3, Observation 2)

Despite Turkish serving as the MoI, student talk in these classes was limited, both in terms of quality and quantity. Students rarely responded to higher order questions in classes. Instead, students primarily listened to the lecture in Turkish and provided short answers to questions posed by the teacher. The lecture was conducted in Turkish, at the request of the students, although English terminology was occasionally used.

5.2.5 English preparation, Turkish discussion

This section describes the language practices observed in Teacher 18's class at Large-3, a unique case in the sample in which a much higher proportion of pauses were found relative to other classes (44.1%, compared to an overall average of 15.9%; see Figure 5.6). In terms of proportion of language use, a higher proportion of Turkish use including Turkish with English lexical items (32.7%; *avg*. = 23.5%) and a lower proportion of English use (20.6%; *avg*. = 56.4%) were found in Teacher 18's lessons compared to overall averages

across classrooms. However, the language practices in this EMI course could be described as using prepared language in English and conducting spontaneous discussion in Turkish. The English used in these lectures consisted of prepared texts, such as paragraphs on slides or the teacher's lecture notes, which were read aloud to the class. Following the recitation of English texts, content was then discussed in Turkish, either with the teacher providing a Turkish summary or with students asking questions for clarification.

The teacher read from lectures notes in English, copied English lecture notes onto the board, and conducted class discussions in Turkish; the high proportion of pauses found in this class resulted from the teaching copying his lecture notes onto the board for students to write in their notebooks. When asked about these language practices, Teacher 18 described his English language proficiency as insufficient and a limiting factor in his ability to lecture in English—making him the only teacher in the sample to explicitly state that his English was not good enough to lecture through English. When asked to describe his language use in class, the teacher said:

> *This year, I'm talking much English. At the beginning, much Turkish, less English, but now I think, I don't know what your opinion is, but I think it's more English.… My aim is pure, uh hundred percent English to talk. But uh actually I can talk but I don't know. I'm not ready yet, maybe. (T-18, Large-3, Interview 1)*

Because this teacher did not feel confident teaching in English, he used the board and other visuals such as writing, diagrams, and slides to facilitate EMI teaching. Visuals and diagrams *"make it easier… Because sometimes, I don't have to explain in English because [the students] see what's going on, on the board" (T-18, Large-3, Interview 2).* In practice, this meant that Teacher 18 often read directly from his slides in English and copied his notes verbatim, reducing the amount of spontaneous or unplanned discussion in English.

Teacher 18 described a laborious process of preparation, including linguistic preparation, which involved preparing slides directly from materials in the book, practicing

his lecture before class, and looking up any new or unknown vocabulary. Because the teacher rarely deviated from his pre-planned notes, the English used to lecture was formulaic and often copied directly from written material. These English texts were then supplemented by Turkish explanations and summaries to clarify meaning. Students asked questions most often in Turkish, to which the teacher replied in Turkish, leading to discussions of content in the L1. The teacher's style of presenting new content first from his prepared notes in English followed by a Turkish explanation is illustrated in Extract 5.2.5, from a 2nd-year Strength of Materials course.

Extract 5.2.5:

T: Negative. It means that point D moves to the left or right?
S1: Left
S2: Left
T: Left.
<writing, pause 38 second; T writes: *'This negative result indicates that point D moves to the left.*'>
T: Uhm, this is displacement d. It means, displacement of point D with respect to a. It's actually delta d slash a. Okay, but when second point x is a fixed point, generally we don't use the fixed point's name.
<writing, pause 8 seconds>
T: For the displacement of point B, relative to point C, what will you say? For the beginning? B and for c.
<writing, pause 7 seconds>
T: This is the relative displacement. B to c. With respect to c.
<writing, pause 53 seconds; T writes, *'Here the negative sign indicates that B will move toward C.*'>
T: Sadece bu termin b ile c'in arasındaki, b'in, c'ye göre yerdeğişimi negatif, birbirine yaklaşıyorlar demek.
[*Just this term is going to be between b and c. The displacement of b with respect to c is negative, so it means they're getting closer.]*
<writing, pause 4 seconds>
T: Böyle bir c belki sağa gidiyor ama b, daha fazla sağa gidiyor, dolayısıyla ne olmuş oldu? İkisinde birbirine yaklaşmış oldu, o yüzden bu relatif, evet kelimesi önemli.
[*Maybe c is going to the right like this, but then b is going further to the right, therefore what happens? They end up approaching each other, so this is relative, yes this word is important.]*

(T-18, Large-3, Observation 1)

Here, the teacher showed the students how to solve a problem related to axial loading by writing in full English sentences on the board and providing Turkish explanations of what he wrote. The sentences written on the board were copied from his notes, which he held in his hand while lecturing. Thus, the teacher could be sure that what he had written on the board was not only scientifically accurate but also grammatically correct.[12] In this form of EMI implementation, texts, diagrams, and visuals facilitated teaching and learning in the L2 by reducing the linguistic demands of EMI, and the L1 was used to supplement or clarify explanations written on the board in English.

As the English used in these lectures was largely pre-planned, the teacher frequently highlighted aspects to the language written on the board. In addition to summarizing what was written on the board in Turkish, the teacher translated specific words that were critical to understanding course content or which he thought the students were less likely to know (Extracts D.5 & D.6 in Appendix D). While solving a problem related to force and displacement, the teacher drew attention to the grammar of a particular part of the lesson, noting the tense at the beginning of a sentence he was copying from his notes (*'If f-b were a negative quantity…').* The teacher explained the meaning of this sentence in Turkish, asking students to make sense of the grammatical structure and providing a Turkish translation ('*Olsaydı gibi';* Extract D.7 in Appendix D). Through this example of focus-on-form teaching, the teacher and students discussed in Turkish an aspect of English grammar in the lecture notes and its implications for understanding the forces in the problem they were solving: while the focus was on the English of the lecture, the discussion occurred in Turkish.

Implemented in this fashion, EMI teaching incorporated visual aids and prepared texts to assist with content instruction. The English used to teach was pre-planned, and the L1 was used for spontaneous discussions and supplementary explanations of the English lecture

[12] Teacher 18's concerns about grammatical correctness while speaking English extended into my interviews with him; see Extract D.4 in Appendix D for an example.

notes. While this appears to have slowed down the pace of the lecture and limited 'natural' speech in English, it provided opportunities to focus on the English used in academic contexts.

5.2.6 Summary of findings on classroom language practices

The findings above have provided an overview of the language practices observed in EMI classes with respect to language choice and teacher-student interaction. Four varieties of EMI implementation, along with a fifth single case outlier, were observed in engineering undergraduate courses in Turkey. The vignettes presented in this chapter have illustrated the diversity with which EMI was implemented, particularly in terms of language choice and student participation. The variations of EMI implementation found through the classroom observations were:

1. English-dominant, teacher-centered lectures: English was used as the primary MoI, with teachers rarely using Turkish to introduce or present new content. Teachers rarely used Turkish during their lectures and often responded in English to questions asked by students in Turkish. When teachers did use Turkish, it was mostly to draw students' attention, check comprehension, and discuss 'off-topic' information related to the course, such as exam dates.
2. English-dominant, interactive lectures: English was the primary MoI in these classes. Although (relatively) high levels of teacher-student interaction were observed in these classes, student participation was often limited to short responses. Teachers scaffolded language and content into the lessons, which contributed to the relatively high levels of student involvement.
3. Turkish-dominant, interactive lectures: the primary MoI was Turkish, although English terminology was used frequently by teachers and students throughout the lecture to discuss scientific concepts. Classroom language use was therefore

characterized by a (relatively) high degree of language fluidity, and intra-sentential codeswitching was common.

4. Turkish-dominant, teacher-centered lectures: the teacher lectured in Turkish, using English terminology occasionally and in relation to specific aspects of the lecture, such as part of a problem or example. Although the MoI was Turkish, student participation was limited and primarily consisted of short responses to questions asked by the teacher.

In addition to the four variations of EMI found along two key dimensions (L1 use and student participation in the form of teacher-student interaction), a fifth variation was observed when the data was analyzed through another lens, pauses. Appearing as a single case in the data set, this fifth variation is described as:

5. Classes consisting of English lecture notes and Turkish discussions: the teacher used pre-planned lecture notes, slides, and texts to teach in English. The English texts were read aloud or written on the board; the teacher then provided explanations and summaries in Turkish. The Turkish discussion included explanations of the academic English used in the lecture notes.

That EMI education is implemented differently across university contexts and between classes within the same department has implications for the quality of education and learning outcomes. The EMI classes described in this chapter are regulated by the same national language education policies, although the language practices observed in these lessons varied, including in terms of which language served as the primary MoI. Considering the variation with which EMI was implemented in the university classrooms observed in this study, the following chapter examines teachers' and students' perceptions of EMI.

Chapter 6: Findings III: Teachers' and students' perceptions of EMI

This chapter addresses RQ3: *How do teachers and students perceive EMI in university-level engineering programs?*

The results presented in this chapter are based on the analysis of semi-structured interviews with teachers, including stimulated recall interviews, and focus group discussions with students. Data were analyzed using qualitative content analysis for emerging themes, and the themes from the inductive analysis are presented in this chapter to answer RQ3. This chapter will look at the following aspects of how teachers and students perceive EMI:

- **Perceptions of EMI policy**, including official policy, inconsistencies in EMI policy, and policy requirements for L2 proficiency;
- **Perceptions of students' linguistic preparedness for EMI**, including the quality of English education in secondary schools, the *hazırlık* system, adjusting to EMI, and learning technical terminology;
- **Perceptions of EMI compared to TMI**;
- **Perceptions of classroom language use**, including teachers' L1 and L2 use, student participation, and the role of mathematics in engineering;
- **Perceptions of motivations for EMI study**, including the decision to study through EMI and the benefits of EMI for students' future careers.

The findings presented in this chapter build on the results presented in Chapters 4 and 5 to address the overarching research question of this dissertation, which aims to understand the variation with which EMI is implemented in undergraduate engineering programs at state universities in Turkey.

6.1 Perceptions of EMI policy

Chapter 4 addressed RQ1, which investigated EMI policies in Turkish higher education, by analyzing official documents, including legislation and other university documentation. This section complements the findings presented in Chapter 4 by examining how teachers and students perceived EMI official policy (e.g. what is written in policy documents). The findings indicated that teachers and students perceived official EMI policy to be English-only instruction but believed that there were no repercussions for violating official policy regulations, such as by lecturing in Turkish rather than English. Teacher 5 summarized official EMI policy as follows:

> Now it's like this, 30 percent English does not mean this, in our classes it's not 30 percent English and 70 percent Turkish. Some classes are entirely English, and some classes are entirely Turkish…. But of course, we have to give the classes that are English in the curriculum in English, and the Turkish classes in Turkish. In the 100 percent English program, the whole curriculum is English; the university is giving all the classes in English. (T-5, Small-2, interview 1)

Teacher 5's summary of EMI policy did not allow for mixed language use; instead, he described a policy through which one language was used at a time, and the language of instruction was pre-determined according to the course curriculum. Other teachers also noted that EMI policy envisioned one-language-at-a-time instruction: *"the university policy is all classes are in English, that's it"* (T-11, Elite-2, interview 2). Although teachers perceived official policy to stipulate the use of one language at a time, many acknowledged that this policy was not enforced—or implemented—in practice. Teacher 20 explained, *"The classes [in the partial EMI program] are supposed to be either English or Turkish but in practice we use both"* (T-20, Large-3, interview 1). Teacher 6 elaborated further: *"Our head of the department says, okay, try to teach in 100 percent English, you know? Don't explain in Turkish. Stuff like that. But, you know, there's a point where you understand that students need some Turkish explanation"* (T-6, Small-2, interview 1). Although teachers perceived

EMI policy to envision English-only instruction, they also appeared to recognize that EMI implementation diverged for the English-only standards envisioned by policy.

Despite pre-determined EMI curricula, some teachers (e.g. T-21, Large-3; T-3, Small-1) noted that departments were flexible with respect to MoI implementation, particularly when courses were offered in both English and Turkish. These teachers stated that students could choose which MoI class they preferred to attend, regardless of the official MoI of their program: *"they can follow the course in either Turkish or English. We don't really care"* (T-3, Small-1, interview 1). Moreover, students in the partial EMI program at Large-3 reported no clear division between their EMI and TMI classes, stating that teachers used Turkish to explain concepts during EMI lectures and assigned English-language materials in TMI classes (FG, T-19, Large-3). According to students, the courses in the partial EMI program at Large-3 were taught bilingually despite policy provisions for dual, one-language-at-a-time instruction.

The EMI teachers interviewed in this study perceived the enforcement of language policy as "a highly debated and very sensitive issue" (T-11, Elite-2, interview 2). Teacher 11 noted that department heads have limited means of enforcing policy: *"the only thing that [the dean] can do is, if anyone is retired but still teaching… then [the department] might not sign [his contract] the next time"* (T-11, Elite-2, interview 2). To her knowledge, however, no repercussions existed for full-time or tenured teaching staff. Similarly, Teacher 21, who was the head of the Electrical Engineering Department at Large-3, stated that he approached language-related complaints from students by talking to the teacher involved; he also expressed sympathy to the sensitivity of language-related issues:

> Just last week, a complaint came from a foreign student in one class from the 30 percent program. He says the teacher speaks Turkish and he wants this class in English…. So I told the teacher to teach in English. But he has two sections of this class, and he asked, 'What should I do?' So I told him to teach one in English and one in Turkish and the students can go to the Turkish section if they prefer. But then the students started complaining that their

> section was in English and the other was in Turkish…. So in the end, I told the teacher to teach both in English. (T-21, Large-3, interview 2).

Following a complaint about Turkish use in EMI classes, Teacher 21 appeared to seek a resolution that satisfied both Turkish and international students. Notably, he mentioned no consequences for the teacher lecturing in Turkish. In general, teachers perceived no form of official institutional oversight or punishment for violating EMI policy.

In the absence of an enforcement mechanism, the implementation of EMI appeared to fall to the teachers' discretion, leading participants to perceive classroom language practices as more fluid and bilingual than envisioned by official policy. In every focus group (n=25), students stated that classroom language use was determined by the teacher. Many students described teachers who used or allowed students to use Turkish as 'relaxed' in terms of adhering to EMI policy. One student summarized the difference between 'strict' and 'relaxed' teachers: *"Some [teachers] want us to ask in English, maybe because it is the rule, I don't know. This is what I think. They want to follow the rule. But some teachers, they are not so strict. They are more relaxed. If we ask in Turkish, they respond"* (Student 2, T-10, Elite-1). This student implied that the 'rules' of EMI were English-only instruction but that some teachers were 'more relaxed' in terms of following those rules. A student in a different focus group described Turkish use in similar terms, stating, *"the teacher might, if he or she is a relaxed person, sometimes go to Turkish and not return to English"* (Student 2, T-8, Elite-1), and students in Teacher 4's class stated that they could ask questions in Turkish because of *"the teacher's relaxedness. Because he speaks a bit more Turkish in class"* (Student 1, T-4, Small-2). In their descriptions, students implied that 'following the rules' of EMI meant using English, and they perceived some teachers as more relaxed in terms of enforcing official policy.

6.1.1 Inconsistencies in EMI policy

The previous section examined teachers' and students' perceptions of official EMI policy. This section explores another aspect of perceptions of EMI policy: perceived inconsistencies. Across university contexts, students perceived a lack of consistency in the classroom-level implementation of EMI policy, which was manifested in three ways. First, students perceived inconsistencies within an individual teacher's class. In one focus group, students expressed frustration at the inconsistency with which a teacher—not included in this study—allowed students to ask questions in Turkish:

> S3: [The teacher] tries to make us speak English. One day I was going to ask a question, I started in Turkish, but the teacher said ask in English.
> S1: I'm not going to ask then.
> S3: I said I'm not going to ask then. The teacher said okay; I said never mind.
> S4: No, but the thing that makes me upset there, look, what are people doing? I'm saying [in Turkish], teacher can I ask a question? She's saying, English please. But someone else goes directly into Turkish, and she doesn't warn them, she just lets them continue.
> S1: You should do the same then. Go straight into Turkish then.
> S4: But I'm asking [in Turkish] if I can ask a question.
>
> (FG, T-16, Large-2)

The students in this focus group perceived inconsistencies in the teacher's English-only language policy: they reported that the teacher sometimes enforced an English-only policy, such as when they asked permission to speak Turkish, but other times allowed L1 use, such as when students spoke Turkish without asking permission to switch the language of communication.

Second, students perceived inconsistencies in language policy implementation across classes. Examples of this were evident across focus groups, in which students perceived differences in their various teachers' implementation of EMI: "*No, [another] teacher does not do that for example*" (Student 5, T-19, Large-3); *"One explains in English, one explains in Turkish"* (Student 3, T-6, Small-2); *"Some teachers are strict and absolutely won't accept Turkish; some do accept Turkish"* (Student 2, T-4, Small-2). Other students noted that a

teacher's language policy could vary from one class to another: *"Last semester, he taught a class and it was all in English, but this one is all in Turkish"* (Student 4, T-21, Large-3).

Third, students perceived a lack of consistent policy between some teachers' tolerance for Turkish in lectures compared to exams: "*Some of the teachers teach in Turkish, like you saw. But the exams are in English, the exams are always in English"* (Student 1, T-2, Small-1). Students highlighted the difficulties that this inconsistency created for them in terms of understanding exam questions in English: *"Sometimes the lessons are never in English. The exams are in English, so the teacher comes and explains the questions to us [in Turkish]"* (Student 2, T-6, Small-2). The students reported difficulty understanding on exams English terminology that they had not been exposed to during lectures. While students were generally positive toward Turkish use in EMI classes (Section 6.4.2), they often expressed frustration with a lack of consistent language policy within a teacher's class (e.g. when they were sometimes allowed to but sometimes reprimanded for using Turkish) and between the lecture and the exam (e.g. when a teacher lectured in Turkish but gave exams in English).

Teachers also perceived inconsistencies with EMI policy, although the issues that they reported occurred at the departmental or institutional level. Several teachers (T-16, Large-2, interview 1; T-19, Large-3, interview 1; T-5, Small-2, interview 1) noted that, while EMI was offered at the undergraduate level, graduate programs in the department were taught entirely through TMI. The teachers described this as a limitation to implementing EMI fully in their departments. For example, TMI graduate-level programs prevented graduate students from serving as teaching assistants for undergraduate EMI courses (T-20, Large-3, interview 1). Moreover, some teachers perceived a lack of institutional or departmental autonomy in determining EMI policy. Teacher 17, who was the head of the department at the time of data collection, stated that his department wanted fewer students admitted to its EMI program than were assigned to it by YÖK:

> Actually when we opened the English program, we requested fewer students [from YÖK]. I mean, we wanted maximum 25, 30 students so that we could pay more attention to the students. You're teaching through English; it's difficult.… [But] because we shut down our Turkish program, YÖK sent us the upper limit of students. We wanted 30, and they sent much more than that. (T-17, Large-2, interview 1)

Although the department wanted fewer students in order to provide more individualized attention in its EMI program, policy decisions concerning enrolment and admission were determined centrally by YÖK.

Similarly, because YÖK controlled the admissions process for international students, Teacher 21 perceived his EMI department as limited in its ability to formulate a coherent language policy: Teacher 21 stated that it might be best if international students were only admitted to full (not partial) EMI programs but *"we don't even know [international students] have been accepted; they just show up. All of that, the application, and the acceptance, and their assignment here, it's all done by the Council of Higher Education"* (T-21, Large-3, interview 1). Teacher 21 believed that if international students were admitted to full rather than partial EMI programs, it would reduce language-related complaints in the department; however, he perceived his department as having little autonomy in formulating policy with respect to MoI and international students. Even within their HEIs, teachers perceived limitations to developing comprehensive EMI policies. Teacher 15 noted limitations in the department's ability to establish L2 proficiency criteria for its Masters program: *"For our Masters program our department [wants to] require a minimum of like 65 or 70 on the language exam. And when we send this request to the university, the Senate, they say, we don't require a language score. So it's just open to everybody. But we teach in English"* (T-15, Large-1, interview 2). In each of these cases, teachers perceived limitations in their departments' ability to formulate coherent EMI policy due to constraints imposed by more macro-level institutions.

6.1.2 Policy requirements for L2 proficiency

In addition to inconsistencies in EMI policy, teachers and students also perceived issues with the policy standards for L2 proficiency. Participants stated that students needed to pass the *hazırlık* program as a pre-requisite for EMI study. However, they did not perceive policy as requiring a clear, minimum level of L2 proficiency. Students in one focus group (FG, T-3, Small-1) stated that EMI policy required students to achieve a B2 level of English proficiency before enrolling in their EMI classes. This was the only focus group in which students perceived a specific, minimum level of L2 proficiency. However, the students expressed skepticism that the minimum passing grade from the *hazırlık* program corresponded to a B2 level of proficiency: *"If you meet the necessary standards, you pass the proficiency [test] and whatever. If you don't pass, you take the course and you need to reach B2. That's what it's called here but it's actually intermediate"* (Student 3, T-3, Small-1). The students in this focus group stated that the *hazırlık* program brought students to an 'intermediate' level rather than a B2 level of English proficiency, although it is unclear what they perceived as the difference between B2 and 'intermediate.' The students only elaborated further to state that, *"the English we saw in hazırlık and the English we see in the department are not the same"* (Student 2, T-3, Small-1), particularly with respect to vocabulary. The students did not specify how or from where they came to perceive EMI policy as requiring a B2 level of proficiency. Teacher 21 also cited B2 as the target level of L2 proficiency necessary for EMI study, although he noted that in practice the *hazırlık* program *"get[s students] to B1 and assume[s] they'll learn the rest here"* (T-21, Large-3, interview 2). Aside from Teacher 21 and the students from Teacher 3's class who participated in the focus group, teachers and students did not elaborate on the level of L2 proficiency required for EMI study and appeared to perceive policy requirements simply as completing the *hazırlık* program.

In contrast to the vagueness with which they perceived L2 proficiency requirements for students (e.g. pass *hazırlık*), teachers described in detail the L2 proficiency requirements for teaching in EMI and elaborated on what they perceived to be policy shortcomings. In general, teachers reported two means through which lecturers could meet the L2 proficiency criteria: teachers must either receive a score of at least 80 points on a national language exam or have completed their PhD studies abroad. One teacher summarized:

> Not just anyone can teach in English; it's not just about whether you want to teach in English. You need to meet certain requirements. There are two ways you can meet these requirements. One, you can get a certain score on an exam, on an English exam. So either on YDS or an international exam, you get a certain score. Or two, you have an international degree. You get your degree from an international university. (T-19, Large-3, interview 1)

In addition to these main criteria, other teachers noted that their departments added additional criteria for EMI teaching because the national exam (*YDS*) did not include a speaking component. Because the YDS assessed grammar, Teacher 17 perceived it as insufficient for evaluating a teacher's ability to lecture through English (T-17, Large-2, interview 1). Another teacher summarized the national exam: *"It says nothing about how well you can teach. Solving grammar on a test is not like teaching [in English]"* (T-19, Large-3, interview 1). Teacher 7 described a similar problem with the language requirements for EMI teaching: *"someone looks at my exam score and says, okay you can teach in English, but no one checks to see if I can speak English"* (T-7, Small-2, interview 1). Because the YDS lacks a speaking component, both Teacher 17 (Large-2, interview 1) and Teacher 13 (Elite-2, interview 2) stated that their departments encouraged applicants to submit TOEFL scores instead, since the TOEFL exam included speaking assessment. These teachers perceived policy requirements to be insufficient for EMI lecturers, since they did not include a measure oral proficiency.

In addition to oral proficiency, Teacher 21 (Large-3, interview 1) noted that teaching skills and pedagogical training were absent from policy requirements. Teacher 21 stated that

language proficiency alone does not qualify one as a competent teacher: *"just because you get a certain score doesn't mean you can teach in English…. These are different skills"* (T-21, Large-3, interview 1). Moreover, he noted that teaching ability is not the main criteria considered during the university hiring process, since universities value an applicant's research record more than his or her teaching ability: *"applicants are asked to give a seminar, a sample lecture, but often this isn't the main criteria for hiring; first, the department will look at their research credentials, publications, etc. Teaching is a main requirement of the job but it's not necessarily considered when hiring"* (T-21, Large-3, interview 1). Teacher 21's statements are supported by the lack of teacher training offered to EMI lecturers: of the 21 lecturers included in this study, only two had received any kind of pedagogical training (T-6, Small-2 & T-14, Large-1); both received training as part of their PhD studies in the U.S.

Despite the official policy requirements for EMI lecturers described above, at some universities with partial EMI programs, teachers perceived the allocation of EMI courses to be less about official qualifications and more about who was willing to teach through English. One teacher stated that he was asked to teach subjects outside of his area of expertise because he was able to lecture in English: *"we have calls from other professors, they ask… we know that you studied in English. It's not about a course, if you know the subject or not. [They say,] 'you can speak English so can you give this course?' It comes from economics, geology, I mean, statistics. All kinds of stuff"* (T-3, Small-1, interview 1). Thus, in his university context, Teacher 3 perceived a willingness to lecture in EMI as superseding content knowledge. He suggested that this resulted from a lack of teaching staff willing and able to lecture through EMI, which increased the demand for EMI teachers: *"It was also the same thing with my colleague. He had to give lots of courses in English just because he could speak English"* (T-3, Small-1, interview 1). Other teachers shared the perception that they

were assigned to teach EMI courses because they were willing to do so, particularly when it appeared that other teachers in the department did not want to lecture through EMI: *"It becomes a natural choice. I mean, some of our teachers for example do not want to give English classes at all"* (T-5, Small-2, interview 1). Moreover, because engineering lecturers did not want to teach through EMI, in *"some other departments they force [teachers] to do this [EMI] lecturing in the basic science courses which is not of course the engineering department itself"* (T-15, Large-1, interview 2). Here, Teacher 15 referred to partial EMI programs in which the majority of EMI courses in the curriculum were foundational math or science courses, taught by lecturers in math or science departments rather than lecturers in the engineering department. These comments imply that some content lecturers working in (partial) EMI departments preferred to lecture in TMI rather than EMI, resulting in the assignment of EMI classes to lecturers who were willing to teach in English.

6.1.3 Summary of policy perceptions

The findings have suggested that teachers and students perceived EMI policy as stating that the language of instruction should be English only. However, teachers and students also perceived flexibility in EMI policy implementation—perhaps due to a lack of policy enforcement—the result of which was that teachers served as the 'final arbiters' (Menken, 2008; Johnson & Johnson, 2015) of language policy. Teachers and students perceived issues with EMI policy with respect to:

- **Consistency:** Students perceived a lack of consistency in classroom language use across and within their teachers' EMI courses. Teachers perceived incoherent EMI policies at the departmental level due to a lack of autonomy in shaping MoI policy.

- **L2 proficiency requirements:** Participants did not perceive a clear, minimum L2 proficiency standard for EMI students, and teachers perceived the lack of an oral proficiency requirement for EMI lecturers to be a policy shortcoming.
- **Allocation of EMI classes:** In some partial EMI programs, teachers perceived a willingness to lecture in English as the primary criteria for determining who would teach EMI classes.

The findings have suggested that teachers and students perceived flexibility in the implementation of EMI policy, including variations in classroom and departmental practices. The participants perceived no repercussions for violating official EMI policy.

6.2 Perceptions of students' linguistic preparedness

Another theme to emerge from the analysis of interview and focus group data was the perception of students' linguistic preparedness for EMI study. This theme is discussed with respect to perceptions of the quality of English education in secondary schools and the *hazırlık* program, as well as perceptions of students' adjustment to EMI.

6.2.1 Quality of English education in secondary schools

Students and teachers perceived issues regarding students' linguistic preparedness for EMI. While students were generally positive about their *hazırlık* experiences, they were critical of the English education provided in secondary schools through the National Ministry of Education (*Milli Eğitim Bakanlığı,* MEB). Because participants perceived students to enter university with little or no knowledge of English, they perceived the one-year intensive *hazırlık* program as insufficient for preparing students for EMI study.

Both students and teachers perceived the quality English language education in (public) primary and secondary schools to be low. The MEB curriculum introduces ELT classes in primary school, meaning that most students received eight years English instruction

before entering university. However, students and teachers perceived issues with the quality of ELT classes in the MEB system. Students in one focus group stated:

> S2: The problem is with MEB. We started learning English in the fourth grade but somehow still could not learn it properly.
> S1: Yeah, the problem starts in elementary school. I mean, we studied for eight years before we came here but we never learned anything. Even now, we have trouble speaking.
>
> (FG, T-8, Elite-1)

Among the perceived issues that resulted in students having 'never learned anything' was the emphasis on grammar teaching in the MEB curriculum: across focus groups (e.g. FG, T-6, Small-2; FG1, FG3, & FG5, T-14, Large-1) students stated that they only studied grammar in their English classes throughout primary and secondary school. Students also noted that the ELT curriculum was repetitive and slow-paced: *"The things that we learned in the elementary level of hazırlık were the same things that we saw for four years [in high school]"* (Student 2, T-6, Small-2). Teachers (e.g. T-18, Large-3, interview 1; T-5, Small-2, interview 1) also perceived that the MEB curriculum's emphasis on grammar limited effective language learning.

In one focus group, students noted that their classmates who came from state high schools in Anatolia (i.e. rural areas) were less prepared linguistically than students from (private and/or elite) high schools in Istanbul: *"It's like they meet English when they come [to university]. So they have no background with English. [Even after hazırlık], they still have some problems getting used to English and I don't think [hazırlık] is enough"* to prepare them for EMI study (Student 3, T-8, Elite-1). The student quoted here—who graduated from an elite EMI high school in Istanbul—perceived that some students were less linguistically prepared for EMI than others because of their secondary schooling, and he suggested that the low English proficiency levels of his Anatolian classmates preventing them from understanding content in EMI lessons.

Some teachers also noted that problems with the *hazırlık* program were connected to issues in the secondary school system. One teacher stated: *"This is a state university, so we get students from all different backgrounds. Especially the ones who study hazırlık, they come in with a very low level of English and they only get one year of instruction in the hazırlık [program]. I don't think it's enough"* (T-11, Elite-2, interview 1). In explaining why she perceived *hazırlık* to be insufficient for preparing students for EMI study, Teacher 11 noted that many students entered university 'with a very low level of English' due to the quality of English education in their secondary schools. Perceived differences in the quality English education across secondary schools raise questions with respect to equality of education in urban and rural areas.

6.2.2 Quality of the *hazırlık* program

The findings presented in the previous section have examined perceived issues with the quality of English education in secondary schools. This section examines perceptions of L2 learning in the *hazırlık* program. Students in many focus groups (e.g. FG, T-8, Elite-1; FG, T-5, Small-2; FG, T-6, Small-2; FG, T-9, Elite-1) were pleased with the quality of their *hazırlık* education, but they perceived that the one-year intensive program was insufficient for EMI study. Students in other focus groups were less satisfied with the quality of their *hazırlık* program, which they perceived as oriented toward grammar teaching (e.g. FG, T-17, Large-2; FG, T-19, Large-3); these students reported that the *hazırlık* program had not adequately prepared them for the linguistic demands of EMI. Student perceptions of the effectiveness of the *hazırlık* program varied across HEIs, suggesting that some *hazırlık* programs were more rigorous than others in terms of the quality of English language education.

Many teachers (e.g. T-1, Small-1, interview 1; T-14, Large-1, interview 2; T-15, Large-1, interview 1; T-11, Elite-2, interview 1; T-19, Large-3, interview 1) also perceived the *hazırlık* program as insufficient for preparing students for EMI study. These teachers

believed that some of their students struggled with language in their EMI lectures due to low levels of English proficiency. Some teachers suggested that—like MEB— *hazırlık* placed too much emphasis on grammar teaching (T-18, Large-3, interview 1) and that the passing grade was too low for EMI study (T-20, Large-3, interview 1).

In order to address issues with the quality of the *hazırlık* program, Teacher 16 stated that he was working with language teachers to revise the curriculum:

> We are working with [the director of the *hazırlık* program] to improve the English education. The first two years, it was bad, because the *hazırlık* wasn't ready. But we've been working with [the director], you know, to change the passing grade from 60 to 70, and at first, the students had only multiple choice tests. Now, they have a writing test and a speaking test, as far as I know, so I hope the students' English is getting better. (T-16, Large-2, interview 1)

Teacher 17, who lectured in the same department, confirmed Teacher 16's account of collaboration with language teachers to improve the *hazırlık* curriculum (T-17, Large 2, interview 1). However, they were the only teachers in the sample to report collaborating with language instructors. Teacher 21 stated he had wanted to work with teachers in the *hazırlık* program to improve the quality of English education but was unable to do so for logistical reasons:

> We don't know exactly what they do over there [in *hazırlık*]. We're trying to change the structure of the *hazırlık* program to give students a better education. But, you know, they have their own limitations and their own problems, you know, with class sizes or desks or teaching hours, or I don't know, they have their own needs, so we can't just tell them to change it. (T-21, Large-3, interview 2)

Teacher 21 perceived the structure of the university to deter collaboration with the *hazırlık* division, since language teachers had their own 'limitations and problems.'

Among the issues with the *hazırlık* programs highlighted by teachers and students across HEIs were a lack of emphasis on speaking skills and technical terminology. Some students attributed speaking difficulties to the education system's emphasis on grammar teaching: *"We know the past perfect but we can't speak. I mean, we can't use it so there's no*

point in knowing the rule" (Student 4, FG3, T-14, Large-1). Students reported difficulty understanding technical vocabulary because it was not taught in the *hazırlık* program (e.g. FG, T-5, Small-2; FG, T-9, Elite-1; FG, T-4, Small-2; FG, T-3, Small-1; see Section 6.2.4). One student stated:

> In [the English] preparation school, we didn't learn anything about the mechanical terms, we just learned English grammar, so when we came to the department, it's really not—I mean, it's different, there's a difference between the English at prep year and the English we use here. (Student 8, T-11, Elite-2)

Here, the student reported that the *hazırlık* program followed a curriculum designed for teaching general academic English, the result of which was that students were not exposed to technical vocabulary specific to their fields before entering their departments.

6.2.3 Adjusting to EMI

Given the perceived limitations of the *hazırlık* program described above, this section explores perceptions of students' transition to EMI and adjustment to learning in English. Students perceived the transition to EMI to be difficult but reported that they 'got used to it' (e.g. FG, T-9, Elite-1; FG, T-8, Elite-1), after which learning through EMI became easier. Students in one focus group reported that the first semester was difficult *"because we were taking English classes at university for the first time but now [in our second semester] it's a bit better"* (Student 1, FG1, T-14, Large-1). Several teachers who had studied through EMI described similar experiences (e.g. T-6, Small-2, interview 1; T-1, Small-1, interview 1). One teacher recalled that the first semester of EMI *"was really [difficult] for me, not English but concentrating. I was just dreaming during the lecture. Someone is speaking in English and I can't go on, I can't follow it. But after a while, after one semester, it becomes a normal thing"* (T-1, Small-1, interview 1). Here, the teacher perceived that EMI 'becomes a normal thing' after students adjust to the switch in MoI.

Students perceived that linguistic challenges lessened as they learned technical terminology in their EMI classes. They perceived vocabulary learning to occur through exposure, and they described processes of learning by which they *"got used to"* (FG, T-13, Elite-2; FG, T-17, Large-2; FG, T-15, Large-1) English technical terms. One student stated:

> At first, we didn't know anything when the teacher was speaking. Now in physics class, for example, we're using [English] physics terms when we take notes, so we're saying, acceleration means *ivme* [in Turkish]. Then the more

> we use the terms, the better we understand them. For example, in the first semester we had a chemistry class in English, and at first it was difficult for us to understand. Then as we learned the terms, we were able to form sentences and our comprehension improved. (Student 7, FG1, T-14, Large-1)

Here, the student perceived language learning to occur through repeated exposure to English terminology in EMI classes. Similarly, teachers perceived students to develop their knowledge of English terms 'little by little' (T-10, Elite-1, interview 1) and stated that students' comprehension improved as English terminology 'sinks in' (T-5, Small-2, interview 2). As such, participants appeared to perceived vocabulary learning as a gradual but natural learning process through exposure to technical terms and the language associated with them.

Although some students perceived EMI to become easier with experience, they did not necessarily perceive EMI as beneficial to their overall English proficiency. In other words, students did not necessarily perceive that their English was improving through EMI. One student stated: *"The problem is, our English stayed in hazırlık. Really, hazırlık was beneficial for us; it improved our English, but after that, we haven't developed our English much"* (Student 6, FG2, T-14, Large-1). Several teachers (e.g. T-5, Small-2, interview 2; T-6, Small-2, interview 1) shared the perception that students' English skills were not improving through EMI, and Teacher 5 perceived that many students—especially students in partial EMI programs—graduated with lower levels of English than when they entered the department, after completing the *hazırlık* program: *"The students come to us at this level <indicates high> but graduate at this level <indicates low>. Why? We have to ask why"* (T-5, Small-2, interview 2).

Many teachers perceived that students were not improving their English through EMI because they were not putting in an effort to study English outside of class (e.g. T-6, Small-2, interview 1; T-7, Small-2, interview 2; T-16, Large-2, interview 1). These teachers perceived issues of language learning to be related to students' study habits. One teacher noted that students had many (non-academic) resources available for learning English: *"To improve*

their English, you know, there's the internet. They could watch films, find resources online, listen to music. But they don't do this. They don't work to improve their English" (T-16, Large-2, interview 1). The teacher perceived that students were not studying English outside of class.

While some participants perceived partial EMI programs as effective for producing bilingual engineers (T-19, Large-3, interview 1), other participants perceived them as ineffective for language learning (e.g. FG4 & FG5, T-14, Large-1; FG, T-6, Small-2). Students highlighted issues with vocabulary learning in partial EMI programs due to a lack of exposure to English terminology across courses. One student compared his experience learning English through a full EMI program with his friends' experiences in a partial EMI program:

> I think the problem is not *hazırlık*, but after *hazırlık*. Now, for example, I'm in the 100 percent English program. My friends, for example, are in the 30 percent program. I'm looking, and my friends are having trouble in some of their classes. Why are they having trouble? I think they're right [to experience difficulty]. For example, I took chemistry in English. I took Physics 1 and Physics 2 in English. I learned all the vocabulary there. But now here the teacher is using some words and [my friends] don't know what they mean. This is the problem. In my opinion, 30 percent [EMI] is ridiculous.… You learn 70 percent of the content in Turkish and then you come to the 30 percent part and they say, 'you should know what this is in English.' I mean, the teacher says velocity, and you know what this is in Turkish but you don't know it in English. There are hundreds of words like this. (Student 1, T-6, Small-2)

This student appeared to question the assumption that partial EMI programs contributed to language learning; instead, he perceived that students in partial EMI programs experienced greater linguistic challenges than students in full EMI programs. Several teachers similarly noted limitations to language learning in partial EMI programs (e.g. T-2, Small-1, interview 1; T-7, Small-2, interview 1). Teacher 5 perceived students' knowledge to be *"caught somewhere in between"* the two languages in partial EMI programs (T-5, Small-2, interview 1); he stated that it took time to learn both English and engineering, but that students in

partial EMI programs were not exposed to enough English terminology for it to 'sink in' (T-5, Small-2, interview 2). Other students also perceived limited opportunities to improve their language skills in partial EMI programs:

> S4: This class adds nothing [to my English skills] but listening. But I could develop my listening anywhere. I could turn on a TV series at home and turn off the subtitles and develop my listening.
> S5: I think that if you are not speaking English when you leave the class, there's no point in teaching the class through English.
> (FG3, T-14, Large-1)

These students perceived the linguistic benefits of (partial) EMI programs to be minimal, and they suggested that there might be more effective ways to improve their English proficiency. In particular, Student 5 highlighted the lack of speaking opportunities in EMI classes. Others students (e.g. FG, T-12, Elite-2; FG, T-4, Small-2) also perceived a lack of opportunities to practice speaking in EMI classes: *"Last year we had debates [in our hazırlık classes]; the teachers were making us speak there. Last year our classes were oriented to speaking but now they're oriented to listening"* (Student 3, T-4, Small-2). As such, some participants perceived the linguistic benefits of (partial) EMI programs to be limited.

6.2.4 Technical terminology

Given that teachers' and students' raised issues concerning technical terminology in their discussion of the *hazırlık* program and transition to EMI classes, this section examines perceptions of technical terminology in EMI classes (see Macaro, 2019, for discussion of technical vocabulary). Several teachers who taught their EMI lectures primarily in Turkish (e.g. T-2, Small-1, interview 1; T-20, Large-3, interview 1; T-21, Large-3, interview 2) emphasized the importance of English terminology: *"Most of the research being published is in English, and so you have to know the terms in English. And sometimes there are no good Turkish equivalents, or sometimes the Turkish term isn't quite right"* (T-2, Small-1, interview 1). These teachers stated that they incorporated English terminology into their lectures and

wrote on the board in English because it was important for students to know English terminology for their exams and future careers. Teachers emphasized that leading research was conducted in English: *"the terminology is tending towards English…. The research is coming out so quickly, there's not enough time to create a German version or a Turkish version of these things, so we just use the English terms"* (T-12, Elite-2, interview 1). As such, knowledge of engineering terms in English was perceived as important for following developments in the field. Teachers also noted limitations with Turkish terminology, such as the existence of multiple terms to represent a single concept (e.g. T-10, Elite-1, interview 1; T-11, Elite-2, interview 1) or lack of concise terms: *"Some terms are full definitions. The English is one word but the Turkish is, I don't know, 4 or 5 [words], so it's really hard to use,"* (T-7, Small-2, interview 1).

Because they conducted their research in English, many teachers stated that they did not know technical terminology in Turkish (e.g. T-10, Elite-1, interview 1; T-3, Small-1, interview 2). Some teachers joked that their lack of Turkish technical vocabulary led to moments of embarrassment when collaborating with industry (e.g. T-10, Elite-1, interview 1; T-13, Elite-2, interview 1). Other teachers stated that they only learned Turkish terms in preparation for their tenure exams (e.g. T-10, Elite-1, interview 1; T-11, Elite-2, interview 1).

Similarly, in focus groups, many students stated that they did not know technical terminology in Turkish (e.g. FG, T-9, Elite-1; FG, T-7, Small-2; FG, T-16, Large-2). Some students stated that this had caused problems during their internships (FG, T-15, Large-1; FG, T-16, Large-2; FG, T-19, Large-3), which were conducted in Turkish. One student expressed concern that her lack of Turkish terminology had been interpreted as insufficient content knowledge: *"During our internship period… we didn't understand the Turkish. It was like we hadn't seen these concepts in school*" (Student 5, T-16, Large-2). Some students worried that they would have to re-learn scientific terminology in Turkish after graduation (e.g. FG, T-17,

Small-2). Other students stated that they were able to learn Turkish terminology by studying from Turkish textbooks, a learning strategy they used to overcome difficulty reading English textbooks (FG, T-19, Large-3).

Although many teachers were not concerned about their students' lack of Turkish terminology (e.g. T-9, Elite-1, interview 1; T-11, Elite-2, interview 1), other teachers (e.g. T-18, Large-3, interview 2; T-19, Large-3, interview 2) stated that students would need to know Turkish terminology for their future careers. The perception that students needed to know scientific concepts in both English and Turkish was evident in the following exchange between two students at Large-1:

> S3: Personally, I'd prefer my entire education to be in Turkish. I mean, I'm going to be an engineer in Turkey. I'm going to work with Turkish engineers, and I need to know Turkish, not English, to speak to them.
> S2: But you need English if you want to work at an international company. They use English, and you need it to get a job.
>
> (FG, T-15, Large-1)

Here, the students contrasted the need to communicate in Turkish with Turkish colleagues and the need to communicate in English with international colleagues. Thus, competency in both languages was perceived by some participants as necessary for work as an engineer—at least for students who aspired to work at international companies.

In the EMI classes observed for this study, teachers did not commonly provide Turkish translations for English terminology (Chapter 5). When teachers did provide Turkish translations of technical terms, they often stated that it was because they did not perceive the Turkish term to be intuitive. Teacher 10 stated that he provided students with the translation of 'fin' because he had personally found it difficult to learn the Turkish (*kanatçık*, related to the word for 'wing'): *"I don't usually tell them what is the Turkish version or I usually do that for the cases where I had a hard time finding out"* (T-10, Elite-1, interview 2). Similarly, Teacher 17 provided his students with the translation of 'common ion effect' because he was concerned they would mistakenly translate 'common' to 'widespread'—as opposed to

'similar'—in Turkish. In another class, Teacher 14 prompted students for the translation of 'amber' because he had forgotten the Turkish word: *"Actually I forgot the Turkish. I couldn't remember it in Turkish, so I asked them"* (T-14, Large-1, interview 2). In these examples, the EMI lecturers introduced Turkish terminology into their lectures when they had (personal) concerns about the Turkish term.

6.2.5 Summary of linguistic preparedness

This section has examined teachers' and students' perceptions of students' linguistic preparedness for EMI study. To summarize the findings, participants perceived that students were not linguistically prepared for EMI study due to the low quality of English education in secondary schools and the emphasis on grammar teaching. Participants also noted that students were not taught technical terminology in the *hazırlık* program. Participants perceived vocabulary learning to occur through exposure to English terminology in their EMI classes. However, participants were more skeptical about the benefits of EMI in terms of improving students' overall English proficiency and speaking skills, especially in partial EMI programs. Furthermore, teachers perceived that it was important for students to know engineering terminology in English but disagreed over the importance of Turkish terminology. In light of these issues concerning students' linguistic preparedness, the following section compares teachers' and students' perceptions of teaching and learning through EMI and TMI.

6.3 Comparing EMI and TMI

Most of the participant teachers (n=19) had studied through EMI at some point in their education. Only Teacher 4 and Teacher 7 were educated entirely through Turkish. Some teachers (e.g. T-9, Elite-1; T-1, Small-1; T-11, Elite-2; T-10, Elite-1) were educated at least partially through EMI prior to university, either at private schools or through the Anatolian High School system, which taught math and science through EMI until 2006. None of the teachers reported negative experiences learning through EMI, although their perceptions of

the effectiveness of EMI for teaching and learning varied. This section explores teachers' and students' perceptions of teaching and learning through EMI compared to TMI.

Teachers and student perceived both positive and negative aspects of EMI and TMI programs. Among the perceived benefits of EMI compared to TMI were the availability of English resources and the potential for English learning, which were considered important for students' careers. However, many teachers and students perceived TMI to be more effective for content learning. Participants perceived the disadvantages of EMI as follows:

- EMI was more difficult than TMI;
- Students understood concepts better in their L1;
- Lecturers explained concepts better in their L1;
- Student participation was higher in TMI classes.

One student summarized the comparison of EMI and TMI as follows: *"If we only look at it in terms of the lesson, it would be much better if the book and the terminology were in English but the lecture was in Turkish. But then when we think about our careers, it's better if the lecture is English,*" (Student 2, T-20, Large-3). In short, while TMI was perceived as more effective for content learning, EMI was perceived as more beneficial to students' career prospects.

Teachers and students perceived resources to be more accessible, more abundant, and of higher quality in English than in Turkish. One student noted that it was easy to find supplementary materials online in English: "*there's English sources everywhere, so that makes it easier, because we have more sources to use*" (Student 3, T-8, Elite-1). Moreover, teachers reported that the quality of English textbooks was better than Turkish textbooks (e.g. T-1, Small-1, interview 1; T-18, Large-3, interview 2), often due to issues of translation, including literal translations that were incomprehensible in Turkish (T-3, Small-1, interview 1) and translation errors that resulted in incorrect scientific content (T-13, Elite-2, interview

1). Although they perceived the quality of English materials to be higher than that of Turkish materials, teachers also noted two limitations with English resources in their EMI classes:

- The accessibility of real-life examples in English textbooks: *"It's very difficult to understand what's going on in the US or Europe in Turkey. But when you try to give an example from Turkey, then it's more complex because we do the work differently"* (T-3, Small-1, interview 2).
- The cost of international (English) textbooks compared to local (Turkish) textbooks: "*We use this book, it's English, an international publication. But it's expensive, 300 lira, and the students don't want to buy it. I mean, some of them cannot afford it"* (T-16, Large-2, interview 1).

While issues of cultural accessibility in the textbook were found only in Teacher 3's class, issues concerning the cost of English textbooks were found across HEIs: students were deterred from buying expensive textbooks and sought cheaper alternatives, including PDFs (FG, T-8, Elite-1; T-16, Large-2, interview 1) and Turkish translations (T-20, Large 3, interview 2; T-18, Large 3, interview 2). In turn, this disrupted teaching plans and homework assignments involving problems from a particular version of the textbook.

In addition to accessing English materials, participants reported that EMI was important because English was necessary for finding a job (Section 6.5.2), and many participants perceived EMI as a means of improving students' English (Section 6.2.3).

Despite the importance of English, teachers and students perceived learning through EMI to be more difficult than learning through TMI. Teacher 4 explained, *"the content itself is difficult to understand anyway, and when you add the language difference on top of that, it becomes really difficult to understand,"* (T-4, Small-2, interview 2). Students in all focus groups shared the perception that EMI was more difficult than TMI. One student stated, *"When we're tired, it's harder to understand English. I mean, it's hard to follow the lesson.*

Turkish would be easier to understand" (Student 1, T-8, Elite-1). Another student stated, *"No matter how much the teacher explains [in English], we're always going to understand better in our native language. It's easier. The concepts make more sense"* (Student 2, T-18, Large-3). Because EMI was perceived to be more difficult, participant students stated that TMI was more effective for content learning. Only two students (Student 7, T-19, Large-3; Student 6; FG1, T-14, Large-1) disagreed: they stated that they learned course content better in their EMI classes because they had to study more intensely. However, their classmates in these focus groups did not share this perception.

Furthermore, TMI was perceived as more effective than EMI because many teachers believed that students learned better in their L1 (e.g. T-3, Small-1, interview 1; T-16, Large-2, interview 1; T-2, Small-1, interview 1; T-19, Large-3, interview 1; T-18, Large-3, interview 1). Teacher 3 described the logic behind this perception: *"We had a professor, he used to say, 'okay, I can understand 70 percent of the book, and I can present 50 percent of what I understand, and you can understand 20 or maybe 25 percent of what I can tell you in English, so in the end you get too little material in English'"* (T-3, Small-2, interview 1). As such, language was perceived to limit both teaching and learning in EMI compared to TMI classes.

While some teachers opposed the use of EMI for this reason (*"It seems that the best way for students to learn is in Turkish. I don't understand why we aren't just teaching them in Turkish,"* T-2, Small-1, interview 1), other teachers (e.g. T-16, Large-2, interview 1; T-17, Large-2, interview 1; T-19, Large-3, interview 1) supported EMI because they perceived its linguistic benefits to outweigh differences in content learning. Thus, although many teachers perceived EMI to be *"much slower"* than TMI (T-16, Large-2, interview 1), they did not necessarily perceive EMI to hinder long-term content learning. While language was perceived to make learning more difficult in EMI than TMI classes, many teachers did not

perceive English as an insurmountable obstacle: *"I don't think students fail because of English. English does not cause students to fail; it just requires them to work harder. People who are able to demonstrate that kind of work ethic are going to be successful anyway, and those who can't are going to fail"* regardless of MoI (T-7, Small-2, interview 1). The challenges of EMI, therefore, were perceived to be greater for students who lacked appropriate study skills. This perception was shared by one of Teacher 7's students, who stated: EMI *"does not prevent us [from learning]; it just slows us down"* (Student 3, T-7, Small-2).

Some teachers also stated that it was more difficult to lecture in EMI than TMI because EMI lessons required more preparation (T-4, Small-2, interview 1; T-7, Small-2, interview 1). Teacher 18 stated that it was 'the psychology' of EMI which made it more difficult: he was nervous about lecturing in English because he did not want to make language errors in front of his students (T-18, Large-3, interview 1). Other teachers perceived the quality of their EMI lectures to be worse than their TMI lectures because *"it doesn't matter how good our English is; it's not our native language and we're always going to be more rigid when we lecture in English"* (T-2, Small-1, interview 1). Teachers described their TMI lectures as more 'natural' (T-2, Small-1, interview 1; T-7, Small-2, interview 1), 'more free' (T-5, Small-2, interview 1), and 'more relaxed' (T-18, Large-3, interview 1) than their EMI lectures.

However, not all teachers agreed that it was more difficult to lecture in English than in Turkish. Some teachers stated that lecturing in English was easier (e.g. T-6, Small-2, interview 1; T-11, Elite-2, interview 1) or just as easy (T-21, Large-3, interview 1) as lecturing in Turkish. These teachers stated that EMI was not difficult because they had extensive experience lecturing in English and were confident in their English skills.

In sum, while teachers and students shared the perception that English skills were important for engineers and that the best engineering resources were in English, they did not agree on the effectiveness of EMI for content learning. The follow section examines perceptions of language use in EMI classes.

6.4 Perceptions of classroom language use

Another theme to emerge from the analysis was perceptions of classroom language use. Only one teacher perceived no linguistic challenges to content learning in her course *("I think they are pretty capable of following what's going on and our preparatory English class during the first year is pretty good,"* T-8, Elite-1, interview 1). The remaining 20 teachers in the sample perceived, to varying degrees, language-related issues in their EMI courses. Some teachers believed that their students' level of English was too low to understand EMI lectures (e.g. T-2, Small-1, interview 1; T-20, Large-3, interview 1), while other teachers believed that students were able to comprehend the lectures but struggled with productive skills (e.g. T-13, Elite-2, interview 1; T-16, Large-2, interview 1). Teacher 11 explained why she perceived students to struggle with language in their EMI courses:

> [Students] come to me after class or during break times to ask questions. And of course we're speaking Turkish then, but the questions they're asking, they're things I've said multiple times during the lecture. So I think they don't understand because of the language, because when I explain it in Turkish, they're like, 'oh!' (T-11, Elite-2, interview 1)

Because of the perception that students struggled to understand content in English, many teachers stated that they incorporated Turkish into their lectures.

Students also perceived linguistic challenges in their EMI classes. Some students stated they had difficulty understanding EMI lectures because their English proficiency was too low (e.g. FG, T-7, Small-2; FG, T-16, Large-2) or because they encountered too many unknown words in lectures: *"One unknown word comes and we've lost the flow of the lecture"* (Student 3, T-6, Small-2). Another student estimated that she understood less than

half of what was taught in class: *"I don't think I have much knowledge because it is in English. I mean, if it were in Turkish, it would sink in more. [In EMI], we understand 30 percent, 40 percent of the course"* (Student 6, T-16, Large-2). As such, some students perceived a loss of content knowledge due to MoI. Other students (e.g. FG, T-17, Large-2; FG, T-15, Large-1) stated that they generally did not have trouble understanding the language used in their lessons but experienced difficulty speaking English in class.

This section examines perceptions classroom language use as it relates to teaching and learning in EMI classes. The section first examines perceptions of teachers' language use; it then discusses student participation and the role of mathematics in EMI engineering courses.

6.4.1 Teachers' English use as evaluated by students

In focus groups, students discussed openly their evaluations of their teachers' English proficiency—including teachers who were not included in the study. Students perceived a range of proficiency levels: some students praised their teachers' English abilities (e.g. FG, T-6, Small-2; FG, T-11, Elite-2) while other students stated that certain EMI teachers lacked the English proficiency needed to express themselves clearly in lectures (e.g. FG, T-9, Elite-1; FG, T-11, Elite-2; FG, T-6, Small-2; FG, T-2, Small-1; FG, T-19, Large-3).[13] One student stated: *"I don't want to criticize too much, but I don't think that [some] teachers' level of English is high enough to teach in English"* (Student 1, T-9, Elite-1). Many students stated that they felt more motivated in lectures taught by teachers with 'good' language skills (e.g. FG, T-13, Elite-2; FG, T-6, Small-2).

Rather than their teachers' English proficiency, some students commented on aspects of speech such as pace and accent. These students appeared to perceive intelligibility as more important than overall proficiency. Some students highlighted the importance of accent, although focus groups were mixed in terms of students who preferred 'Turkish' accents

[13] These students were not necessarily referring to the teachers included in this study but were comparing teachers in their EMI departments.

because *"it is closer to our accent"* (Student 5, FG3, T-14, Large-1) and therefore easier to understand (e.g. FG, T-7, Small-2; FG, T-17, Large-2), and focus groups in which students criticized their teachers for not having 'native-like' accents (*"We have teachers who speak a lot better, especially the ones who spent more time in America"* Student 2, T-15, Large-1). Some students stated that variation in their teachers' English made it difficult to understand EMI lectures: *"Actually it's not right for a teacher whose native language isn't English to give classes in English. Because none of us learned this language in its [native] place, everyone has a bit of their own pronunciation style. When [pronunciation] changes from teacher to teacher we get confused"* (Student 3, T-20, Large-3). However, a preference for 'native-speaker' accents was not common across focus groups.

Other students noted that it was easier to understand teachers who adjusted their lecturing style, such as by speaking slowly in English:

> S3: I really like this teacher because he speaks slow and repeats.
> S4: He explains everything step by step. I mean, if it were in Turkish, he wouldn't explain it like this, but he does this so it's easy for us to understand [in English].
> S3: Yeah, if a teacher speaks too fast, we cannot understand.
>
> (FG, T-17, Large-2)

Thus, students perceived factors related to the intelligibility of their teacher's English, such as accent and pace—rather than the teacher's overall proficiency level—as contributing to their understanding of EMI lectures. Moreover, in the extract from Teacher 17's focus group above, Student 4 perceived that the teacher changed his lecturing style in EMI classes to provide simpler explanations in English. Similarly, other students (e.g. FG1 & FG5, T-14, Large-1; FG, T-15, Large-1) believed that their teachers modified their spoken English to increase student comprehension: *"Our teacher adjusts his language for us, so we can understand better. I mean, he uses more basic words, like he uses more daily life language than scientific language, to make it easier for us to understand"* (Student 6, FG5, T-14, Large-1). Thus, while some students criticized their teachers' non-native varieties of English,

students overall appeared to value intelligibility and perceived some teachers as accommodating the English used in lectures to enhance student comprehension.

6.4.2 Teachers' Turkish use

The previous section examined students' perceptions of EMI teachers' English use. This section compares teachers' and students' views on teachers' use of L1 in the classroom. In general, teachers and students perceived that it was appropriate for teachers to use Turkish to clarify concepts that students did not understand or were having difficulty understanding in English. The majority of teachers (n=14) stated that they used Turkish in class to explain concepts that students did not understand in English. None of the six teachers working at elite HEIs reported using Turkish during the lecture to clarify content. Teacher 15 also did not report using Turkish to clarify content during lectures. Teacher 5 criticized strict English-only policies, stating: *"The person listening to the lecture is Turkish, and the person giving the lecture is Turkish, so it starts to turn into a theatrical production"* if Turkish is forbidden (T-5, Small-2, interview 1). Teacher 5 perceived Turkish to be a natural linguistic resource in the classroom. Similarly, Teacher 19 stated, *"you can use only English in class, but if the students do not understand you, this is not teaching; this is talking…. You are just talking to yourself"* (T-19, Large-3, interview 1). He stated that teachers have an obligation to teach students *"even if [the students'] English is not good enough. We need to teach them as well"* (T-19, Large-3, interview 2). In order to teach students with low English proficiency, many teachers believed that *"sometimes Turkish support is necessary to make sure they understand why and what's happening"* (T-18, Large-3, interview 2).

Many students also shared their teachers' perception that using Turkish made the lecture easier to understand (e.g. FG, T-3, Small-1; FG, T-7, Small-2; FG, T-19, Large-3). Some students stated that their teachers' occasional use of Turkish helped them focus during lectures (FG, T-20, Large-3). Several teachers also perceived Turkish as means of drawing

their students' attention (e.g. T-7, Small-2, interview 1; T-19, Large-3, interview 2; T-13, Elite-2, interview 1). In general, students responded positively to their teachers' use of Turkish during EMI lectures (e.g. FG, T-18, Large-3; FG, T-20, Large-3), although they perceived differences in their teachers' tolerance of Turkish use in the classroom (Section 6.1.1). Overall, participants perceived Turkish use as beneficial in terms of facilitating content learning and clarifying scientific concepts.

However, some teachers (e.g. T-11, Elite-2, interview 2; T-12, Elite-2, interview 2) believed that it was not appropriate for teachers to use Turkish during the lecture, especially if an international student were present. Teacher 12 stated that he would only respond to students in Turkish during the lecture *"if there is no foreign student and if the question is in Turkish and if it is not directly related to the content of the course… but the core of the course has to be taught in English. You cannot use another language"* (T-12, Elite-2, interview 2). Another teacher stated that he rarely used Turkish in class because it was easier for him to explain scientific concepts in English: *"I think it's easier for me to explain things in English. If I have to explain it in Turkish, I still use English words"* (T-9, Elite-1, interview 2).

Only one teacher perceived issues with his own English proficiency as a reason for using Turkish in class. Teacher 18 stated that his *"aim is pure, hundred percent English"* during the lecture but that he is *"not ready yet"* to lecture only in English (T-18, Large-3, interview 1). Here, the teacher stated that his English proficiency prevented him lecturing entirely in English. Teacher 18 was the only teacher to express concerns with his English proficiency.

With respect to the presence of international students in the classroom, Teacher 11 stated that it was 'unethical' to use Turkish if an international student were in the class (T-11, Elite-2, interview 2). This perception was not shared by other teachers in the sample (e.g. T-

2, Small-1; T-1, Small-1) who used Turkish with international students in their EMI classes. Teacher 1 and Teacher 2 both claimed that the international students in their classes were proficient in Turkish: *"I have two foreign students in the class, but they both speak Turkish so it isn't a problem. They've been in Turkey for a while"* (T-2, Small-1, interview 2). However, the two international students from Teacher 2's class stated in a focus group that they would understand content better if the teacher lectured in English rather than Turkish *("Yeah, I learned Turkish, but I still wish the class were in English. That'd be better,"* Student 2, T-2, Small-1). International students also reported that they felt socially isolated on campus, at least initially, because student clubs and other social activities were primarily conducted in Turkish (FG, T-16, Large-2; FG, T-8, Elite-1). Thus, regardless of teachers' preferences for language use in EMI classrooms, international students appeared to perceive linguistic barriers to social integration on campus.

Although Teacher 11 stated that it would be 'unethical' to use Turkish in an EMI class when international students were present, she also perceived that it was useful to allow students to ask questions in Turkish:

> It's a balancing point. You know, if I enforce [an English-only policy] too much, they're going to say just—I'm sure it happened before, I mean, they're just going to say, 'no it's fine, I'm not asking. I'll ask it after the class.' So I don't want to prevent them from asking.… My goal is not to make them speak English. It's just that they understand thermodynamics. (T-11, Elite-2, interview 2)

Teacher 11 perceived content learning—not language learning—as the primary aim of her EMI classes. As such, she allowed students to ask questions in Turkish during class. The following section addresses perceptions of students' language use in class, including the perception that students are hesitant or unable to speak English.

6.4.3 Student participation and classroom interaction

The previous two sections have examined perceptions of teachers' classroom language use. This section now considers perceptions of students' language use and classroom interaction in EMI classes. With respect to students' language use in EMI classes, both teachers and students perceived that students had difficulty speaking in English. Teacher 17 explained that *"there is less participation [in EMI classes], especially with respect to speaking. Student have trouble when they ask questions, when they express themselves"* (T-17, Large-2, interview 1). Teachers also noted that students "*cannot give full answers"* (T-16, Large 2, interview 1) and are hesitant to speak because "*they don't trust their English"* (T-14, Large-1, interview 2). Students stated that they had difficulty asking questions in English during the lecture (e.g. FG, T-20, Large-3; FG, T-19, Large-3; FG, T-12, Elite-2; FG, T-11, Elite-2; FG, T-16, Large-2), and some students stated that they lacked confidence speaking English (FG, T-6, Small-2). Students stated that it was easier to formulate questions in Turkish than in English, particularly when content was difficult: *"sometimes we are seeing really complicated things, and when you are trying to ask really complicated questions, confusing things, to the teacher, it's really hard to explain in English"* (Student 2, T-8, Elite-1). Students in one focus group stated that it was the 'mindset' of the students which prevented them from asking question in English: *"people just feel more comfortable with Turkish, I think. So they just don't challenge themselves to really improve their English"* (Student 2, T-9, Elite-1). Another student in the same focus group stated that the *"speaking part is kind of hard to get used to, speaking in English. Because our teachers are Turkish, and you're Turkish, and so you speak in Turkish. I mean, you shouldn't, so you can improve your English"* (Student 3, T-9, Elite-1). In this focus group, the students noted that Turkish was an easy default, because it was a common language shared by students and teachers.

Although they perceived that speaking English would improve their English skills, they noted that it was easier to use Turkish.

Because students had trouble speaking English, many participants perceived language as a barrier to participation in EMI classes. One student stated: "*When [the class] is English, participation really drops*," (Student 1, T-7, Small-2). Many teachers stated that it was better for students to participate in Turkish than not participate at all (e.g. T-10, Elite-1, interview 1; T-8, Elite-1, interview 2; T-11, Elite-2, interview 1; T-19, Large-3, interview 1; T-5, Small-2, interview 1). One teacher stated: *"at the beginning of the semester I told them, you know, ask your questions in English. But I don't enforce that because then they don't ask anything"* (T-13, Elite-2, interview 1). Another teacher stated that he allowed students to ask questions in Turkish because "*if they don't ask questions about the material, I can't be sure whether they've understood"* (T-4, Small-2, interview 2). Many teachers perceived student participation as important for content learning and students as more comfortable participating in Turkish.

Some teachers sought to address low levels of student participation by encouraging students to speak English in class (Section 5.2.2). For example, Teacher 6 states: *"They're nervous to speak in class, so I try to encourage them to do that. That's why I have one student summarize in English at the beginning of the class"* (T-6, Small-2, interview 2). Teacher 6 incorporated student summaries in his lessons to provide students with opportunities to practice speaking English. Similarly, Teacher 16 asked questions to students throughout his lecture in order "*to encourage them to speak, yeah, to respond to my questions…. Otherwise, they sit there and just listen, and some of them, they fall asleep"* (T-16, Large-2, interview 2). Teacher 7, however, perceived motivation to play a role in students' willingness to speak English: *"That kid in the back who kept participating, he wants this; he wants to speak English. Some kids want to take English classes, and some kids are the exact opposite and*

don't want to take English classes" (T-7, Small-2, interview 1). Teacher 7 perceived that some students were more motivated to study through EMI, and thus more willing to speak English, than others.

However, teachers also perceived a number of non-linguistic factors that contributed to low student participation. These factors included poor attendance (T-9, Elite-1, interview 2; T-11, Elite-2, interview 1), personality (e.g. T-10, Elite-1, interview 2; T-3, Small-1, interview 1; T-12, Elite-2, interview 1), difficulty of course content (T-1, Small-1, interview 2), the time of the class *("they're in a dead state on Monday mornings,"* T-11, Elite-2, interview 2), gender dynamics (T-19, Large 3, interview 2), and class size (T-14, Large-1, interview 1). Many teachers perceived that students engaged more actively in courses they found interesting (T-9, Elite-1, interview 2) or in which they could connect course content with personal experiences (T-3, Small-1, interview 2). Furthermore, some teachers noted that they had similar issues regarding student participation in both Turkish and English. Teacher 1 noted that student participation was low, even though he taught his EMI class in Turkish (Chapter 5): *"I'm speaking Turkish but it's still like this. If it were in English, participation would be zero"* (T-1, Small-1, interview 1). As such, although teachers perceived MoI to affect student participation, they did not perceive language as the only factor contributing to low student participation in EMI classes.

6.4.4 Role of mathematics in engineering

Another theme to emerge from the analysis of data was the role of mathematics in engineering. Many participants perceived mathematics to facilitate communication in EMI engineering classes. Several participants perceived the linguistic burden of EMI to be less in engineering than in social science courses (e.g. FG, T-12, Elite 2; T-16, Large-2, interview 1; FG, T-12, Elite-2). Teacher 16 summarized the perception that *"in engineering we don't have as many language problems as social sciences, you know. We use equations, math, chemistry.*

This is a kind of universal language" (T-16, Large-2, interview 1). Participants stated that the 'universal language' of math made EMI easier in engineering classes.

Students perceived math-based classes to be easier from a linguistic perspective than verbal, conceptual classes (e.g. FG, T-3, Small-1; FG, T-16, Large-2; FG, T-19, Large-3; FG, T-18, Large-3; FG, T-13, Elite-2). They perceived the English in their math-based classes to be relatively easy: *"If you know about ten words in English, you can figure it out. The rest is all math"* (Student 3, T-12, Elite-2), and stated that math was the same in all languages (FG, T-11, Elite-2). In contrast, students *"need to study a little extra for verbal classes"* (Student 5, T-19, Large-3) to understand content. Thus, mathematics was perceived to lessen the linguistic challenges of EMI.

Moreover, some students stated that it was easier to study math-based engineering classes in English than in Turkish, because the variables used in equations matched the English terms they represented: *"Already because it starts with 'v' [that term] directly calls velocity to mind. I mean, we're so much more comfortable when we read English formulas. [In Turkish,] we say f equals m-a, but there 'a' is acceleration and 'm' is mass. It fits directly in English"* (Student 1, FG4, T-14, Large-1). Students in this focus group stated that they had memorized each variable and its related term in Turkish, for which there was no alphabetic connection, in high school. Because the variables matched the English terminology, they saw English as beneficial with respect to learning scientific equations.

Several teachers also perceived the language of math to aid in EMI lectures (e.g. T-6, Small-2, interview 2; T-7, Small-2, interview 1). Teacher 6 stated: *"if I'm writing in math, [there's] no need to speak any Turkish, because everything is in maths language… but when it comes to a physical term which they need to understand, they need to interpret, they need to rephrase, then I may switch a little bit to Turkish"* (T-6, Small-2, interview 2). As such, Teacher 6 perceived 'maths language' to facilitate communication by serving as an additional

shared language between him and his students. Similarly, Teacher 18 stated he did not have to explain mathematical equations because students *"see what's going on, on the board"* (T-18, Large-3, interview 1). Here, Teacher 6 and Teacher 18 imply that mathematics is a commonly understood language that requires no additional explanation in Turkish or English. However, some teachers (e.g. T-10, Elite-1, interview 1; T-13, Elite-2, interview 1) perceived that teachers and students prioritized math in EMI engineering courses at the expense of important conceptual information:

> Some students rely too much on math. You know, maybe they don't really know English but their math could be really good, so they use it to help… [but] the question is in English. I mean, I'm using English to give the problem. Without that, you just give an equation but then there is not a story before and after it. (T-13, Elite-2, interview 1)

Thus, while he perceived mathematics as important for engineering, Teacher 13 stated that math was insufficient on its own to understand engineering concepts.

6.4.5 Summary of classroom language use

To summarize the findings presented in this section, teachers and students perceived the following with respect to language use in their EMI courses:

- Students perceived **a range of English proficiency levels** among their EMI teachers. Some students stated that certain teachers lacked the proficiency needed to lecture in English.
- Many participants perceived that it was appropriate for **teachers to use Turkish to clarify concepts** during EMI lectures. These participants perceived Turkish as a linguistic resource to facilitate content learning. None of the six teachers working at elite HEIs stated that they used Turkish to clarify concepts, and some stated that they would not use Turkish if international students were present.
- Participants perceived that **students had difficulty speaking English**, which limited student participation in English.

- Teachers and students perceived that the **language of mathematics** lessened the linguistic challenge of EMI in engineering courses.

Participants perceived issues with students' L2 proficiency that affected content learning in their EMI classes. In particular, participants perceived that students had difficulty speaking English, which prevented them from participating fully (in English) in EMI classes. Many participants also perceived that the use of Turkish by teachers and students facilitated content learning in EMI classes.

6.5 Perceptions of motivations for EMI

This section examines teachers' and students' motivations for teaching and learning through English. The findings revealed two themes with respect to motivations for EMI: students' selection of EMI programs during the university admissions process and the perceived benefits of EMI for students' future careers. Findings related to these two themes are presented in this section.

6.5.1 Decision to study in EMI programs

This section examines students' motivation to study through EMI by investigating their perceptions of the university selection process. The findings suggest that students chose their undergraduate EMI engineering programs for a variety of reasons. Focus group data suggested that (a) not all students considered MoI when selecting an undergraduate program and (b) not all students were aware of their program's MoI when applying. The reasons provided by students for choosing their undergraduate programs were:

- A desire to study through EMI;
- A desire to study engineering;
- A desire to study at that university;
- A result of the student's university entrance exam score .

Focus group data suggested that students perceived varying degrees of choice in enrolling to EMI engineering programs. While some students appeared to have made a conscious decision to study through EMI, others appeared to have ended up in their EMI programs by chance: *"I chose randomly based on my points"* (Student 7, T-6, Small-2) from the university entrance exam.

Students from elite HEIs reported that they selected their undergraduate programs due to the university's reputation (e.g. FG, T-9, Elite-1; FG, T-8, Elite-2; FG, T-11, Elite-2). They perceived their HEIs as *"one of the best universities in Turkey"* (Student 6, T-11, Elite-2). One student stated that international firms recruited from *"the top Turkish universities. Like the Ivy Leagues of Turkey"* (Student 2, T-9, Elite 1), thus implying that graduating from an elite HEI could enhance career prospects. In focus groups, students at elite universities did not mention EMI or language as a factor that they considered when selecting an undergraduate program; rather, they stated that they had the opportunity to study at an elite HEI *"based on our exams"* (Student 4, T-11, Elite-2). One student explained, *"this is where our points put us"* (Student 1, T-12, Elite-2). These students selected programs at elite universities because of the HEIs' reputation and because they had performed well on the university entrance exam; MoI did not appear to have been a consideration.

Some teachers at elite HEIs (e.g. T-8, Elite-1, interview 1; T-16, Large-2, interview 1; T-12, Elite-2, interview 1; T-13, Elite-2, interview 1) also perceived that students had selected their undergraduate courses on the basis of their exam points: *"I think the way they come here, for a good percentage of them, I'm not sure it's a very conscious decision"* (T-8, Elite-1, interview 1). Another teacher noted: *"They are not all here because they want to be engineers. It's because of an exam. They got some good exam scores, and then they selected based on their scores but not based on their interests,"* (T-13, Elite-2, interview 1). These

teachers stated that some students were less engaged in their courses because they were not interested in engineering.

Similarly, many students at non-elite universities indicated that they had selected their undergraduate program on the basis of their exams points and that MoI was not a consideration when applying to undergraduate programs. These students stated that they enrolled in EMI programs because *"there was no other option"* (Student 5, T-7, Small-2) in terms of MoI at the university when they applied (e.g. FG, T-3, Small-1) or because their exam points were high enough that all options were EMI programs (e.g. FG, T-18, Large-3). These students ended up in EMI programs *"randomly"* (Student 7, T-6, Small-2) based on their exam points.

Some students, however, appeared to have made a conscious decision to pursue their undergraduate education through EMI (e.g. FG, T-3, Small-1; FG, T-5, Small-2). These students perceived English as important for their future careers (e.g. Student 2, T-3, Small-1; Student 1, T-6, Small-2), and they believed that studying through EMI would improve their English proficiency (e.g. Student 4, T-3, Small-1) and offer opportunities for them to work abroad (e.g. FG, T-5, Small-2). One student stated that she was pressured by her family to choose an EMI program:

> S5: I didn't want [to study here] initially. My father made me choose it, but I've come to like it. I now say it's the right program for me.
> S4: Did your father know it was in English?
> R: This is a good question.
> S5: Yes, he knew it was in English. And when he learned it was in English, he said, 'alright, that's where you're going.'
>
> (FG, T-16, Large-2)

Student 5's decision to study in an EMI program was the result of family pressure, since her father wanted her to study in English.

Often, within a single focus group, students provided a variety of reasons for choosing their EMI program. The extract below demonstrates the degree to which students' knowledge of their program's MoI varied during the application process:

> R: Why did you choose this department? I mean, why did you choose an English department?
> S4: So, I wanted mechanical engineering. I applied to this university without looking at whether it was 30 percent or 100 percent English. So it was just by chance.
> S6: Yeah, because it was mechanical engineering.
> S3: Same.
> R: So it was just a matter of points? Wherever the points put you?
> S2: I knew [that it was an EMI program]. Our guidance counselor recommended it, he said, 'English is very important, you should learn English.' I wanted a 100 percent English department but I saw that there was English here. I talked to a few people before coming and they said the *hazırlık* education is good here. So that's why I picked it.
>
> (FG, T-6, Small-2)

While Student 2 appeared to have researched the university's language learning opportunities and considered EMI in his decision making process, the other students in this excerpt were unaware of the program's MoI while applying to university. These students applied to mechanical engineering departments *"without looking"* at MoI (Student 4, T-6, Small-2). Students in other focus groups also noted that academic discipline was their primary consideration (e.g. Student 2, T-18, Large-3; Student 6, T-21, Large-3; Student 2, T-8, Elite-1); these students stated that they applied to programs in the academic discipline they wanted according to their exam points, without considering MoI.

Across and within focus groups, students recounted a variety of perceptions concerning the importance of MoI in their university selection process. Some students reported being unaware of or unconcerned with their programs' MoI while applying; other students consciously applied to EMI programs. As such, the decision to study through EMI did not always appear intentional.

6.5.2 Importance of English for students' future careers

Despite the perceived language-related challenges discussed throughout this chapter, students and teachers valued EMI for the perceived positive effect that it would have on students' future career opportunities. Across interviews and focus groups, teachers and students asserted the importance of English for students' future engineering careers. In doing so, they evoked themes of:

- **English as a lingua franca for engineering** *("The language of the world is English, so knowing English ensures we have a better command of [the field]"* Student 6, T-7, Small-2; "*For bosses, it is important because they want their engineers to communicate with the world,"* T-6, Small-2, interview 1);
- **The importance of English in a globalized economy** (*"We can do our internships abroad and maybe work abroad,"* Student 2, T-12, Elite-2; *"Our industry is tied to Europe… so it's really important for engineers to know English,"* T-4, Small-2, interview 1);
- **The availability of scientific resources in English** *("Actually, in English, we can reach more sources and, I mean, academically we can do many [more] things than in Turkish,"* Student 3, T-9, Elite-1).

In terms of EMI, these themes were connected to students' exposure to English terminology during lectures: *"If we enter a factory or if that factory has connections abroad, this will be an advantage for us, because we won't need to sit and memorize all the terms; we know them in English already"* (Student 5, T-16, Large-2).When discussing the importance of English for their future careers, students framed English as a skill desired by employers and a skill necessary for getting a job.

Perceptions that English was necessary for getting a job were supported by claims that job interviews were conducted in English and applicants were required to sit English exams

during the hiring process (e.g. FG3, T-14, Large-1; FG, T-7, Small-2). In several focus groups, students asserted that *"English isn't enough anymore"* (Student 2, T-18, Large-3) but that employers expected applicants to have additional language skills as well: *"After we get our diploma, when we start work, they don't ask, 'Do you know English?' They say, 'You need to know English.' Because this is a condition at every factory, and we need to know English. Moreover, we need to know another language"* (Student 1, T-5, Small-1). The students perceived English as a pre-requisite for hiring, and they perceived foreign language skills as an advantage in applying for jobs.

Although they did not disagree that English was an important consideration during the hiring process, some teachers and students questioned the necessity of English skills for (all) engineers as well as employers' expectations of English proficiency. Commenting on the necessity of English for getting a job, one student stated: "*This is a big irony in our country: language is the most important thing [for finding a job] and yet no one speaks English"* (Student 2, T-18, Large 3). Here, the student perceived a disconnect between discourses asserting the importance of English and the linguistic reality that he perceived, in which few people in Turkey spoke English fluently. A similar comment was made by Teacher 7, who perceived English as an 'elimination method' used by companies to sift through perspective applicants (T-7, Small-1, interview 1). He stated that companies were not necessarily seeking employees who could speak English fluently but looked for English skills to distinguish applicants within a larger pool:

> Of course it is indisputable that English is required [by employers]. Now, forget engineers; banks are hiring employees to work at the counter. Even though these employees will only speak Turkish in their professional lives, the employer wants them to know English. First of all, wanting someone to know English does not mean wanting them to speak English fluently. This is a kind of elimination method. I mean, you get rid of a portion of the applicants. Secondly, it shows how much a person values him or herself, how much they've worked to develop themselves. (T-7, Small-2, interview 1)

Teacher 7 perceived English skills as signaling more than an applicant's linguistic knowledge, including skills which employers might value such as a desire 'to develop oneself.' Similarly, Teacher 19 stated that students needed English skills on their resume in order to distinguish themselves from other engineers in a competitive job market (T-19, Large-3, interview 1). In these examples, English skills were perceived to convey more than an applicant's ability to communicate in English. In terms of EMI, the perception that English is important for getting a job suggests that EMI might also serve as a signaling mechanism to employers: EMI might 'distinguish' applicants by demonstrating 'how much they've worked to develop themselves' (T-7, Small-2, interview 1).

6.5.3 Summary of motivations

The findings presented in this section reveal teachers' and students' motivation for EMI programs. Focus group data suggested that not all students consciously or intentionally enrolled in EMI programs. For many students, the university admissions process was determined by their university entrance exam score, and they did not consider MoI when selecting an undergraduate program. This finding raises questions about (some) students' desire and motivation to study through EMI. With respect to the benefits of EMI, participants perceived English as a skill desired by employers and necessary for getting a job. EMI was thus perceived as beneficial for students' career prospects because it was perceived to improve students' English—or at least signal to employers that students had studied engineering in English.

6.6 Chapter summary

The findings presented in this chapter address RQ3: *How do teachers and students perceive EMI in university-level engineering programs?*

With respect to EMI policy, teachers and students perceived variation in policy implementation and no repercussions for violating official EMI policy. Students perceived

that classroom-level policy implementation was determined by the teacher, and they noted variations within and across EMI classrooms. Teachers perceived inconsistencies in EMI policy, such as the lack of a speaking proficiency requirement for lecturers. Furthermore, participants perceived issues with students' linguistic preparedness, which contributed to difficulties understanding lectures and speaking English in class. Participants perceived Turkish as a resource for overcoming language-related challenges, although they differed in their perceptions of how, when, and by whom Turkish should be used in EMI classes.

Moreover, teachers and students did not perceive university-level engineering programs in isolation from the broader education system of Turkey. Participants perceived issues with the secondary school system, which resulted in low student L2 proficiency and overburdened the *hazırlık* program. The findings have also suggested that some students selected undergraduate programs on the basis of their university entrance exam score, without considering MoI.

Teachers and students perceived EMI as necessary for enhancing students' career prospects, but the majority of teachers and students in this study also perceived obstacles to teaching and learning in EMI courses, including issues of student comprehension and participation. Some participants perceived EMI as ineffective—or at least less effective than TMI—for content teaching and learning, in part because they perceived problems with students' English proficiency. To overcome language-related challenges, teachers and students perceived the L1 to be a useful resource for teaching and learning in EMI classes.

As such, there appeared to be a paradox with respect to participants' perceptions of EMI for university-level engineering programs: English (and therefore EMI) was perceived as necessary for students' careers, but English (and therefore EMI) was perceived as an obstacle for teaching and learning, so teachers and students used Turkish in their EMI classes—even though it was necessary for students to learn English for their careers.

Chapter 7: Discussion

This chapter discusses the key findings of the study in relation to the relevant theory and empirical evidence in the literature. The discussion compares policies, practices, and perceptions of EMI in Turkey, arguing that the role of English in EMI is multi-faceted and complex. The discussion is organized around five themes, which synthesize the findings from different data sources. First, EMI implementation is discussed with respect to policy and practice. Next, the findings related to policies and perceptions are considered in terms of L2 proficiency and linguistic preparedness. The use of L1 in EMI lectures is then discussed in light of the findings from classroom observations and participants' perceptions of their language use. The theoretical dual aims of EMI are evaluated, and the chapter concludes by discussing stakeholder 'buy-in,' or perceptions of the benefits of EMI in light of policy and practice. Each of these themes contributes to an understanding of the variation with which EMI is implemented in classrooms. Methodological considerations are discussed throughout the chapter, which ends with a brief discussion of the role of English in EMI.

7.1 EMI implementation

This study set out to examine the variation with which EMI was implemented in Turkey. In doing so, it examined EMI policy and practice at seven state universities. The universities were selected to include elite (n=2), large (n=3), and small (n=2) HEIs, in order to investigate the diversity of EMI programs in a country where policy was determined by a central national agency. Turkey is unique compared to many other EMI contexts in that there is a formal, top-down policymaking process with respect to HE regulations. L2 MoI programs are regulated through explicit policies determined centrally by the Council of Higher Education (YÖK). In comparison, EMI in many European and Asian contexts is decentralized. In Italy, there is no national policy regulating EMI at the tertiary level. Instead,

decisions to teach through English are made at the institutional level (Costa & Colemas, 2012), although the Italian Ministry of Education has introduced EMI/CLIL programs in secondary schools in a top-down fashion (Macaro, 2018, p. 52-53). In Spain, multilingualism is written into the constitution (Macaro, 2018, p. 53)—unlike in Turkey, where the constitution specifies that Turkish is the language of Turkey—and powers of policymaking are devolved to autonomous regions. As such, language policies in Spain vary according to region, or even schools within the same region (Doiz & Lasagabaster, 2017), and English may serve as an L3 in addition to two official languages (Dafouz, 2017; Doiz, Lasagabaster, & Sierra, 2013a; Lasagabaster, 2017; Moncada-Comas & Block, 2019).

Moreover, Turkey has a long, continuous history of EMI, whereas EMI is a relatively new phenomenon in other contexts, such as China (Macaro, 2018). The Chinese Ministry of Education has supported the expansion of EMI programs in HE since 2001 (Hu & Lei, 2014; Macaro et al., 2019). EMI programs in China are often framed as 'Chinese-English bilingual' programs (Jiang et al., 2019), although how much English should be used does not appear to be codified as with partial EMI programs in Turkey. While EMI in China is promoted top-down, the decision to introduce EMI programs resides with the HEI (Hu & Lei, 2014); this includes decisions regarding L2 proficiency requirements and language support. To provide another comparison: although EMI has a long history in Malaysia, language policy has oscillated between EMI and L1 MoI, with current policies allowing HEIs to choose the MoI of programs offered (Ali, 2013; Gill, 2006). Ali (2013) reports that EMI has been used at HEIs in Malaysia since 2005, when "the Ministry of Higher Education (MOHE) issued a verbal directive to public universities to use English in the teaching of science and technology courses" (p. 78). In contrast to the 'verbal directive' in Malaysia or the top-down support in China, L2 MoI policy in Turkey has been regulated through written legislation since the 1980s.

Written regulations facilitated the policy analysis presented in Chapter 4 and allowed for a comparison of explicit policy and classroom practice. Whereas previous studies have relied on descriptions of policy reported by participants (e.g. Costa & Coleman, 2012; Dearden & Macaro, 2016) and data of self-reported classroom practices (e.g. Ali, 2013; Aizawa & Rose, 2019), this study was able to compare data collected from written policy documents and observed classroom practices. The remainder of this section discusses EMI implementation from this perspective.

In terms of comparing policy and practice, a major finding of this study was that, despite (nominally) following the same national EMI policy, there was great variation in the actual amount of English used in the EMI lectures. This finding with respect to variation in L2 use concurs with previous research conducted in secondary schools in Hong Kong (e.g. Lo & Macaro, 2012; Pun & Macaro, 2019) and supports the results of other studies, which have found that—regardless of policy intentions—the norms of language use in EMI classrooms are constructed by teachers and students (e.g. Kerklaan et al., 2008; Söderlundh; 2013). In a study by Aizawa and Rose (2019), teachers and students at a university in Japan reported that the official MoI of their classes was often not followed in practice. Similarly, Ali (2013) found discrepancies between national-level EMI policies and the teaching practices reported by lecturers in Malaysia. The findings from both of these studies were arrived at through interviews with stakeholders and consisted of single case studies; the current study has added further evidence to these findings using classroom observations at multiple HEIs.

From its analysis of multiple HEI contexts, the results of this study have suggested that variation in EMI implementation occurred *across* and *within* HEIs. Teachers within the same department differed in their classroom language practices, a finding from the observation data that was supported by focus group discussions, in which students described

variation in the EMI practices of their teachers. These findings suggest that EMI content teachers served as the "the final arbiters of language policy implementation" (Menken, 2008, p. 5; see also Johnson, 2013; Johnson & Johnson, 2015), and this finding is in line with the results of studies conducted in other contexts which have highlighted the heterogeneity with which EMI policies are implemented across classrooms (Ali, 2013, in Malaysia; Dearden & Macaro, 2016, in a comparison of Austria, Italy, and Poland; Doiz & Lasagabaster, 2017, in Spain; Evans, 2008, in Hong Kong; Owu-Ewie & Eshun, 2015, in Ghana). For example, Costa and Coleman (2012) found that HEI administrators in Italy were often unaware of classroom practices, and Gill (2006) found that the lack of a clear implementation strategy in Malaysia resulted in the disparate implementation of EMI across HEI contexts.

This study set out to understand EMI implementation across macro- (national), meso- (institutional), and micro- (classroom) levels. Based on Johnson and Johnson's (2015) theoretical model, Figure 7.1 summarizes the EMI policy arbiters found in this study. Johnson and Johnson (2015) define language policy arbiters as "individuals who have a disproportionate amount of impact on language policy and educational programs" (p. 222). Although EMI content lecturers had little influence over official EMI policy, they were found to be 'the final arbiters' of its implementation in classrooms. The figure illustrates the dynamics contributing to EMI implementation and notes key arbiters at each level. The ways in which these arbiters interpreted EMI policy contributed to the variation with which EMI programs were implemented in Turkish higher education.

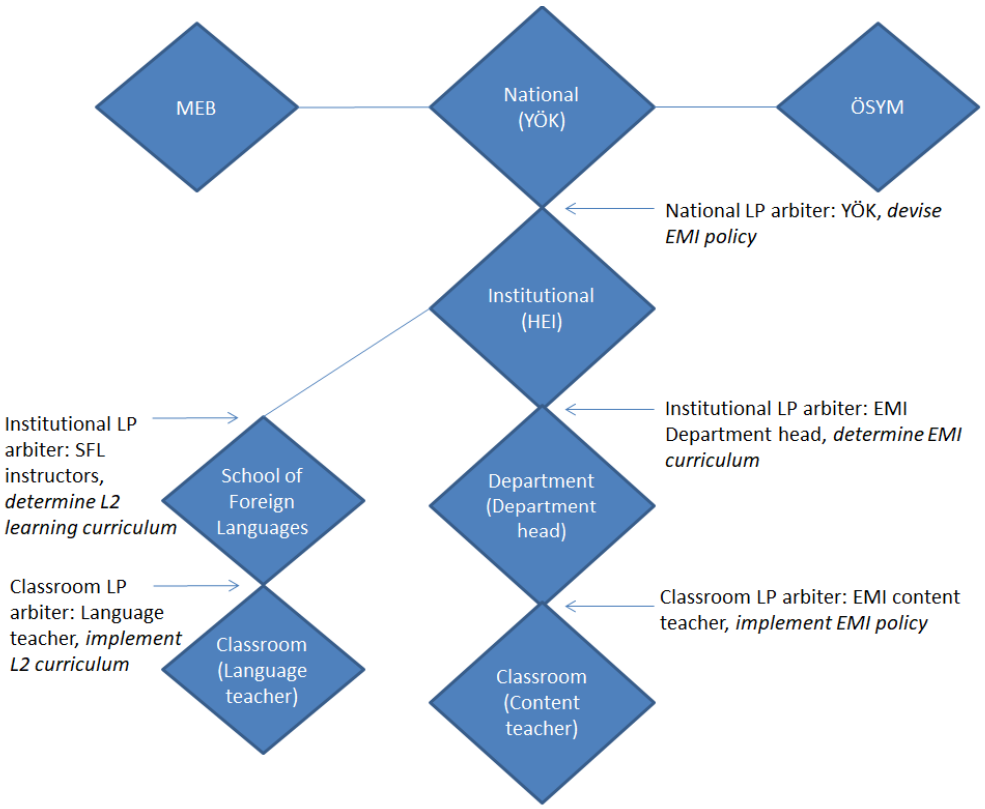


Figure 7.1: EMI policy arbiters in Turkish higher education

Language policy can be understood as consisting of creation, interpretation, and appropriation, which the component of which emphasizes the agency of individual actors in enacting language policy in their own contexts (Johnson, 2013). As Figure 7.1 demonstrates, the findings of this study have suggested that the creation of EMI policy occurred largely at the national level, through the formal policy structures of YÖK, which was responsible for approving the MoI of university programs and establishing L2 proficiency criteria for teachers and students. Elements of EMI policy were interpreted by institutional actors, including the HEI senate and department heads, who adapted YÖK's decisions for their HEI contexts. While some aspects of policy appropriation occurred at the institutional or departmental levels (e.g. adding additional criteria for L2 proficiency, devising EMI curricula, etc.), EMI policy appropriation was found to be shaped by the individual classroom practices of EMI content lecturers, who interpreted EMI policy and enacted the language practices they perceived as appropriate for their classroom contexts.

When policy implementation is considered across macro-, meso- and micro-levels (e.g. Aizawa & Rose, 2019; Ali, 2013), the results of this study have indicated that macro-level policy has not 'trickled down' to micro-level practices. Issues transferring macro-level policy to micro-level practices could be due to the absence of clear policy implementers at the meso- (institutional and departmental) level: it was not clear *who* did *what* to ensure that EMI policies were implemented at the institutional and department levels, resulting in a lack of (perceived) oversight, discussed later in this section. Further, as indicated by Figure 7.1, language instructors in the School of Foreign Languages (SFL) were found to be important meso-level actors, because they were responsible for administering the *hazırlık* program. However, language instructors in the SFL were removed from the direct line of EMI policy implementation, since they were separate from the EMI department and EMI content lecturers. Despite calls from researchers for increased collaboration between language and content teachers (Dearden, Macaro, & Akincioglu, 2016; Lasagabaster, 2018; Wilkinson 2013), the results of this study have suggested that this is not the case: evidence of collaboration between content and language specialists was found only at the Environmental Engineering Department of Large-2.

As Figure 7.1 illustrates, the findings of this study have suggested that additional actors are influential in the process of language policymaking and implementation. The addition of these actors (e.g. MEB, ÖSYM, SFL) has highlighted the disconnect between the actor(s) responsible for L2 learning and those responsible for EMI content teaching. The policies of MEB and ÖSYM were found to influence (or were perceived to influence) teaching and learning in EMI programs with respect to the L2 proficiency of teachers and students (Section 7.2). For example, MEB's secondary school curriculum was perceived by EMI teachers and students to affect negatively students' linguistic preparedness for EMI programs. Similarly, ÖSYM is the unit responsible for national assessment in Turkey and

administers two examinations relevant to EMI programs: first, ÖSYM issues the national language exam (YDS) which is used to assess EMI lecturers' L2 proficiency for EMI courses. Participant teachers perceived the lack of a speaking component on this exam as a shortcoming in evaluating teachers' preparedness for EMI. Second, ÖSYM issues the university entrance exam (YKS) which determines admissions to undergraduate programs in Turkey—including to EMI programs. Many students in this study perceived their exam points on the YKS as the primary factor determining their enrolment to EMI programs, with some students indicating that they did not consciously apply to EMI programs or actively choose to study through EMI (Section 7.5). Although they are not strictly part of the EMI policymaking process, decisions made by MEB and ÖSYM impact EMI teachers' and students' L2 proficiency and enrolment in EMI courses.

Furthermore, the SFL plays an important role in EMI implementation in that it is responsible for administering the *hazırlık* program. The findings presented in Chapter 4 demonstrated the centrality of the *hazırlık* program to EMI policy. The SFL both evaluates student proficiency and conducts the intensive English-language program; in other words, it serves as the linguistic gatekeeper for EMI study. However, as Figure 7.1 indicates, the SFL is **separate and removed** from the activities of the EMI department. As such, content and language learning are not integrated in EMI policy: the teachers who determine the language learning curriculum and those who determine the content learning curriculum are separated. Similar findings have been noted in other contexts (e.g. Ali, 2013, in Malaysia). In addition to understanding policy implementation vertically (e.g. macro to micro), these findings suggest that greater coordination is needed *horizontally* between macro-level actors (e.g. YÖK & ÖSYM), meso-level actors (e.g. EMI departments & SFL) and micro-level actors (e.g. content lecturers & language instructors) to form cohesive EMI policies and ensure their successful implementation.

Finally, another finding of this study with respect to EMI implementation concerned the oversight or enforcement of EMI policy. As presented in Chapter 4, an oversight mechanism theoretically exists in national-level EMI policy, since YÖK has the ability to audit EMI programs and revoke a department's right to lecture through EMI. Although national-level policy provides for (theoretical) oversight, the participants in this study were not aware of the existence of an enforcement mechanism. Participants described the enforcement of language policy as a 'sensitive issue' (T-11, Elite-2, interview 2), and the classroom observation data suggested that teachers did not always adhere to official MoI policy, with some teachers teaching their EMI lectures in Turkish. In a study conducted with EMI lecturers from Italy, Poland, and Austria, Dearden and Macaro (2016) found that EMI lecturers were unaware of institutional-level policies and perceived that they (EMI teachers) were responsible for carrying out EMI classes, resulting in "within-country and cross-country diversity" (p. 476) in EMI implementation. Although the EMI lecturers in this study were (generally) aware of official policies, they perceived flexibility in policy implementation due to the absence of administrative oversight. With respect to EMI enforcement, the findings of this study have indicated that there is a lack of consistency across EMI classrooms, which suggests issues in terms of the quality and equality of EMI programs across HEIs, as well as the effectiveness of policy in providing guidelines for EMI teaching and learning. Rather than 'enforce' language policy through mechanisms that would police language use, the findings of this study suggest that EMI teachers and students might benefit from (on-going) linguistic support (e.g. Dearden, et al. 2016; Jiang, Zhang, & May, 2019). The following section discusses the findings of this study with respect to L2 proficiency and linguistic preparedness.

7.2 L2 proficiency and linguistic preparedness for EMI

This study adds to the existing research on EMI in Turkey which suggests a situation of "deep concern in terms of [students'] level of English in general and vocabulary

knowledge in particular" (Macaro et al., 2018, p. 52), as well as to research outside of Turkey suggesting that low L2 proficiency is perceived as an obstacle to content learning in EMI (Broom, 2004, in South Africa; Hu & Lei, 2014, in China; Jiang et al., 2019, in China; Owu-Ewie & Eshun, 2015, in Ghana). Even though HE policy in Turkey has established the *hazırlık* system to prepare students linguistically for EMI, the findings of this study have suggested that many students lacked—or were perceived to lack—the L2 proficiency necessary to succeed in EMI courses. This concurs with the finding of previous research (e.g. Kılıçkaya, 2006; Kırkgöz, 2009; 2014; Sert, 2008).

In this study, participants across HEIs identified two main areas in which the English language curriculum of the *hazırlık* program could be revised in order to prepare students better for EMI study. These two areas were speaking and technical vocabulary**,** or terminology specific to the academic discipline (see Macaro, 2019, for discussion of technical vocabulary). Other studies conducted on EMI in Turkey have produced similar findings with respect to speaking (e.g. Dalkız, 2002; Sert, 2008) and technical vocabulary (e.g. Kırkgöz, 2005; Yıldız, Soruç, & Griffiths, 2017). In a study conducted by Soruç and Griffiths (2017) at a university in Istanbul, the most commonly reported difficulties by EMI students were related to understanding the vocabulary used in during lectures and inferring vocabulary from context. In the same study, students in focus groups reported that they could understand their EMI lectures but could not speak in English. The current study offers evidence in support of these findings, as the data from classroom observations has suggested that students often participated in Turkish in their EMI lessons. Moreover, statements similar to those reported by Soruç and Griffiths (2017) were found in focus group discussions with students, who stated that it was easier to participate in Turkish than English.

Although participants identified speaking as an area of concern with respect to L2 proficiency, the extent to which speaking difficulties impeded students' comprehension of or

participation in EMI lectures remains unclear. The findings of this study have indicated that students spoke Turkish in EMI lectures to overcome (perceived) difficulties speaking English, and the teachers in this study perceived that it was better for students to participate in Turkish than to enforce an English-only policy. Classroom observation data indicated that student-talk occurred more in the L1 than the L2. However, participating in Turkish may not have hindered students' comprehension of English lectures.

With respect to vocabulary, English technical terminology was used (instead of Turkish technical terminology) in lectures in which Turkish served as the primary MoI and in discussions between teachers and students in Turkish. Nonetheless, many students across HEIs stated that they had not been taught technical vocabulary related to their field in the *hazırlık* program but learned technical terms by 'getting used to' them in EMI lectures. In stating that they did not understand technical terminology, students framed the issue as a problem of L2 vocabulary comprehension in their EMI courses. This finding highlights the importance of vocabulary knowledge in EMI classes and suggests that students would benefit from discipline-specific instruction in *hazırlık*. Other studies have produced similar findings with respect to issues of vocabulary comprehension in EMI lectures (e.g. Chang, 2010; Hellekjaer; 2010; Kırkgöz, 2009; Lin & Morrison, 2010). In their large-scale survey at a university in Hong Kong, Evans and Morrison (2011) found that first-year EMI students experienced difficulty understanding technical vocabulary in their EMI lectures, although the study found that the students' language-related challenges decreased throughout their studies. In line with the findings of this study, the diminishing language-related challenges could be the result of students learning or 'getting used to' English vocabulary in their EMI courses.

While researchers have expressed concern over the spread of English loan words at the expense of Turkish technical terminology (e.g. Buyukkantarcıoğlu, 2004; Kırkgöz, 2014; Selvi, 2011; Sinanoğlu, 2004)—what Hultgren (2012) has characterized as 'domain loss'—

the results of this study were more ambiguous in terms participants' reactions to the spread of English. Data from classroom observations confirmed the prominence of English technical vocabulary in Turkish scientific discourse. However, participants disagreed over whether the use of English terminology had negative implications for the Turkish language. While some participants were concerned about not being able to express discipline-specific concepts in Turkish, other participants did not perceive this as an issue.

This study joins an existing body of research in raising concerns about the effectiveness of the *hazırlık* program (e.g. Bozdoğan & Karlıdağ, 2013; Macaro, Akıncıoğlu, & Dearden, 2016; Yıldız et al., 2017). Although EMI policy in Turkey has provided for language support through the *hazırlık* program, issues with students' L2 proficiency were found to exist—or were perceived to exist—in EMI programs. These findings suggest that students would benefit from additional language support in their EMI courses (Jiang et al., 2019, in China), particularly with respect to communicative skills (Gundermann, 2014, in Germany) and discipline-specific academic English (Rose et al., 2019, in Japan).

The criticism above regarding the effectiveness of the *hazırlık* program does not suggest that it should be abolished or that L2 entry requirements for admission to EMI programs should be imposed. A strength of the *hazırlık* system is that it provides equal opportunities of *access* to EMI programs, at least theoretically.[14] Macaro (2018) has suggested that there are multiple models of EMI, one of which is the preparatory year model in which students study through an intensive English program before beginning their EMI studies; another of which is the concurrent support model in which students are offered language support courses alongside their EMI courses; and the third of which is the selection model which requires students to achieve a minimum level of English proficiency before they are accepted to EMI programs but in which L2 support is not provided by the university to

[14] In practice, there may be issues with the university entrance exam system in terms of providing equal opportunities, such as the financial cost of test-prep tutoring and the limitations of standardized testing to assess academic aptitude; however, these questions are beyond the scope of this study.

assist students' in meeting this threshold. Among these three models, the first—the *hazırlık* program—is arguably the most egalitarian in that it allows students to enroll in EMI programs regardless of their background or previous educational experiences.

Research in other contexts has highlighted issues regarding access to EMI programs (e.g. Ferguson, 2009; Napoli & Sourisseau, 2013; Shohamy, 2013). Costa and Coleman (2012) report that almost half of the Italian universities in their survey required students to submit English proficiency scores from international exams such as TOEFL or IELTS, and a similar policy was reported by Hu and Lei (2014) in their case study of a university in China. Hu and Lei (2014) argue that "setting an entry proficiency requirement, like the double tuition charged for the focal program, limited access to EMI and its associated benefits to only a small elite with the right kinds of symbolic and economic capital" (pp. 562-563). In their case study in South Korea, Byun et al. (2011) reported that EMI courses were made compulsory without consideration for students' L2 proficiency and without providing language support. From these perspectives, the *hazırlık* program could be considered a strength of EMI policy in Turkey, since it alleviates linguistic challenges for students from less-privileged backgrounds or with lower levels of L2 proficiency leaving secondary school. With respect to issues of accessing EMI programs, this has social implications in Turkey, since elite HEIs teach entirely through English.

Moreover, the findings from this study have suggested that students' low L2 proficiency should be considered with respect to the quality of English education in public secondary schools through the MEB curriculum. Shohamy (2012) has stated that language education policy at one level of the education system should be considered in relation to the policies in the system as a whole: "the teaching of EMI at universities cannot be detached from broader settings where medium of instruction approaches are implemented… [and] there are major lessons that can be learned from each of these settings that may have an

impact on the others" (p. 13). As such, the findings of this study suggest that the quality of English language education and the nature of the ELT curricula should be re-evaluated in both *hazırlık* and secondary schools in order to prepare students adequately for EMI study. Poor English language education through the MEB (public) school system might disadvantage some students, particularly those who come from rural public schools—as suggested by students at Elite-1 (FG, T-8, Elite-1; Section 6.2.1). Macaro (2018, p. 13) has stated that there is a "top-down effect of tertiary on secondary" education. The findings from this study have suggested that there is also a bottom-up effect of secondary on tertiary education in terms of students' linguistic preparedness for EMI study. In Malaysia, Ali (2013) reported that the introduction of EMI in the secondary school system in 2003 led to the re-introduction of EMI at the tertiary level in 2005. While language education policies at the school level in Malaysia appear to have eased the transition to EMI at the university level, the opposite effect was found in this study. In Turkey, the linguistic challenges of EMI at the tertiary level appear to be exacerbated by aspects of the secondary school system, such as its emphasis on grammar teaching, standardized testing, and the low levels of L2 proficiency with which students leave secondary school. Given trends toward the expansion of EMI in HE, the MEB curriculum for English language education in secondary schools should be re-evaluated in light of the linguistic demands of EMI study.

In terms of teachers' L2 proficiency, students perceived a range of English proficiency levels among their EMI lecturers, and participant lecturers perceived the lack of an oral proficiency requirement as an EMI policy shortcoming. Previous EMI scholarship has reported that L2 proficiency requirements for EMI lecturers vary (e.g. Wächter & Maiworm, 2015, across Europe) or are nonexistent (e.g. Dearden & Macaro, 2016, comparing Austria, Poland, and Italy). Moreover, researchers have argued that general language exam scores are an insufficient measure of the English proficiency needed to lecture in EMI courses (Ball &

Lindsay, 2013; Gundermann, 2014; Li, 2013). While only one teacher (T-18, Large-3) in this study expressed concerns about his L2 proficiency level, the high proportions of L1 teacher-talk found in some teachers' lectures may suggest issues with teachers' L2 oral proficiency—although this study did not assess teachers' English. EMI policy also assumed that teachers who completed their PhD studies in 'English-speaking countries' would have the L2 proficiency necessary to teach in English. Similar findings have been reported from the South Korean context, where it is "assumed that Korean professors who earned their doctoral degrees abroad, mostly at U.S. universities, will encounter little or no difficulty conducting classes in English" (Byun et al., 2011, p. 440). The findings of this study with respect to the L2 proficiency requirements for EMI lecturers raise questions about the most effective means of assessing L2 competence for EMI teaching.

In short, the findings from this study have suggested that some EMI students lacked—or were perceived to lack—the L2 proficiency necessary to engage fully with EMI coursework in English. Although this study did not provide an objective measure of participants' L2 proficiency or content achievement, some participants perceived that content learning could be more effectively achieved through TMI. The following section discusses the findings with respect to L1 use in EMI classes.

7.3 L1 use in EMI

The findings from this study have revealed that many teachers and students perceived TMI as more effective for content learning, or at least easier, than EMI. Although measures of content learning were not included in this study, classroom observation data revealed that the L1 was commonly incorporated into EMI lectures and the majority of codeswitching instances were initiated by teachers. These findings add to a growing body of research which suggests that the L1 is commonly used in EMI classes (e.g. Airey, 2012; Aizawa & Rose, 2019; Evans, 2008; Lo & Macaro, 2012; Pun & Macaro, 2019; Söderlundh, 2013;

Tarnopolsky & Goodman, 2014). The findings from the observation data were supported by interviews and focus groups, in which teachers and students reported perceiving the L1 as a useful resource for content learning (e.g. Dearden & Akıncıoğlu, 2016; Lin, 2006; Lin & Lo, 2017; Lo & Macaro, 2015; Macaro, Tian, & Chu, 2019).

While previous research has suggested that the L1 is used in EMI classrooms primarily to establish rapport and translate technical vocabulary (e.g. Evans, 2008; Macaro et al., 2019; Söderlundh, 2013; Tarnopolsky & Goodman, 2014), the results of this study found that the two most common functions of L1 use were 'present new content' and 'ask questions related to content.' In other words, the results of this study found that the L1 was used for purposes of content teaching and learning. Moreover, instances of vocabulary translation were not found frequently in the data. In total, the function 'translate technical vocabulary' was recorded 73 times in the dataset, or less than once per observation. The student profile of the EMI classes included in this study may have contributed to this finding: the EMI classes included in the sample consisted primarily of home (local, Turkish) students who shared an L1 with their teachers (also Turkish nationals). Because participant teachers and students shared an L1, they may have been inclined to choose the "path of least linguistic resistance" (Söderlundh, 2012, p. 101). Moreover, extended explanations in Turkish may have negated the need to translate vocabulary items. The findings with respect to function and frequency of L1 use might have been different in EMI classes with more international students, although high proportions of Turkish use were found in classes with international students in this study (Section 5.2.3).

Moreover, this study examined classroom language practice across HEI contexts and found significant differences between universities (e.g. elite and small universities) with respect to Turkish use, teacher-student interaction, and the translation of technical vocabulary. The findings of a study conducted by Macaro et al. (2019) found low proportions

of L1 use in five teachers' lectures at a university in China, results which resemble those found at **elite universities** in this study, where teachers rarely used the L1. Macaro et al. (2019) report that the university in their study was "one of the top ten universities in China" (p. 5). Together with the results of this study, these findings suggest that the profile of the HEI and its students may contribute to differences in EMI implementation, particularly with respect to L1 use. Moreover, the lower proportions of L1 use found in EMI lectures at elite universities were supported by findings from interview data, in which teachers at elite universities did not perceive that it was necessary or appropriate to provide explanations in Turkish when students struggled to understand academic content in English. With the exception of Teacher 15 at Large-1, the other EMI lecturers in the study (n=14) (e.g. from non-elite HEIs) indicated that they provided explanations in Turkish during EMI lectures to facilitate student comprehension. As the number of EMI programs offered worldwide continues to increase, these potential differences in EMI implementation **across institutions** (e.g. elite and non-elite) should be considered in order to ensure fair and adequate program implementation.

In Chapter 5, five 'vignettes' were presented according to the analysis of classroom language use and teacher-student interaction. These vignettes have been reproduced below in Figure 7.2.

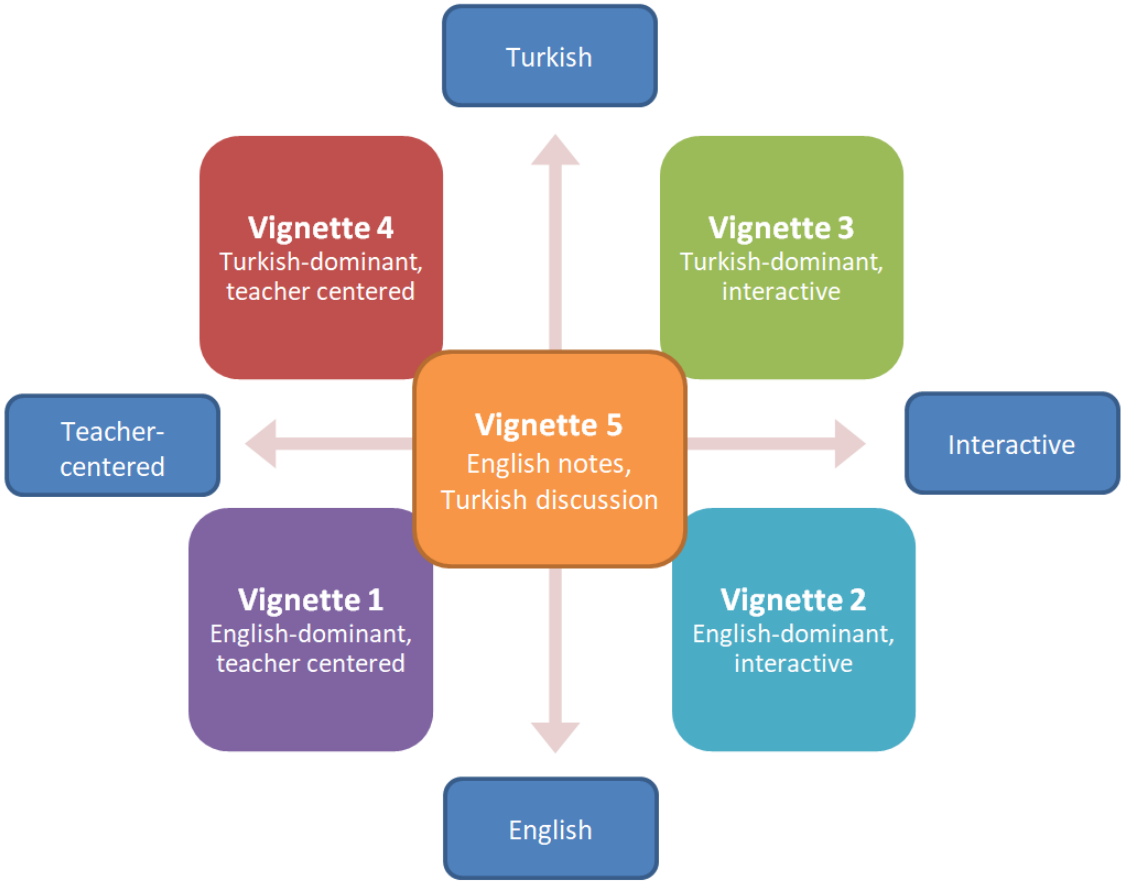


Figure 7.2: Five variations of EMI implementation

The language practices of the teachers in Vignette 1 consisted of little L1 use; in these classes, the L1 was primarily used by students to ask questions. The language practices of the elite university teachers included in this study (n=6) were characterized according to Vignette 1. Low proportions of Turkish use were also found in lectures characterized as Vignette 2, although higher proportions of teacher-student interaction were found in these classes compared to Vignette 1. The language practices of Vignettes 3, 4, and 5 consisted of higher proportions of L1 use than L2 use. As such, these lectures did not expose students to large amounts of English input, a reported aim of EMI (Macaro et al., 2019).

Although L2 exposure was reduced in lectures with high proportions of L1 use, the results of this study suggest that the L1 might be a useful pedagogical resource when used to encourage student participation and engagement in EMI classes—at least in learning environments similar to the ones in this study in which all or the vast majority of students

share an L1. Although extended student utterances were limited in the classroom observation data, student-talk was found to occur most often in Turkish (57.28%). Turkish was also used, in some form, in the majority of teacher-student interactions: about 29.38% of teacher-student interaction occurred in Turkish, 17.06% in a mix of English and Turkish, and 12.18% in Turkish with English terms—for a total of 58.62% of teacher-student interaction involving the L1. The analysis of classroom observation data found higher proportions of teacher-student interaction and higher proportions of L1 use in EMI classes at large and small universities compared to elite universities, where the proportion of teacher-student interaction was relatively low. Although the results of this study do not go so far as to suggest a relationship between L1 use and teacher-student interaction, other research looking at EMI classroom interaction has found that EMI classrooms were less interactive than L1 learning environments (e.g. Lo & Macaro, 2012; Pun & Macaro, 2019). Lo and Macaro (2012) found that EMI resulted in more teacher-centered instruction with "fewer opportunities for negotiation of meaning and scaffolding" (p. 29) compared to L1 MoI classes. Although the results of the current study cannot suggest a correlation between MoI and student participation, the proportion of teacher-student interaction in English-dominant, teacher-centered lectures (Vignette 1) was lower than the overall average (11.7% compared to 20.7%). Among the lectures found to be most interactive (Vignettes 2 & 3) the average proportion of classroom interaction in L1-dominant lectures was 36.5%, compared to 30.2% in English-dominant interactive lectures, and the *quality* of student participation in terms of linguistic complexity was found to be richer in L1-dominant lectures. In their study on the effect of L1 and L2 on question type in EMI science classrooms, Pun and Macaro (2019) found that "L1 use appears to be associated with higher order questions; higher order questions and quality interaction more generally have in the past been shown to lead to better learning" (p. 72). This study differed from Pun and Macaro's (2019) in that it did not

examine classroom interaction with respect to question type, and it investigated university lectures rather than secondary school classes; however, the findings presented in Chapter 5 support the conclusions of previous research (e.g. Lo & Macaro, 2012; Pun & Macaro, 2019) in suggesting that L1 use facilitates student participation.

Nonetheless, the results of this study have indicated that (relatively) high levels of student participation can be achieved in EMI classes through student-centered pedagogical techniques. While the L1 appeared to be a useful resource for negotiating meaning in the classroom, this study also found evidence of EMI pedagogies that encouraged student participation in English—which, arguably, might be more in line with the dual aims of EMI (e.g. content and learning) in the Turkish context and more appropriate in settings with international students who do not speak the local language. Although research on EMI pedagogy is limited (Macaro et al., 2018), researchers have suggested that EMI teaching requires a re-evaluation of the methodological approaches used by content instructors (Ball & Lindsay, 2013) and have suggested that student-centered learning might be an effective pedagogical approach in EMI classrooms (Lo & Macaro, 2012; Wilkinson, 2013). Such pedagogy would resemble the teaching strategies presented in Vignette 2 (Section 5.2.2). Classroom observation data found that, in these lectures, teachers worked to scaffold language and content through questioning techniques that increased student participation **in English**. However, although the *quantity* of student participation was found to be greater in these lectures than others in the sample, the *quality* of student output was minimal, with responses typically limited to single words or short phrases.

To summarize the findings with respect to L1 use, lectures at elite universities were characterized by "massive exposure to the L2" (Pun & Macaro, 2019, p. 65), although the same cannot be said of some EMI classes at small and large universities, where English was not used as the MoI in practice. While a monologic, teacher-centered pedagogy may fail to

promote the development of students' academic English, it is also unlikely that students receive the linguistic benefits of EMI in lectures with low proportions of English use. These findings suggest that the purpose of EMI—both in terms of policy objectives and stakeholder perceptions—need to be revisited, as the language learning aims of EMI, which were outlined in national policy regulations, did not appear to be realized in practice (Section 7.1). Moreover, although teachers incorporated the L1 into their lectures, the majority of teachers (n=19) included in this study had not received formal pedagogical training of any kind. As such, L1 use and student-centered pedagogies appeared ad hoc, based on teachers' perceptions of effective practices for EMI teaching. Similar findings were reported by Lasagabaster (2017) in Spain, where L1 use by CLIL secondary school teachers was found to be arbitrary or based on teachers' beliefs and intuition.

7.4 Dual aims of EMI

Based on the discussion of L2 proficiency and L1 use in EMI classes, the results of this study have revealed a tension between the stated aims of national-level EMI policy (e.g. L2 learning *through* EMI) and the mechanisms in place for EMI education (e.g. L2 learning *before* EMI). While the definition of EMI used in this study (Macaro, 2018) does not include explicit language learning aims, the results of this study have found that language learning is an official policy aim in Turkey: *"the aim of instruction in a foreign language is to ensure that graduates… gain foreign language competences related to their fields"* (Article 5, Law No. 29662). However, despite this policy statement, EMI policies at both the national and institutional levels were found to support students' L2 learning *prior* to EMI coursework but not *after* students and teachers had met the L2 proficiency requirements and were *engaged* in EMI programs, although some EMI departments required additional EAP courses. Other studies (e.g. Jiang et al., 2019, in China; Moncada-Comas & Block, 2019, in Spain; Unterberger, 2012, in Austria) have noted similar discrepancies between policy aims for

language learning through EMI and a lack of support for language learning in EMI curricula; however, none of these studies incorporated data both from explicit policy statements and classroom observations. As discussed in the previous section, the analysis of classroom observation data has raised doubts over the effectiveness of EMI classroom practices to develop students' L2 proficiency. This section discusses the findings with respect to the theoretical dual aims of content and language learning in EMI (Block & Moncada-Comas, 2019; Lo & Macaro, 2012; Rose et al., 2019).

Previous research has suggested that EMI programs often fall short of their theoretical dual aims (Ali, 2013; Broom, 2004; Chapple, 2015; Lei & Hu, 2014; Sert, 2008). Research (e.g. Byun et al., 2011; Hu & Lei, 2014; Kırkgöz, 2011) has suggested that EMI has negative effects on students' content comprehension due to low levels of (perceived) English proficiency. In Japan, Rose et al. (2019) have found that English proficiency and academic English skill were predictors of success in EMI programs, and Aizawa and Rose (2019) found that students faced linguistic challenges in their EMI classes regardless of L2 proficiency level, although students with lower L2 proficiency experienced significantly greater challenges. While the participants in this study perceived TMI as easier than EMI, many did not perceive long-term detrimental effects to content learning. As one student stated, EMI *"does not prevent us [from learning]; it just slows us down"* (Student 3, T-7, Small-2). This is in line with Rose et al.'s (2019) finding that "students from all levels of proficiency were able to pass the course" (p. 10), despite the relationship found between L2 proficiency and academic success. Here, I consider Macaro et al.'s (2018) statement that EMI "should demonstrate some improvement in English language learning and, AT THE VERY LEAST, present no long-term cost to academic content learning" (p. 38; emphasis in the original). The value, or effectiveness, of EMI ought to be considered in relation to language

and content learning, and while there should be no detriment to content learning, the *added benefit* of EMI is its supposed contribution to language learning.

While the current study did not objectively measure students' L2 proficiency nor include a measure of its development through EMI programs, the findings problematize the supposed 'dual aims' of EMI by suggesting that the language learning benefits of EMI might be modest for three reasons:

1. The findings from classroom observations indicated that content teachers' pedagogical approach to EMI included **few instances of focus-on-form instruction,** although language mixing was common in many classes. These findings are in line with other studies in the literature which have suggested that EMI content teachers do not perceive themselves as language teachers nor do they perceive language learning as a primary objective in their courses: previous studies have supported this claim through data collected from interviews (Airey, 2012; Ali, 2013; Block & Moncada-Comas, 2019; Dearden & Macaro, 2016; Unterberger, 2012) and observations (Costa, 2012; Jiang et al., 2019). Because this study collected data from both observations and interviews, it was able to triangulate the findings with respect to teachers' reported and observed practices to suggest that teachers neither perceive themselves as language teachers nor incorporate focus-on-form instruction in their EMI classes.
2. The majority of the classes (n=12) observed in this study were **teacher-centered lectures** with low levels of teacher-student interaction. In line with Inbar-Lourie and Donitsa-Schmidt's (2013) claim that the teacher-centered structure of EMI university courses limits the potential for language learning, the findings of this study raise questions of the effectiveness of teacher-centered EMI courses for L2 learning.

3. Classroom observations revealed that **Turkish was the primary MoI** in some EMI lectures; in such courses, it is unlikely that students would have opportunities to develop their English skills.

While these three points have been discussed in previous sections of this chapter, my intention here is to consider them with respect to the dual aims of EMI, including national-level policy aims to improve students' English proficiency through EMI. However, taken together, these findings suggest that EMI may not be effective for L2 learning (Kırkgöz, 2014, Byun et al., 2011), or at least not more effective than other methods of education.

Moreover, these findings challenge the notion that EMI is becoming 'CLIL-ised' in its implementation (Block & Moncada-Comas, 2019; Moncada-Comas & Block, 2019). Moncada-Comas and Block (2019) have argued that 'CLIL-ised EMI' occurs when language learning objectives are incorporated into EMI courses—in other words, EMI programs begin to resemble CLIL programs (at least theoretically) when language learning becomes an explicit aim. The findings of this study challenge the notion that EMI is becoming 'CLIL-ised' at Turkish universities: while language learning was found to be a national-level EMI policy objective, this study found little evidence of language teaching in EMI classes. Rather, the teaching practices observed in this study align with the findings of Block and Moncada-Comas (2019) to suggest "no pedagogical moves towards a true CLIL-ization of EMI" (p. 14). Again, these findings suggest that, despite the dual aims of EMI, content and language are not integrated in practice. Further, while the analysis of policy documents found 'CLIL-ised' aims of EMI, policy documents did not provide guidelines for a 'CLIL-ised' implementation of EMI (Section 7.1). Given evidence that EMI may not develop students' L2 proficiency, the following section discusses the perceived benefits of EMI to address the question of *why* stakeholders choose to participate in EMI programs.

7.5 Why EMI?

This chapter so far has discussed the findings of the study with respect to aspects of teaching and learning in EMI classrooms. This section discusses the results with respect to justifications or motivations for EMI. In other words, this section considers the findings with respect to the question of *why* stakeholders might choose to teach or learn through EMI programs.

Although many participants perceived EMI as less effective and more difficult than TMI for content learning, they believed that the benefits of EMI in terms of improving students' employment opportunities outweighed its linguistic challenges. Similar findings were reported by Kırkgöz (2014) in a study comparing EMI and TMI students' perceptions of learning in their engineering undergraduate programs: EMI students expected that learning through English would lead to better career prospects and access to English resources, although TMI students reported greater ease in understanding content material. With respect to the benefits of EMI, participants in the current study perceived English as a skill desired by employers and necessary for getting a job. They also perceived benefits in terms of accessing scientific resources in English. Similar findings have been reported in others studies with respect to perceptions that English skills improved employment prospects (e.g. Coleman, 2006, in Europe; Heller, 2003, in francophone Canada; Piller & Cho, 2013, in South Korea) and were an asset in the globalized economy (e.g. Inbar-Lourie & Donitsa-Schmidt, 2013, in Israel; Li, 2013, Hong Kong). Previous studies in the Turkish context have also identified economic gain and career advancement as motivations for EMI study (Kırkgöz, 2007; 2009; 2014; Uçar & Soruç, 2018). In this study, EMI was perceived by teachers and students as beneficial for students' careers because it was perceived to improve students' English—or at least signal to employers that students had studied engineering in English. This latter point regarding the importance of EMI as a signaling mechanism to employers—regardless of

students' actual L2 proficiency or the effectiveness of EMI for L2 learning—suggests that EMI might be an example of linguistic entrepreneurship (De Costa, Park & Wee, 2016; 2018).

Scholars have argued that EMI policies are underpinned by a neoliberal ideology that values competition and economic gain (Piller & Cho, 2013; Tollefson, 2013a; 2016). Through this neoliberal ideology, "English is increasingly going to become a 'commodity' of those belonging to the upper middle class" (Selvi, 2011, p. 196). De Costa et al. (2016) argue that, as a result of "the neoliberal turn in education," language learning has become an activity through which individuals can improve their employment opportunities by "enhancing the value of one's human capital" (p. 696). The notion of linguistic entrepreneurship posits that individuals are motivated to learn a language because they wish to improve their marketability, and learners undertake activities which will increase their competitiveness in the job market. The idea of linguistic entrepreneurship echoes Teacher 7's statement that EMI *"shows how much a person values him or herself, how much they've worked to develop themselves*" (T-7, Small-2, interview 1). Here, I argue that the importance of studying through EMI was perceived by the participants in this study not simply as a way to improve their English but as a way to "exploit language-related resources for enhancing one's worth in the world" (De Costa et al., 2016). In other words, studying through EMI was a means through which to demonstrate one's "commitment to enhancing and justifying her worth" (De Costa et al., 2016, p. 699) as a future engineer in a globalized market, because it would indicate to employers that the student had invested in her linguistic capital.

Moreover, the concept of linguistic entrepreneurship may help to explain the paradoxical findings with respect to participants' perceptions of EMI for university-level engineering programs: the findings presented in Chapter 6 suggested that English (and therefore EMI) was perceived as both necessary for students' careers and an obstacle for

teaching and learning, resulting in the use of Turkish in EMI classes, even though students needed to develop English skills for their careers. Considered through the lens of linguistic entrepreneurship, the benefit of EMI is that it makes students more *competitive* in the job market. However, in the context of this study, the *signaling* of EMI might be more valuable in terms of employment opportunities than *L2 proficiency* since the findings of this study raised questions about the effectiveness of EMI to improve students' English (Section 7.2). In light of the findings of this study, the notion of linguistic entrepreneurship would suggests that (some) students' motivation to study through EMI is less about *learning English* than it is about increasing their *marketability*. Although EMI was perceived to improve students' employment opportunities, there is little empirical evidence from Turkey to confirm that this is the case.

As a counterpoint to the argument that students' chose to study through EMI as an investment in their linguistic capital, an unexpected finding of this study concerned students' awareness of EMI before enrolling to their undergraduate programs: focus group data have suggested that not all students consciously or intentionally enrolled in EMI programs. For many students, the university admissions process was determined by the score they received on their university entrance exams, and some students either did not consider MoI when selecting an undergraduate program or were unaware that their program was partially taught through English. This finding raises questions about (some) students' motivation to study through English, and it highlights a methodological strength of this study: focus group discussions allowed students to generate ideas and compare their experiences. As such, unexpected themes—such as the lack of awareness of MoI—emerged that may not have been captured by questionnaires (e.g. Macaro & Akıncıoğlu, 2018).

Further, this finding joins previous research in suggesting that (some) EMI students in Turkey lack motivation to learn or study through English (e.g. Dearden & Akıncıoğlu, 2016;

Sert, 2008). Research on student motivation in EMI programs in Turkey has found differences with respect to gender and year of study (Macaro & Akıncıoğlu, 2018; Turhan & Kırkgöz, 2018), with research suggesting that students are less confident in the benefits of EMI as they progress in their studies. Research in other contexts has noted resistance to compulsory EMI policies (e.g. Byun et al., 2011, in Korea); however, previous research in Turkey has not explicitly asked students whether they *chose* to or *wanted* to study through EMI.

As Macaro and Akıncıoğlu (2018) have noted, enrolment is not a "completely free choice" because "a number of factors can influence students' ability to enroll" (p 258). However, the results of this study suggest that the language policies of the Turkish HE system limit students' options and awareness of EMI during the university selection process. For example, the top universities in Turkey, both public and private, teach entirely through EMI, which means that students wishing to study at these prestigious institutions *must* study through EMI; there is no option for TMI at Turkey's top universities. Similarly, Kang and Park (2005) found that Korean students enrolled in an EMI engineering program because an L1 MoI program was not available at their university. If students have not actively chosen to study through EMI, their motivation to learn (in) English might be lower than expected. In turn, students' low motivation might contribute to their positive perceptions of L1 use in class, as found in this study.

This study did not include policymakers among its participants; however, it is worth considering policy-level justifications for EMI in light of the analysis presented in Chapter 4. Although internationalization is commonly cited in the literature as a justification for the introduction and expansion of EMI programs (e.g. Brenn-White & Faethe, 2013; Brenn-White & van Rest, 2012; Costa & Coleman, 2012; Gundermann, 2014; Hynninen, 2012; Inbar-Lourie & Donitsa-Schmidt, 2013; Rose & McKinley, 2018; Wächter & Maiworm,

2015), the national and institutional policy documents examined in this study did not frame EMI as a strategy for internationalization. Moreover, the results of this study have found that it is difficult to determine the exact number of EMI programs offered at the undergraduate level in Turkey, particularly the number of partial EMI programs, because MoI was often made invisible in documents pertaining to undergraduate programs—including the *kılavuz* handbook used by students applying to university. Although English is the most commonly used L2 MoI in Turkey, policy documents conflated English and 'foreign language' education. Similar findings were reported by Ali (2013) in Malaysia, where the word 'English' was absent from MoI policy documents, and by Saarinen and Nikula (2013) in Finland, where 'English' was conflated with 'foreign language' in institutional documents. The degree to which (partial) EMI programs are made invisible in Turkey suggests that they are not introduced to attract international staff and students.

Whereas Rose and McKinley (2018) found that the 'Top Global University Project' (TGUP) in Japan allowed individual HEIs to develop their own agenda for policy implementation, the findings of this study have suggested that national EMI policy in Turkey has provided state universities with little flexibility in terms of interpreting or developing policies for internationalization and EMI. For example, the findings of this study have suggested that national policies for admissions and hiring at state universities limit the ability of public HEIs to recruit international staff and students. In other words, centralized national policies have appeared to limit the ways in which public HEIs can use EMI for purposes of internationalization. Although attracting international students has been provided as a motivation for EMI in Japan (Rose & McKinley, 2018) and Europe (Wächter & Maiworm, 2015), state universities in Turkey cannot benefit from higher fees charged to international students and are often limited in the number of international students that can be admitted due to quotas set by YÖK.

While these findings problematize the assumption found in the literature that EMI is connected to internationalization, the importance of the *discourse* of internationalization should not be discredited in evaluating motivations for EMI study: interview and focus group data have suggested that EMI teachers and students perceived English as an important skill for improving students' employment opportunities in the global economy. As such, discourses of internationalization were found in participants' perceptions of the benefits of EMI, even though these discourses were not made explicit in the policy documents examined in this study.

7.6 Summary of chapter: Defining the 'E' in EMI

By investigating the variation with which EMI is implemented in Turkish HE, the results of this study have called into question what is meant by the role of English in EMI (e.g. Dafouz & Smit, 2016; Macaro, 2019; Kuteeva, 2019). In other words, the results of this study have suggested that the 'E' in EMI is not monolithic. The EMI engineering courses included in this study were neither English-only nor English-always in their implementation. At the beginning of this dissertation, EMI was defined as: "The use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language (L1) of the majority of the population is not English" (Macaro, 2018, p. 19). As Macaro (2019) has noted, this definition is "deliberatively provocative" (p. 2), since each aspect of it could be problematized in comparing EMI implementation across contexts and academic disciplines. The diversity of classroom language practices observed in this study has highlighted the ways in which *English* is used for teaching and learning in EMI classes. English was found to play a role in each of the EMI lectures observed in this study, including lectures in which Turkish was the primary MoI. English technical terminology was used in Turkish explanations of scientific content (Figure 7.2, Vignettes 3 & 4), and English materials such as PowerPoint slides were used alongside Turkish explanations (Figure 7.2,

Vignette 5). This finding problematizes the scope of what is meant by using English *to teach* academic content in EMI. While students in EMI classes with high proportions of L1 use were not exposed to large amounts of English (Macaro et al., 2019), they were exposed to English resources and English terminology specific to their academic fields.

Lo and Macaro (2012) state: "A fundamental question that must face all policy makers when contemplating whether to use the learners' L2 as the MoI is 'Why are we doing this and what are our objectives?'" (p. 30). The results of this study indicate that there is a disconnect between national-level policy aims for language learning through EMI and the implementation of EMI across university contexts. The findings of this study have revealed that English does not serve as the primary MoI in some EMI classes, meaning that potentially "it is not furthering the acquisition of academic English" (Pun & Macaro, 2019). While English was the primary MoI in other classes, many of these lectures were monologic in nature; the low levels of classroom interaction found in these contexts raise questions as to whether they are *at least as effective* as L1 MoI in terms of content learning and *at least as effective* as traditional EFL classes in terms of language learning. While teachers and students expressed concerns over content and language learning in EMI, they perceived EMI as beneficial for students' future employment opportunities.

The results of this study have indicated that the role of English in EMI is multi-faceted and complex, and the findings have highlighted the fluidity with which language is used in EMI courses (e.g. Aizawa & Rose, 2019; Kuteeva, 2019; Prinsloo, 2012). Given the variation with which EMI is implemented across HEI classrooms, the findings of this study suggest a re-evaluation of the objectives of EMI and the role English in EMI lectures.

Chapter 8: Conclusion

This study has contributed to the growing body of research on EMI by examining the variation with which EMI engineering programs are implemented at state universities in Turkey. Because the study sought to examine variations in EMI implementation at the classroom level, one discipline was examined to compare classroom language use. Engineering was selected as the discipline under examination because it is a discipline for which EMI is commonly offered, both in Turkey and globally, and a 'hard' EMI subject (Macaro, 2018). This study has examined:

- EMI policy at the national and university levels with the application of the ROAD-MAPPING framework as an analytical tool;
- Classroom language practices across a diversity of university contexts using a structured coding scheme to analyze classroom observation data with respect to language, speaker, function, codeswitching behavior, and length of turn;
- Perceptions of EMI for teaching and learning through interview and focus group data with participant teachers and students.

Key findings presented in the preceding chapters have shown that, despite centralized policies regulating MoI decisions in Turkey, teachers and students negotiated the implementation of EMI at the classroom and departmental level, resulting in a diversity of classroom language practices. The findings have revealed that, although EMI teachers and students perceived language-related challenges in their classes, they perceived EMI as beneficial for students' career opportunities. This study was guided by the following overarching research question:

> *With what variation is EMI implemented in undergraduate engineering programs in Turkey?*

This study approached its overarching research question by asking the following sub-questions:

1. What are the current policies for EMI engineering education at the university level in Turkey?
    a. How are the dimensions of the ROAD-MAPPING framework enacted in national EMI policies?
    b. How are the dimensions of the ROAD-MAPPING framework enacted in institutional EMI policies?
    c. How do EMI policies vary across universities?
2. How are languages used in university-level engineering classes in Turkey?
    a. What functions do languages (English, Turkish, and other languages) serve in EMI classrooms?
    b. How do the functions of these languages vary across EMI classrooms?
    c. What functions does codeswitching have in EMI classrooms?
3. How do teachers and students perceive EMI in university-level engineering programs?

The findings presented in Chapter 4 answered RQ1 with respect to EMI policy. These findings highlighted the centrality of the *hazırlık* program for language learning and the absence of policy guidelines for EMI classroom implementation, beyond stating that teaching and learning should be carried out in the target language. The policy findings also revealed that the aim of EMI, according to national policy documents, was to improve students' English competencies with respect to their academic fields. In answering RQ2, Chapter 5 presented the results of classroom observation data, which illustrated the diversity of language practices across EMI classrooms. In particular, the findings presented in Chapter 5 revealed differences with respect to language choice and teacher-student interaction in EMI

lectures. Finally, Chapter 6 revealed that teachers and students perceived flexibility in EMI policy implementation, and that participants perceived a tension between the linguistic benefits of EMI for students' employment opportunities and the perceived difficulty of content learning in EMI compared to TMI courses.

This chapter begins with a review of the aims and key findings of the study. It then discusses the contributions of the study and implications for future research, practice, and policy. Finally, limitations and recommendations for future research are presented.

8.1 Review of aims and major findings

8.1.1 What did this study do?

This study examined the variation with which EMI was implemented in university-level engineering courses in Turkey. Participants included 21 EMI lecturers from seven HEIs. The HEIs were selected to include elite (n=2), large (n=3), and small (n=2) universities in order to capture a diversity of classroom language practices in EMI contexts.

First, this study examined national- and institutional-level EMI policies through an examination of policy documents and official university statements. The ROAD-MAPPING framework (Dafouz & Smit, 2016) was applied to analyze data from policy documents (n=145). The analysis of policy data illuminated the landscape of EMI education in Turkish HE. Further, the analysis provided evidence of how national-level policies were appropriated and reflected at the institutional level. Through the comparison of seven HEI contexts, the analysis revealed the diversity and similarity of EMI policy in Turkish universities. Moreover, to my knowledge, this study is the first to apply to ROAD-MAPPING framework as an analytical lens to compare national and institutional policy within one country context.

Then, classroom language practices were examined through classroom observations. The EMI lectures of 21 teachers from seven HEIs were observed and audio-recorded. Each lecturer's (n=21) class was observed twice, for a total of 85 classroom observations and

nearly 68 hours of audio-recorded data. The data were transcribed and analyzed in NVivo using a structured coding scheme (adapted from Tsui, 1985) for length of turn, language, code-switching behavior, speaker, and function. The coding scheme was piloted before the main data collection, and acceptable levels of inter-rater reliability were found for each category of the coding scheme ($\kappa = 0.828$ to 0.987, $p < .001$). The analysis of the classroom observation data compared average proportions and frequencies across EMI contexts, including by institutional type and according to individual content teacher. Data were then analyzed with a qualitative focus on language use. Classroom observation data have provided empirical evidence of the language used for teaching and learning in EMI classrooms, as well as empirical examples of EMI pedagogy.

Finally, data were collected and analyzed through semi-structured interviews (n=42) with teachers and focus group discussions (n=25) with students. The first interview with each lecturer collected information pertaining to the teacher's background and general perceptions of EMI for teaching and learning; stimulated recall procedures were also used to probe the teacher's understanding of classroom language practices. Additionally, focus groups were conducted to incorporate EMI students' perspectives. The interviews and focus groups were transcribed and analyzed in NVivo using qualitative content analysis for emerging themes. The findings from the interview and focus group data have shed light on teachers' and students' perceptions of EMI policy, classroom language practices, and process of teaching and learning in EMI contexts.

8.1.2 What did this study find?

The findings of this study have revealed the variation with which EMI engineering programs are implemented in Turkey. Although official EMI policy was found to state that classes should be taught in English by lecturers with command of that language, EMI engineering courses were neither English-only nor English-always in their implementation,

and EMI content teachers were found to be 'the final arbiters' (Johnson, 2013) of EMI policy implementation.

The analysis of EMI policy documents presented in Chapter 4 has found that, while official EMI policy was determined by macro-level actors such as YÖK, ÖSYM, and HEI senates, department-level actors (e.g. department heads and lecturers) shaped the practices and processes of EMI programs—particularly partial EMI programs—by determining course content and the arrangement of the EMI curriculum. Five vignettes were presented in Chapter 5 to illustrate the diversity with which EMI was implemented, particularly in terms of language choice and student participation. The diversity of EMI classroom practices found in the observation data was confirmed through interviews and focus groups with teachers and students. The findings presented in Chapter 6 revealed that teachers and students perceived variation in EMI policy implementation but no repercussions for violating official EMI policy.

With respect to EMI policy: this study found that (formal) content and language learning were separated in EMI policy and institutional practice. EMI policies at both the national and institutional levels were found to be primarily concerned with L2 learning through the *hazırlık* system, which was administered by the School of Foreign Languages (SFL) as a prerequisite for EMI programs. Policy provisions were found to support L2 learning *prior* to EMI coursework but not *after* students and teachers had met the L2 proficiency requirements and were *engaged* in EMI courses. As such, there appeared to be a tension between stated policy aims (e.g. L2 learning *through* EMI) and the mechanisms in place for EMI education (e.g. L2 learning *before* EMI).

With respect to classroom language use: the EMI lessons observed at elite universities were found to be more teacher-centered and English-dominant, with less student participation and L1 use than the EMI lessons observed at small and large state universities.

Moreover, the function 'translate technical vocabulary' occurred less frequently in lectures at elite universities than small universities. However, clear patterns of language use were not found at or between small and large universities, where language practices appeared to vary across teachers' lectures. The five vignettes presented in Chapter 5 illustrate the diversity of language practices with respect to language choice and teacher-student interaction. In support of these findings, students perceived that classroom-level EMI implementation was determined by the teacher, and they noted variation within and across EMI classrooms. Codeswitching was found to occur frequently in the EMI classes, with the majority of codeswitching instances initiated by teachers. On average, codeswitching was found to occur 26.83 times per lesson (*SD* = 20.11). The three most common functions of language use were 'present or explain new content,' 'ask questions related to content,' and 'provide "off content" information related to the course.' These functions were found to be the top three functions in the dataset regardless of speaker or language.

With respect to perceptions of EMI for teaching and learning: teachers and students perceived EMI as necessary for enhancing students' career prospects, but the majority of teachers and students in this study also perceived language-related challenges to teaching and learning in EMI courses, including issues with students' English proficiency. Because of language-related challenges, many participants perceived EMI as less effective and more difficult than TMI for content teaching and learning. To overcome language-related challenges, teachers and students perceived the L1 to be a useful resource in EMI classes. As such, although participants perceived English (and thus EMI) as beneficial for students' career prospects, they perceived issues with students' English proficiency that created challenges in EMI programs.

8.2 Contributions of the study

This study has contributed to the existing research on EMI in the following ways:

In terms of its scope and focus, this study took a broad, country-wide approach in examining EMI policies and EMI implementation. To my knowledge, it is the only study to incorporate an analysis of policy, practice, and perceptions on such a scale. The findings of the study have offered rich empirical evidence of EMI classroom practices and suggested that EMI is not monolithic in its implementation, even in the presence of a uniform, guiding national policy. These findings challenge theoretical understandings and policy definitions of EMI that envision English-only instruction. Moreover, because this study took a country-wide approach, it has contributed to understandings of how EMI implementation differs across institutions and classrooms. Additionally, this study examined classroom interaction and L1 use in EMI university contexts, an under-researched area in the literature on EMI (e.g. Macaro et al., 2019). This is only the second study to examine classroom interaction in EMI contexts in Turkey. Its findings have contributed empirical evidence to understandings of EMI practices and policy implementation in Turkey and more broadly at the university-level.

Methodologically, this study contributed a novel application of the ROAD-MAPPING framework to analyze EMI policy. This study was the first to apply the ROAD-MAPPING framework to the context of Turkey, and it has added to the growing body of research employing the ROAD-MAPPING framework. The analysis in Chapter 3 has demonstrated the robustness and effectiveness of the ROAD-MAPPING framework as an analytical tool to examine EMI policy.

Additionally, this study's methodological contributions include its adaptation of the structured coding scheme used to analyze classroom observation data. To examine the fluidity of classroom language use, this study revised the framework created by Tsui (1985) and used by Lo (2015) to capture classroom interaction. In revising the framework, this study included more dynamic perspectives of language choice, codeswitching, and speaker. Rather than consider language use in binary terms of L1 or L2, this study introduced language

categories to capture mixed-language utterances, the results of which have highlighted the language fluidity found in EMI lectures. The adaption of the coding scheme has captured the ways in which and the frequency with which English lexical items, including technical terminology, are used in Turkish explanations of scientific concepts. Similarly, by including a speaker category dedicated to teacher-student interaction, the coding scheme has captured interactions that may have otherwise been missed by time measurements, since student-talk often consisted of short, often single-word responses. Similarly, a time measurement may not have captured the L2 use in L1 utterances described above.

Finally, from its classroom observation data, this study has provided diverse empirical examples of EMI pedagogy and has created a corpus of EMI classroom language, which can be used for future research investigating aspects of classroom language practices.

8.3 Implications of the study

The findings of this study offer implications for policymakers, researchers, and practitioners with respect to EMI programs and English language teaching. While the implications presented in this section are discussed with respect to the Turkish context, they are applicable to the broader landscape of EMI policy and practice.

A key finding in this study was the perception that students lacked the L2 proficiency needed for EMI, despite having completed the *hazırlık* program. Tertiary-level education should not be considered in isolation from the broader educational context of Turkey. In order for students to be adequately prepared for the linguistic challenges of EMI, educational reforms should be considered at the secondary school level to improve the MEB curriculum for English language learning. In particular, the MEB curriculum should be revised to provide more emphasis on communicative skills such as speaking and listening, the former of which was perceived as a challenge for EMI students and the latter of which was perceived as important for understanding EMI lectures. Rather than teaching grammar for standardized

tests, the MEB curriculum could be revised to ease the transition to tertiary EMI programs. As the number of EMI programs—and thus the number of students studying through EMI—continues to grow, it is imperative that students are provided with adequate L2 instruction. Strengthening the quality of English instruction in public secondary schools would provide students with a better foundation of English before entering the *hazırlık* program, which could then teach a curriculum of EAP or ESP tailored to students' disciplinary needs.

The results of this study have suggested that the *hazırlık* program might prepare students better for EMI study by providing specialized EAP and ESP instruction, instead of general English education. In other words, the focus of the *hazırlık* program should be revised to include vocabulary and scientific terminology specific to the students' area of study. Similarly, the *hazırlık* program could include an emphasis on communicative skills, including productive skills, as this might increase students' confidence to participate in English in EMI courses. Moreover, to help students overcome language-related challenges, continuous English-language support should be provided *throughout* EMI programs, not just through the *hazırlık* program. Examples of continuous language support could include additional EAP/ESP classes throughout students' undergraduate education and collaboration between content and language instructors to address students' linguistic needs (e.g. Aizawa & Rose, 2019; Jiang et al., 2019).

The findings of this study also offer theoretical implications for research on EMI. First, the findings have contributed to theoretical understandings of EMI by demonstrating the diversity of language practices found in EMI university lectures. These findings suggest that definitions of EMI should be re-evaluated, specifically with respect to scope of the 'E' in EMI. This study has revealed a diversity of EMI implementations. English was found to play a role in the teaching and learning of academic content in each of the EMI lectures observed in this study, although the scope and nature of English used in the lectures varied. Some

lectures were conducted entirely in English, whereas English technical terminology was found to support Turkish explanations in other lectures. These findings suggest that more nuanced definitions of EMI might be needed in order to evaluate and compare research contexts. While some researchers have already begun to theorize new definitions of EMI (e.g. Pecorari & Malstrom, 2018), the findings of this study shed light on the variation with which EMI is implemented in the same country context. Further, this study found that L1 use was a reality in EMI classrooms: to what extent can theoretical understandings of EMI allow for L1 use?

The findings of this study challenge notions that EMI is becoming 'CLIL-ised' (Moncada-Comas & Block, 2019). The empirical evidence presented in this dissertation has suggested that EMI content teachers rarely focus on form or aspects of language in their lectures. Moreover, students described language learning as implicit, saying that they 'got used to' the English vocabulary used in their lectures. These findings suggest that, despite official aims for EMI to improve students' L2 proficiency, EMI teachers and students are oriented toward content instruction in their EMI classes and do not incorporate 'CLIL-ised' aims of language learning into their content teaching. Given these findings, stakeholders and researchers should re-evaluate the assumption that EMI is effective for language learning: if the contribution of EMI to students' L2 proficiency is minimal, researchers and policymakers should consider other means to support and/or develop students' language learning.

For example, if language learning is an aim of official EMI policy—as was found in the study—language learning objectives could be included in EMI curricula and supported by pedagogical practices that optimize conditions for language learning. Such revisions to EMI curricula would improve the alignment of policy aims and classroom practices. To this end, policymakers and researchers should consider pedagogical training for EMI lecturers to support opportunities for language learning through EMI.

8.4 Limitations of the study

This study is not without its limitations. The scope of this study was limited to EMI programs in engineering departments. Different results might be found in other academic disciplines, such as in the social sciences or humanities. For example, an academic discipline such as international business might have resulted in difference patterns of language use, given the international orientation of the discipline. Moreover, engineering is an applied science, which may have contributed to participants' perceptions of the benefits of EMI for students' future careers as engineers. In other words, the engineering programs in this study prepared students for a specific career; although graduates of engineering programs can pursue other paths, the assumption among participants appeared to be that students were studying engineering to become engineers. The results of the study might have been different had a more theoretical scientific discipline, such as physics or biology, been examined, since these academic disciplines are less associated with a single career path.

Moreover, this study investigated undergraduate EMI programs at state universities. More research is needed to understand how EMI implementation, policy, and classroom language practices may vary according to degree level (e.g. postgraduate programs) and in private universities. Private universities in Turkey have more autonomy in terms of admissions and recruiting international staff and students, compared to state universities. Further research is needed to understand how EMI policies and their implementation at private universities compare to the findings of this study.

The data for this study were collected in naturalistic settings. As a result, a number of limitations arose during the process of data collection. The EMI classes included in this study varied in size and year of study. While a majority of the classes (n=12) were between 30-60 students in size, four classes contained less than 10 students and the largest class was a lecture hall of approximately 200 students. These differences in class size may have

contributed to variations in teacher-student interaction. While higher levels of teacher-student interaction were not necessarily found in the smaller classes in this study, different results may have been found had the study controlled for class size.

In addition to class size, the length of each individual lesson and the total time observed per teacher varied, due to scheduling patterns at the participating HEIs. In its analysis of classroom observation data, this study attempted to account for these differences in class length by comparing proportions of language use and speaker talk. However, the results may have been different had lessons of similar length been recorded.

Moreover, classroom observations and focus group discussions were audio-recorded because participants during the pilot study expressed hesitation to being video-recorded. Given the politically sensitive nature of HE in Turkey at the time of data collection, the decision to audio-record was made to protect participants' identity and increase participation in this study. However, the decision to audio- rather than video-record limited the richness of the data. Video-recordings would have enabled the analysis of visuals, body language, and gestures in lessons and focus groups, such as students nodding to express agreement with peers. Field notes were used to address this limitation, although the data from field notes were limited in comparison to the data that could have been provided by video-recordings.

Additionally, the average length of the focus group discussions was shorter than desired or originally intended due to logistical issues. Focus groups were often scheduled in between classes when students were available, although this limited the maximum length of the focus group. A focus group discussion was not conducted for Teacher 1's class, since students in this class did not wish to participate. Nonetheless, the focus group data revealed the candor of students and the diversity of perspectives within a single EMI cohort.

In terms of data analysis, the structured coding scheme used to analyze classroom observation data included a broad category of 'teacher-student interaction' to capture student

participation in class. While this category captured student utterances that might have been missed in a time-sampling analysis, it did not measure the proportion of teacher or student talk within instances of teacher-student interaction. In other words, the category of teacher-student interaction did not provide a measure of how much time or how many words students contributed to the interaction.

Similarly, the broad language categories employed to capture codemixing did not provide precise measures of how much L1 or L2 were used in each codemixing utterance. These categories were added because many instances of intra-sentential codemixing were found in the data which may not have been captured by a time sampling technique. In the same way, counting the number of L1 and L2 words as measure of language use, as was done in the study by Macaro et al. (2019) in China, would have under-represented L1 use due to differences in the grammatical structure of Turkish and English.[15] While the structured coding scheme was effective in comparing broad patterns language use across classrooms, these limitations prevented precise measures of student-talk within classroom interactions and of L1 and L2 use within instances of codemixing.

The findings of this study indicated that teachers and students across university contexts perceived low levels of student L2 proficiency, and many participants shared the perception that students learn more effectively in their L1. However, the study included no measures of students' L2 proficiency or content achievement to evaluate the validity of these perceptions. While the classroom observations revealed a variety of pedagogical practices, the effectiveness of these practices for content and language learning was not evaluated. These limitations suggest avenues for future research in order to evaluate language and content learning against direct measures of achievement.

[15] Turkish is an agglutinative language that adds affixes and suffixes to word stems, meaning that one word in Turkish often requires several words in English.

Finally, there were limitations in the sampling for this study due to issues of access. Although the original design of this study sought to include HEIs in Eastern Anatolia, the final sample included HEIs in Western and Central Anatolia. Participation in this study was voluntary, and participants were contacted through purposeful sampling techniques. The results of this study cannot, and should not, be generalized to a larger population. The aim of this study was to investigate the variation with which EMI was implemented, not to provide generalized claims about EMI practices in Turkey.

8.5 Recommendations for future research

The data collected for this study have resulted in a large corpus of EMI classroom language. Future research into classroom language use can be conducted using this dataset and more micro-level analyses. For example, additional analyses could be conducted on teacher-student interaction to provide a richer understanding of student talk in EMI classrooms. These analyses could examine student responses to teacher questions according to question type, or they could investigate how students ask questions in EMI classes. Further, a more micro-level analysis could be conducted on the intra-sentential codemixing found in this study, such as on the use of English lexical items in Turkish explanations of scientific concepts. This type of analysis would contribute to theoretical understandings of technical terminology (Macaro, 2019) and offer pedagogical implications for ESP courses in EMI programs.

This study revealed a diversity of EMI practices; however, further research is needed to evaluate the effectiveness of these practices for language and content learning. A key finding of this study was the perception among teachers and students that students learn more effectively through TMI than EMI; in some cases, this perception appeared to influence classroom language practices with respect to L1 use. Future research is needed to evaluate whether and to what extent EMI affects content learning outcomes compared to L1 MoI.

Moreover, the differences found between elite and non-elite HEIs in this study could be attributed to the lecturers teaching style, rather than institutional differences. Given the small sample size and voluntary nature of participation in this study, further research is needed to confirm the findings reported here with respect to institutional differences in classroom language practices.

Furthermore, research is needed to evaluate the effectiveness of partial EMI programs for content and language learning, as well as to assess students' language needs in partial EMI programs. This study set out to examine EMI implementation across university contexts, and the findings revealed differences in perceptions of the effectiveness of full and partial EMI programs. Empirical research is needed to evaluate perceived and/or measured differences of learning in full and partial EMI programs. For example, future research could compare policies, practices, and perceptions in full and partial EMI programs, as this study compared HEIs. Participants in this study perceived that students learned technical terminology by 'getting used to' the vocabulary used in their EMI lectures. In partial EMI programs, students take fewer EMI classes, which may have detrimental effects on language and content learning in these programs.

Additionally, this study found differences with respect to the curricula of partial EMI programs. In the Turkish context, partial EMI programs are defined as programs in which at least 30 percent of course credits are offered through EMI. Future research is needed to compare and evaluate the structure of partial EMI programs worldwide. For example, in some departments included in this study, EMI courses were offered for foundational math and science classes in the students' first two years of study while advanced engineering courses were taught through Turkish; in other departments, EMI courses were spread throughout the students' four years of study. Future research is needed to investigate the

effectiveness of these curriculum designs as well as how partial EMI programs might be implemented to support language and content learning.

Finally, future research is needed to evaluate the costs and benefits of EMI with respect to students' future career needs. Participants in this study perceived the primary benefit of EMI to be improved career opportunities for students. However, what is missing from this perception is empirical evidence supporting the claim that EMI leads to 'better' employment opportunities.

8.6 Concluding remarks

I would like to conclude this study by commenting on one aspect of the findings: differences were observed in the implementation of EMI between elite and non-elite universities with respect to language use and teacher-student interaction. Differences were also found in teachers' perceptions of L1 use in EMI classes at elite and non-elite universities. While further research is needed to explore these institutional differences, the implications of these findings with respect to the quality and equality of educational programs across HEI contexts should be considered by researchers, policymakers, and practitioners. It is important that EMI teachers and students across institutional contexts are provided with adequate preparation and ongoing support in order to enable the best conditions for success in EMI programs.

Of course, a number of factors may have contributed to the findings of this study with respect to institutional differences: the elite HEIs were full-EMI universities, whereas the small and large HEIs offered TMI programs; the sample size in this qualitative study was small, and teachers voluntarily opted to participate. As such, any generalized conclusions should be considered with caution. Nonetheless, given these findings, researchers, policymakers, and practitioners should consider the purposes and intended learning outcomes

of EMI programs, and teachers and students should be supported throughout EMI programs to ensure that these outcomes are successfully met across university contexts.

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Appendix A: Appendices for Methodology

Appendix A.1 Recruitment of participant universities

The table below summarizes the recruitment procedures for the seven participating universities. In total, 14 universities were contacted and invited to participate in the study. Participants were contacted either via email or through a personal/professional contact. The table indicates how participants at each university were contacted, whether the university was included in the sample, and (if the university was not included) the reason given for declining to participate.

Note: While the initial sampling criteria called for 6 universities, universities 6 and 7 in the table below confirmed their participation and finalized their observation schedules within the same week and were therefore both included in the sample, resulting in 7 universities.

University No.	Type	Location	Method of Contact	Included in sample (n)	Reason for declining to participate
1	Small	West	Professional contact	Yes	--
2	Small	West	Professional contact	Yes	--
3	Elite	West	Email invitation	Yes	--
4	Elite	Central	Email invitation	Yes	--
5	Big	West	Professional contact	Yes	--
6	Big	West	Professional contact	Yes	--
7	Big	Central	Professional contact	Yes	--
8	Big	East	Professional contact	No	Not interested in participating
9	Big	Central	Email invitation & professional contact	No	Concerns about receiving administrative permission
10	Small	Central	Professional contact	No	Demanded teaching services in exchange for access
11	Big	West	Professional contact	No	Administration rejected permission request
12	Big	Central	Email invitation	No	No response
13	Big	West	Email invitation & professional contact	No	No response
14	Big	East	Professional contact	No	Not interested in participating; too busy

Appendix A.2 Participant demographic information

Table A.2: Participant demographic information

Teacher	University (no.)	Department (Engineering)	Title	Years Teaching (total)	Years Teaching (EMI)	TMI experience	Gender	PhD	Training	Class Year	Class Size	Subject
1	Small-1 (1)	Civil Eng.	Associate Professor	6	2	Yes	Male	Turkey	No	2nd	12-15	Statics
2	Small-1 (1)	Civil Eng.	Professor	10+	2	Yes	Male	Turkey	No	2nd	5	Reinforced Concrete
3	Small-1 (1)	Industrial Eng.	Assistant Professor	1	1	Yes	Male	Switzerland	No	3rd	8	Management information systems
4	Small-2 (2)	Mechanical Eng.	Professor	10+	4	Yes	Male	Turkey	No	1st	50-60	Computer Programming (MATLAB)
5	Small-2 (2)	Mechanical Eng.	Professor	10+	10+	Yes	Male	Turkey	No	1st	5	Intro to Mechanical Engineering
6	Small-2 (2)	Mechanical Eng.	Associate Professor	6	6	Yes	Male	USA	Yes	2nd	40-60	Statics
7	Small-2 (2)	Mechanical Eng.	Associate Professor	3	3	Yes	Male	Turkey	No	3rd	9	Manufacturing methods
8	Elite-1 (3)	Mechanical Eng.	Assistant Professor	10+	10+	No	Female	USA	No	3rd	40-50	Mechanics of Materials
9	Elite-1 (3)	Mechanical Eng.	Associate Professor	5	5	No	Male	Switzerland	No	4th	20-40	Mechanisms
10	Elite-1 (3)	Mechanical Eng.	Lecturer	9	9	No	Male	USA	No	3rd	50-60	Heat Transfer
11	Elite-2 (4)	Mechanical Eng.	Associate Professor	10+	10+	No	Female	USA	No	2nd	30	Thermodynamics
12	Elite-2 (4)	Mechanical Eng.	Assistant Professor	3	3	No	Male	Germany	No	2nd	30	Statics
13	Elite-2 (4)	Mechanical Eng.	Associate Professor	10+	10+	No	Male	USA	No	2nd	30	Statics
14	Large-1 (5)	Physics for Mech. Eng.	Associate Professor	3	3	Yes	Male	USA	Yes	1st	200	Physics
15	Large-1 (5)	Industrial Eng.	Assistant Professor	8.5	8.5	Yes	Male	USA	No	4th	60	Production Planning and Control
16	Large-2 (6)	Environmental Eng.	Professor	10+	4	Yes	Male	USA	No	4th	30	Water Treatment

17	Large-2 (6)	Environmental Eng.	Professor	10+	4	Yes	Male	USA	No	2nd	30	Environmental Chemistry
18	Large-3 (7)	Mechanical Eng.	Lecturer/ Teaching Fellow	4	4	Yes	Male	Turkey	No	2nd	75	Strength of Materials
19	Large-3 (7)	Mechanical Eng.	Professor	10+	10+	Yes	Male	UK	No	4th	30-40	Energy engineering
20	Large-3 (7)	Mechanical Eng.	Lecturer/ Teaching Fellow	3.5	3.5	Yes	Male	Turkey	No	1st	11	Thermodynamics
21	Large-3 (7)	Electrical Eng.	Professor.	10+	10+	Yes	Male	USA	No	2nd	40-60	Circuit Analysis

Notes:

- *Teacher*: indicates the teacher number
- *University:* indicates the university number (1-7) and type (small, elite, or large)
- *Department*: mechanical (n=14), civil (n=2), industrial (n=2), environmental (n=2), or electrical (n=1) engineering
- *Title*: indicates the lecturer's title or academic rank. All titles have been translated from the Turkish and are (in descending order): Professor (*Prof*), Associate Professor (*Doc*), Assistant Professor (*Yar doc.*), Lecturer/Teaching Fellow (*Ogr. Gor.*).
- *Years teaching (total)*: total number of years the teacher has been teaching at the university level, post-PhD; teaching assistantships while completing graduate studies are not included (1-4 years, n=6; 4-9 years, n=5; 10+ years, n=10).
- *Years teaching (EMI):* indicates the number of years the lecturer has been teaching through EMI at the university level (1-4 years, n=11; 4-9 years, n=4; 10+ years, n=6).
- *TMI experience:* indicates whether the lecturer has experience teaching through Turkish at the university level.
- *Gender*: indicates whether the lecturer is male (n=19) or female (n=2).
- *PhD*: lists the country where the lecturer completed his/her doctoral studies (Turkey, n=7; English-speaking country, n=11; Europe, n=3).
- *Training*: indicates whether the lecturer received any pedagogical or instructional training related to EMI (no, n=19; yes, n=2).
- *Class year*: indicates the level/year of study of the class (1st, n=4; 2nd, n=9; 3rd, n=4; 4th, n=4).
- *Class size*: indicates the size of the class observed during the lecture (NOTE: not necessarily the number of students enrolled in the class, but the approximate number of students present during the observations; <15 students, n=6; 15-40 students, n=7; >40, n=8).

Appendix A.3 Structured coding scheme for classroom observations

Structured Coding Scheme for Main Data			
Classroom Observations			
Function			
Code	**Description**	**Definition**	**Example**
0	Pause	Periods of silence or for which there is no spoken language on the recordings; must be a minimum of 3 seconds in length.	(e.g. teacher is waiting for students' response, writing on the board, drawing a diagram, etc.)
1	Introduce new content or concepts	Statements referring to upcoming/subsequent topics; structures the lesson; framing or transition to a new part of a lesson	"Today, we will talk about combined loading. So, this is the combination for what we will discuss this morning."
2	Check student comprehension	Statements assessing student progress and comprehension of lesson; often realized by a question.	-"Do you remember? From the previous class." -"Okay? Any question up to now?"
3	Explain, clarify, or summarize presented content or concepts	This category refers to a restatement or repetition of material/concepts that have already been presented.	"Firstly, we discussed all these and then we discussed the torsional stress. Torsional, loading. In torsional loading, we have some shear stresses and we know that the calculation of the shear stress, t times r over j."
4	Ask and/or answer question related to content	Refers to questions asked by teachers or students directly related to content; these statements have the aim of eliciting a response (e.g. not rhetorical questions). Responses are also coded in this category.	-"But do you know what type of stresses are created in this manner? Do you--do you have any idea?" -"What type of action forces we have for this part?" -"From previous discussion, what is the first step in this solution? Can you say?"
5	Translate technical vocabulary	Provides a (parallel) translation of a technical word or phrase; provides the equivalent of a term in the L1 or L2.	-" T: Doymus hava oluyor. Saturated air oluyor." -"T: And please measure the distance. Of this two lines by using cetvel. S: Ruler. T: Huh? S: Ruler T: Ruler."

6	Present or explain new content	Statements which aim to provide information or impart knowledge related to content.	"We cut this point and draw the component of the other section on the pass. So, in other pass, that includes, that part includes component of two. So don't yield these forces." "We have to translate these forces to that point. Because we have to satisfy the equilibrium in this part, in this uh okay."
7	Give math-based example to explain content or apply concept	Statements that provide or solve a (specific) mathematics example or problem; applies concept to a problem or example that requires mathematical calculations to solve.	"Assume that we have a bar with a uniform cross section, rectangular cross section. And we have these forces: F1 and this force F2." "We have a load here. Which is equal to 10 kilometers. And this is point is center of the circle--eh cylinder."
8	Give conceptual example related to daily life experiences to explain content or apply content	Statements that provide a (specific) example from 'daily-life' to illustrate a concept; applies content to real world (non-mathematical) example.	"Tupler. Yeni eh evet. Normal dogal gaz tasiniyor burada, baska? Mesela az once arkadasiniz dedi ki, kola. Su olabilir mi? Kola iyice sallarsaniz o zaman tabii icerisinde basincli gaz olusuyor, olabilir, iyi ornek oluyor."
9	Manage discipline	Statements that address issues of student behavior in or related to class.	"Efendim? Duymadiniz mi? Telefonla mi oyniyordunuz?" "Ders bu saatte girilmez ya"
10	Provide feedback, e.g. praise or criticism	Statements that comment or provide feedback on students' performance, responses, or contribution to class; can be both positive (praise) and negative (criticism).	"Great. Very right. Very good. Thank you." "Yes, you are close. Something like that."
11	Give instructions or procedural commands	Statements that provide a directive; aim to elicit a non-verbal response; typically in the form of a question or imperative.	"Please read your book and try to solve many questions, you know from the book understand this topic but now, I want to close this topic." "Okay. No need, I said no need to memorize these equations for engineers. Generally, you do not need memorize."
12	Encourage student participation	Statements that encourage statement participation, responses, or involvement in class.	"Do you have any idea? This problem, when we consider such a problem, okay. Please, someone help me please."

			"Is there any volunteer to do the recap of last week?"
13	Draw students' attention or focus	Statements that direct students' attention toward a specific (ongoing) aspect of the lesson, as it relates to the lesson and/or learning of that topic or course content.	"Evet. Arkadaslar." "Okay. Please look at here." (non-verbal, e.g. tapping on board to get students' attention)
14	Provide "off-content" information related to the course (e.g. announcements, reminders)	Statements and/or questions that relate to aspects of the course other than content material, such as course announcements, reminders, and logistics.	"S: Hocam notlari nasil ogrenecegiz? T: Mail, mail olarak gondecegiz. Sistemten degil." "Just, just before this, I want to show you the pop quiz results because at the end of this hour, we have another pop quiz."
15	Build rapport	Statements that aim to develop a (personal) relationship and/or create warmer, friendlier atmosphere; use of jokes or humor; reference shared cultural values or norms.	(e.g. students and/or teacher talking and laughing before/after class)
16	Emphasize importance of topic for career or future studies	Statements that aim to underline the importance of a particular topic, concept, or course for reasons related to the students' future studies or career (but not the course/lesson itself).	"Anlayacaksiniz zaten. Arkadaslar, muhendis olmak isterseniz anlayacaksiniz. Bakin, zaman zaman zorliyorsunuz. Bu ornek anlamaniz icin. Bir mudendis bir tasarimda hata yaptiginda arkadaslar en az bin kisi oluyor." "The topics that we will cover in this three weeks will be very important for your future classes. Okay? For example, uh, for machine elements or machine theory and stuff like that it will be very important so please be patient and try to embrace, try to get uh the notions we're talking about."
		Speaker	
Code	**Description of talk**	**Definition**	
O	pause, no speaker	Periods of silence or in which there is no spoken language on the recording.	

S	student talk	One student's speech
S-S	student-student interaction	Exchange between two or more students
T	teacher talk	Teacher's speech
T-S	teacher-student interaction	Exchange between teacher and one or more students
	Language	
Code	**Description of utterance**	**Example**
L1	all Turkish (L1) utterances	Hocam notlari nasil ogrenecegiz?
L2	all English (L2) utterances	Let me to remind you what we discussed up to now.
T-e	mainly L1 utterances, with L2 lexical items (intra-sentential)	Bu teknigi hem ozgur hacim icin kullanabilirsiniz hem dry bulb temperature kullanabilirsiniz.
E-t	mainly L2 utterances, with L1 lexical items (intra-sentential)	Of course, because of the internal equilibrium, this must be balanced such as shear stress and another sides, this stresses much be şu.
L1/L2	both L1 and L2 phrases/sentences (inter-sentential)	T: So, do you remember its equation? S2: pi bolu iki T: pi over four, not two.
Other	non-L1 or -L2 utterances	(e.g. neither L1 nor L2)
O	pause or no utterances	(e.g. pause, writing on board, etc.)
	Codeswitching	
Code	**Description of CS**	**Definition**	**Example**
TA	Teacher-initiated	Instances in which the teacher switches languages	(e.g. teacher switches of instruction, responds in different language than used to ask question, etc.)
TB	Teacher-induced	Instances in which the teacher uses one language to encourage (or induce) a response in the other	"Okay, in Turkish. Give me some examples. Do you know some structures?" "So what is inertia in Turkish?"
SA	Student-initiated	Instances in which the student switches languages	(e.g. student responds or asks a question in a different language than the lecture)
SB	Student-induced	Instances in which the student uses one language to encourage (or induce) a response in the other	"Please speak English."
0	No codeswitching	Instance in which the language remains the same	

Appendix A.4 Development of the structure coding scheme for classroom observations

This document provides an overview of the development of the structured coding scheme for classroom observation data as well as a comparison of the coding scheme used in this study with the coding schemes from which it is adapted. In this way, the document serves as a point of comparison and a record of the development of the coding scheme. The document includes:

1. An overview of the taxonomies from which the coding scheme using in this study was adapted (Lo, 2015; Canagarjah, 1995; Tsui, 1985)
2. Table comparing coding schemes (my study; Lo, 2015; Canagarjah, 1995; Tsui, 1985)
3. Comparison of pre- and post-pilot study categories for language function
4. Notes on the revision of categories following the pilot stage

1. Overview of taxonomies from which the coding scheme was adapted

The coding scheme used in this study was adapted from the work of Lo (2015), Canagarjah (1995), and Tsui (1985). The function category of the coding scheme was initially adapted from Tsui's (1985) 17-category taxonomy of language functions. Tsui's taxonomy was developed as a descriptive tool to analyze interaction in L2 learning classrooms, and the Seventeen-Category System divides its function categories according to teacher-talk and student-talk as well as response and initiation categories. Given the nature of university lectures, it was decided that these divisions would be inappropriate for the scope of the data collected for this thesis, and the categories were considered holistically in the adaptation of the framework.

Canagarajah's (1995) framework was also developed from research in ESL classrooms, in this case in the context of classrooms in Jaffna, and includes two broad categories, classroom management and content transmission, and a total of 17 sub-categories. Using this framework, Canagarajah (1995) suggests that codeswitching is used to distinguish management functions from the content of the lesson, although the L1 is used for certain purposes in content transmission. Lo (2015) analyzes transcripts from CLIL secondary school classrooms in Hong Kong for patterns of language use using a taxonomy of language functions modified from Canagarajah's (1995) framework. Lo's (2015) taxonomy includes three major categories and ten sub-categories. This dissertation uses the three major categories developed by Lo (2015) (content transmission, classroom management, social and affective), divided according to the two registers identified by Gierlinger (2015) in an examination of codeswitching in CLIL classrooms (instructive and regulative), and combines the taxonomies of Lo (2015) and Canagarajah (1995). The framework was piloted prior to main data collection, and the sub-categories were revised according to the findings of the pilot study. Of the three main categories, the category of content transmission refers to instructive functions of codeswitching and includes language directly related to the teaching and learning of classroom material. The other two categories of classroom management and social or affective functions of language use refer to regulative features of classroom language that are not related to the transmission of content material.

2. Comparison of coding schemes

Main Category (3)	*Sub-category (17)*	*Lo's (2015, p. 279) Category (10)*	*Canagarajah's (1995) Category (17)*	*Tsui (1985) Category (17)*
Content Transmission	Intro or transition to new concept			6. Frame
	Check student comprehension			8. Check
	Clarify or summarize presented concept	8. Explanation of difficult concepts	12. Review	5. Recapitulate
	Ask and/or answer Q related to content			1. Elicit
	Translate technical vocab	9. Parallel translation (i.e. L1 equivalents for L2 vocabulary)	13. Definition; 16. Parallel translation	
	Present or explain (new) content		14. Explanation	4. Inform
	Give example (math, content)			
	Give example (daily life, conceptual)	10. Providing annotations or examples in students' daily life to explain an unfamiliar topic or concept to students		
			17. Unofficial student collaboration *[note: coded as S-S talk + function]*	
Classroom Management	Manage discipline	3. Managing discipline	4. Managing discipline	
	Feedback, e.g. praise or criticism related to student responses	4. Comments on students' behaviours (i.e. praise and reprimand)	6. Teacher compliments; 8. Teacher admonitions	9. Evaluate
	Instructions or procedural commands	5. Giving instructions or commands	2. Negotiating directions; 7. Teacher's commands	2. Direct
	Encourage student participation	6. Encouraging class participation	5. Teacher encouragement	
	Draw student attention/focus	7. Arousing students' attention	1. Opening the class	7. Starter

		or focus		
	Provide "off-content" info related to course		11. Unofficial interactions	
			3. Requesting help *[note: asking Qs];* 9. Mitigation; 10. Pleading	
Social or Affective Functions	Build rapport	2. Building up warmer and friendlier atmosphere or building up rapport to students		
	Emphasize importance of topic for career, future studies, etc.			
		1. Referring to shared cultural norm or social *[note: eliminated after pilot study]*	15. Negotiating cultural relevance *[note: eliminated after pilot study]*	
Other	Pause			

3. Comparison of coding schemes used during pilot and main data analysis

Pre-pilot categories (15)	*Final Coding scheme categories (17)*
1. Introduce new content or concepts	1. Intro or transition to new concept
2. Check student comprehension	2. Check student comprehension
3. Explain, clarify, or summarize presented content or concepts	3. Clarify or summarize presented concept
4. Ask question related to content	4. Ask and/or answer Q related to content
5. Translate technical vocabulary (parallel translation of word/phrase: provide L1/L2 equivalent)*	5. Translate technical vocab
6. Manage discipline	6. Manage discipline
7. Provide praise or feedback	7. Feedback, e.g. praise or criticism related to student responses
8. Give instructions or procedural commands	8. Give instructions or procedural commands
9. Encourage participation	9. Encourage student participation
10. Draw students' attention or focus	10. Draw student attention/focus
11. Provide "off-content" information related to the course (e.g. announcements, reminders)	11. Provide "off-content" info related to course
12. Build rapport (create warmer, friendlier atmosphere)	12. Build rapport
13. Use idioms	13. Present or explain new content
14. Use jokes or humor	14. Give example (math, content)

15. Express shared cultural/social identity, norm or value	15. Give example (daily life, conceptual)
	16. Emphasize importance of topic for career or future studies.
	17. Pause

4. Notes on the revision of categories following the pilot stage:

-The category *'pause'* was added as a category of language function two reasons: (1) to ensure that all data were coded with respect to function, including data for which there was no spoken language, and (2) to capture the significance of pauses in classroom language practices, discourse, and interaction. Pauses in the data include periods of silence, such as when a teacher is waiting for students' responses, as well as periods during which the teacher is writing on the board, drawing a diagram, or preparing a presentation on the computer.

-The category of *'ask questions related to content'* was expanded to include *'ask and/or answer questions related to content'* in order to capture responses to content-related questions. This decision was made because the majority of student responses appeared to be (very) short, e.g. one-word responses which did not appear to warrant their own category of *'respond to questions.'* Furthermore, because the speaker category Teacher-Student talk (T-S) captures teacher-student interaction, expanding this category to include *'ask and/or answer'* allows for questions and responses to be grouped together for later analysis of teacher-student interaction.

-The category of *'provide praise or feedback'* was revised as *'provide feedback, e.g. praise or criticism on student responses'* to clarify the nature of feedback. In terms of classroom management, *'manage discipline'* refers to issues of student behavior, whereas feedback more narrowly refers to student responses or performance in class.

- The categories *'use idioms,' 'use jokes or humor,'* and *'express shared cultural/social identity, norm, or value'* (categories 13, 14, and 15) in the original schema were combined with the category *'build rapport'* (category 12 in the original scheme). These three categories related to idioms, humor, and social values were found to occur infrequently in the pilot data, and as such were combined with *'build rapport'* to create a broader category to capture socio-affective functions of language.

-Three categories related to content transmission were added to the coding scheme: *'present or explain new content,' 'give math-based example to explain content or apply concept,'* and *'give conceptual example related to daily life experiences to explain content or apply content.'* These three acts were found to occur frequently in the pilot data, and it was decided that a (broad) category specifically related to the presentation and/or teaching of content needed to be added; this was likely absent from the original (pilot) scheme because it had been developed from frameworks based on interaction, whereas the majority of class time in the pilot data was spent on teacher-talk in a monologue-style lecture.

-A final category was created: *'emphasize importance of topic for career or future studies.'* This category has been classified as a socio-affective function of language use. This category is regulative in nature and emerged from the pilot data.

-In sum, the final coding scheme for classroom language function includes 17 sub-categories, 16 of which are classified under three main categories along with an additional category for pauses in the transcript.

Appendix A.5 Interview protocol for semi-structured interview with lecturers

Interview Protocol for EMI Lecturers (1)			
Date:	**Location:**	**Start time:**	**End time:**
Title:	**Gender:**	**Nationality:**	**Class code:**
Education:	PhD:	University/Location:	
		MoI:	
		Comments:	
	Other degrees:	University/Location:	
		MoI:	
		Comments	
	Studying Abroad:		
Experience:	Years teaching:		
		in Turkish:	
		in English:	
		in Turkey:	
		Abroad:	
		Comments:	
	Courses taught:		
Teaching EMI:	Prep for EMI:		
		Course Materials:	
		Lecture Notes:	
		Prep Time:	
		Comments on Prep:	
	EMI v. TR MoI:		
	Lang policy in univ: Describe:	Yes ____	No _____
	Lang policy in class: Describe:	Yes____	No ____
Opinion of EMI:			
		Challenges of EMI:	
		Benefits of EMI:	
Observation:	How did it go?		
	Was it normal?		
	Comments:		

1. Could you start by telling me about your academic background?
    a. Where did you complete your PhD studies?
    b. Have you ever studied abroad? In an English-medium university?

2. How long have you been teaching at the university level?
    a. Have you taught in Turkish/English? How long?
    b. Have you ever taught abroad?

3. How long have you taught in English?

4. How does teaching in English compare to teaching in Turkish?
    a. How do you prepare for English v. Turkish lectures?
    b. Do you use the same/different material for English and Turkish courses?

5. Does your university have a language policy for EMI?
    a. *Ask probing questions for more detail.*

6. Do you have a language policy for your EMI classes?
    a. *Ask probing questions for more detail.*

7. What challenges do you face lecturing in English?

8. Finally, I want to talk about the lesson I observed today.
    a. How would you describe the lecture?
    b. Was it a normal lecture for this class?

Appendix A.6 Interview protocol for stimulated recall with lecturers

Interview Protocol for EMI Lecturers (2)			
Date:	**Location:**	**Start time:**	**End time:**
Title:	**Gender:**	**Nationality:**	**Class code:**
Observation:	How did it go?		
	Was it normal?		
	Comments:		
Notes:			
Stimulated recall:	**Event:**	**Recall:**	
1			
2			
3			
4			
5			
Extra (if needed):			
6			
7			
8			
9			
	Event:	**Recall:**	

1. Warm-up
    a. Ask if there are any questions/comments from last week
    b. Ask how the observed class went
        i. Was it normal?
        ii. *Ask more probing questions to understand what is "normal"*
2. Introduce stimulate recall
    a. Today I want to ask you about some of the things I saw during class.
    b. *Use field notes and audio sample (if possible) to recall event*
    c. Ask teacher if they remember this event
    d. Ask teacher to describe what happened
    e. *Ask probing questions to encourage teacher to verbalize thoughts during the event:*
        i. What were you thinking at this point in the lecture when you _____?
        ii. I see you ____ here. What were you think at this point in the lecture?
        iii. I see you ___. What were you thinking when you did that here?
        iv. Can you tell me what you were thinking at that moment when you ____?
        v. You ____ here. Why do you think you did that at this point in the lecture?
        vi. Do you have any idea why you _____ at this moment in the lecture?
3. Repeat with 2-3 other stimulated recall events
4. Wrap-up
    a. In sum, how would you describe your English lectures?
    b. How do they compare to your Turkish lectures?
    c. Is there anything else you want to say about EMI?
    d. Thank teacher for his/her support.

Appendix A.7 Interview protocol for focus group discussions with students

Focus Group Interview Protocol			
Date:	**Location:**	**Start time:**	**End time:**
Class code:		**# of Students:**	
Dept:	Year:	Turkish:	Foreign:
		Male:	Female:

Post-Focus Group Comments and/or Observations:
Other notes about the session:

1. Welcome & Introduction:
    a. Introduce myself & the research project
    b. Explain the purpose of the focus group (note that the discussion will be record and all information is confidential)
    c. Ask participants to introduce themselves
2. Studying English (Warm-up questions)
    a. How long have you been learning English?
    b. What were experiences learning English as a child/in high school?
    c. What were your experiences learning English at university?
3. Studying in English (Transition questions)
    a. Why did you choose this university course?
    b. *Depending on responses:* Why did you decide to study in English?
    c. What challenges come with studying in English?
    d. What are the benefits of studying English?
4. Observed lesson & English use in EMI (Key questions)
    a. Would you say the lesson that I observed was a normal lesson for your class?
    b. *Ask follow up questions for more information on "normal" EMI lessons*
    c. How often does your teacher use English/Turkish?
    d. How often do you use English/Turkish for your studies?
    e. When do you use English/Turkish?
    f. *Depending on responses, ask follow-up/probing questions to investigate language use*
    g. Does your university have a language policy? If so, describe it.
        i. Is this language policy follows?
    h. Does your class have a language for lectures? If so, describe it.
        i. Is this language policy follows?
5. Wrap-up
    a. It's about time to wrap up. Is there anything else that you'd like to say?
    b. *Provide a brief summary of the discussion and ask if the summary is accurate.*

Appendix A.8 Methodology steps

This document provides an outline of the methodological steps followed for data analysis: (1) data preparation, (2) transcription, (3) analysis of classroom observation data, (4) analysis of semi-structured interview & focus group data, and (5) qualitative analysis of classroom observation data.

1. Data preparation:

1) Upload files to NVivo
2) Categorize files in NVivo according to data source type (e.g. observation, interview, focus group, or policy document)
3) Name files in NVivo according to participant (e.g. creation of anonymous codes)
4) Enter macro-data regarding file & participant into Data Organization spreadsheet

2. Transcription:

5) Transcribe files in NVivo:
    i. For classroom observations, transcriptions were synchronized with the timestamp using NVivo's synchronized transcription tool.
    ii. When issues were encountered regarding the audibility or comprehensibility of a segment of the audio file, a note was made and a Turkish-English bilingual colleague was consulted for a second opinion.
    iii. If the audio segment remained inaudible after consulting a second researcher, it was noted in the transcript as 'inaudible.'
6) Mark as transcribed in the Data Organization spreadsheet to track progress.

3. Analysis of classroom observation data according to structured coding scheme:

7) Evaluate pilot coding and assess fit of the scheme:
    i. Code pilot data at two different time points (September 2017 and June 2018)
    ii. Calculate intra-rater reliability of the coding scheme ($\kappa = .82$, $p < .001$)
    iii. Evaluate and revise categories to fit data (see Appendix A.4)
8) Recode sub-sample of data using revised coding scheme
9) Assess inter-rater reliability of revised scheme using a sub-sample of data (3 transcripts)
    i. Train rater on procedures for coding and coding categories
    ii. Code sub-sample of data (3 transcripts)
    iii. Calculate Cohen's kappa to determine inter-rater reliability
    iv. Discuss and resolve disagreements in the coding scheme (see Table 3.8)
    v. Revise definitions and examples to clarify disagreements (see Appendix A.4)
10) Import finalized scheme into NVivo transcription sheets for coding
11) Code transcripts in NVivo
    i. Add columns to the transcript fields for each category of the scheme
    ii. Segment data so that a new line of the transcription file begins each time a new code appears for any category of the structured coding scheme

iii. Code data using numerical codes corresponding to sub-categories
iv. Save and export coded transcripts as Word documents

12) Analyze coded data using auto-code feature in NVivo (e.g. each code in added transcript fields correspond to sub-category of coding scheme)
    i. Check auto-coded data and recode any errors (e.g. missing codes, typos, etc.).
    ii. Extract codes from NVivo and organize data in an Excel spreadsheet
    iii. Calculate averages, frequencies, etc., for analysis
    iv. Aggregate data by participant teacher for calculations and comparisons
    v. Export cross-coding matrices from NVivo for analysis

4. Qualitative content analysis procedures for interviews & focus groups

Develop coding frame:

13) Code pilot data for emerging themes (e.g. open coding stage)
14) Review pilot codes (e.g. codes that emerged from analysis of pilot data)
15) Reduce pilot codes & evaluate fit with respect to RQs
    i. For this step, a table (see Appendix A.9) was generated to breakdown the coding framework based on RQs.
    ii. The pilot data was also considered in a mock 'write-up' of the findings to evaluate how appropriate the coding scheme was for addressing the RQ3.
16) Create a revised scheme based on the pilot coding

Segment data for coding:

17) Revise transcription format in NVivo to facilitate coding by allowing each unit of coding to form its own transcription line
18) Import coding scheme as nodes in NVivo

Conduct trial coding phase:

19) Trial revised coding scheme on main data:
    i. Using the revised scheme from the pilot coding, a sample of the data (interviews = 4; focus groups =3) was selected and coded to test the revised framework
    ii. Evaluate and revise the coding scheme according to the initial coding
    iii. Formalize codes (e.g. create list of codes, descriptions, and examples in NVivo Codebook)
    iv. Code a different sample of data (10 interviews from 5 teachers, 3 focus groups) using revised scheme
    v. Assess fit of coding scheme

Evaluate and modify coding frame:

20) Finalize coding scheme based on trial coding:

INTERVIEWS

    i. Two categories were eliminated ('deciding what to teach' in Class content & 'preparation and materials" in Medium of instruction)
    ii. Each of the remaining categories of the coding scheme was covered in at least 2 of the 10 coded interviews and by at least 2 of the 5 teachers. These categories were kept for the final coding scheme.

FOCUS GROUPS

iii. The following revisions were made:
    1. 'Role of Language' was added under Medium of Instruction
    2. 'Future career' was expanded to include internships
    3. 'Teacher differences' was renamed to 'Teaching style'
    4. 'Department or institutional characteristics' was created with the following three sub-categories: 'Department quality,' 'Department policy' (non-linguistic), and 'University experience'
    5. 'Role of Language' sub-category was revised to include comments related to the language of math in EMI.

iv. The following clarifications were made:
    1. Learning English = relates to a specific learning experience
    2. L2 proficiency = relates to the students current level of English
    3. Role of language in EMI = relates to how students think about language in EMI
    4. Attitudes toward EMI = includes reason why students chose to study EMI; relates to opinions and attitudes about EMI, broadly

Conduct main coding phase:

21) Main data coding:
    i. Code 3-4 sets of transcripts using the coding scheme
    ii. Check for fit & appropriateness; recode one transcript to ensure reliability.
    iii. Continue coding on the next set of 3-4 transcripts & repeat process for entire set of interview and focus group data using the coding scheme
    iv. Repeat coding process for all data using the coding scheme

5. Qualitative Analysis of classroom observation data

22) Create summaries of each participant teacher's class based on data from observations, interviews, student focus groups
23) Analyze each case (e.g. teacher's class) individually by producing a short summary phrase and completing the sentence: "*In this class, the E in EMI is…"*
24) Conduct cross-case analysis:
    i. Compare findings from structured coding scheme in Excel & SPSS
    ii. Compare short summaries and sentence completions.
25) Create mind maps to visualize grouping of cases according to theme.
26) Create vignettes of each grouping
27) Run queries in NVivo on classroom observation data in order to extract data:
28) Compile & review extracts from NVivo queries in Word documents.
29) Repeats Steps 7 & 8 on the interview and focus group data to illustrate and validate the profile divisions.

6. Deductive coding of classroom observation data using the ROAD-MAPPING framework

Import coding frame:

30) Policy documents were organized into folders in NVivo based on type (e.g. national, Elite-1, Elite-2, Small-1, Small-2, Large-1, Large-2, Large-3).
31) In addition to uploading the policy documents in NVivo, the documents were organized in an Excel spreadsheet according to scope (e.g. national or institutional) and source (e.g. National Gazette, YÖK website, Strategic Plan, HEI website, etc). Additional descriptive information was included in the spreadsheet, such document title, data of publication, date and website from which the source was retrieved, and serial number when applicable. The Excel spreadsheet was used to track progress throughout the data analysis process.
32) Nodes were created in NVivo for the six dimensions of the ROAD-MAPPING framework: role of English, academic discipline, agents, management, practices and process, and internationalization and glocalization. These nodes were applied as the deductive coding scheme.

Segment data for coding:

33) Data segmentation occurred during coding, which was conducted on the files in NVivo. The majority of the policy documents were imported into NVivo as PDF files. Data segmentation was conducted by highlight the relevant text and coding it in NVivo. The remaining policy documents were imported as Word documents, and data segmentation followed the same process of highlighting text for coding.
34) Data which was not coded to a dimension of the ROAD-MAPPING framework was discarded from the analysis.

Conduct trial coding phase:

35) The three main national policy documents were selected for pilot coding (Law No. 29662, Law No. 27074, and Law No. 22598).
36) The three documents were coded in NVivo according to the six dimensions of the ROAD-MAPPING framework.
37) One week later, the three documents were coded by hand: the policy documents were printed and colored highlighters were used to distinguish between the six dimensions of the ROAD-MAPPING framework.
38) The results of the two rounds of coding were compared and intra-rater reliability was calculated:
    i. Instances of agreement were counted (e.g. the same excerpt of text was coded to the same code).
    ii. The number of instances of agreement was divided by the total number of codes to calculate intra-rater agreement. In the three pilot documents coded, two instances of coding disagreement were recorded. An acceptable level of intra-rater agreement was calculated: 96.67%.

Evaluate coding frame:

39) The dimensions of the framework for evaluated for clarity (e.g. distinguishable for each other) and fit (e.g. appropriateness for the data) by reviewing the results of the trial coding phase.
40) Empirical research which used the ROAD-MAPPING framework was reviewed (see Table 2.1).
41) The six dimensions of the ROAD-MAPPING framework were defined in the NVivo Codebook by adding definitions and examples from the trial coding phase.

Conduct main coding:

42) Code national policy documents:
    i. The policy documents listed in Appendix B.1 were reviewed and coded in chronological order to examine the development of language policy in HE from 1981 to 2016.

ii. The remaining national policy documents were reviewed and coded.
iii. Throughout the coding process, handwritten summaries of the policy documents were recorded in a notebook. The summaries were referred to contextual the documents when each dimension was analyzed.
iv. Beginning with the 'RO' dimension, data coded in NVivo was exported as a Word document and the coding reviewed for thematic analysis. The process was repeated for each dimension of the ROAD-MAPPING framework.

43) Code institutional policy documents:

i. The institutional policy documents were coded in the following order: Elite-1, Elite-2, Small-1, Small-2, Large-1, Large-2, and Large-3. After the documents pertaining to one HEI were coded, I proceeded to code the next HEI's documents.
ii. Handwritten summaries were kept in a notebook to contextual each document. The notes were referred to during the thematic analysis of each dimension.
iii. Beginning with the 'RO' dimension, data coded in NVivo was exported as a Word document and the coding reviewed for thematic analysis. The process was repeated for each dimension of the ROAD-MAPPING framework.

Appendix A.9 Coding scheme for qualitative content analysis (with breakdown by RQ)

This document provides the coding schemes used for qualitative content analysis of interviews with teachers and focus groups with students.

Coding framework for interviews with TEACHERS:

1. Future career (e.g. as engineer)
    a. Content and learning for (e.g. importance of topics or lack thereof)
    b. Language needs (e.g. importance of English or lack thereof)
2. Student participation (e.g. student involvement and participation in class; student behavior in class)
    a. Motivation to learn
    b. Language barriers
    c. Affective factors
3. Student quality
    a. Aptitude, prior knowledge
    b. Work ethic, study habits (e.g. notetaking, homework)
4. Student comprehension (e.g. students' ability to understand content)
    a. Of content
    b. Of language
        i. L2/Eng. prof.
        ii. L2 Turkish prof.
        iii. Need for L1/Turkish use
5. Teaching philosophy
    a. Principles
    b. Methods
    c. Role of language
6. Class content
    a. Difficulty of
    b. Preparation and materials
7. Medium of instruction
    a. Comparing EMI and TMI (incl. preparation, materials, availability of resources)
    b. Attitudes towards MoI
    c. Policies, teachers
8. Learning English
    a. Through EMI (students)
    b. Before EMI (students)
    c. Personal experiences (teacher)
9. Workload
10. Teacher experience and background
11. Normalcy of lesson observed
12. Background of study; introductory and concluding comments

Breakdown of coding framework for TEACHERS based on RQs:

Policy	Practice (linguistic challenges)	Practice (content related challenges)	Practice (other challenges)	Other perceptions
	Future career (English for engineers)	Future career (knowledge needed for engineers)		
	Student participation (language barriers)		Student participation (motivation; affective factors)	
		Student quality (aptitude, prior knowledge)	Student quality (work ethic, study habits)	
	Student comprehension (of language: need for L1; proficiency)	Student comprehension (of content)		
	Teaching philosophy (role of language)	Teaching philosophy (methods)		Teaching philosophy (principles)
		Class content (difficulty; prep & materials)		
Medium of instruction (policies)	Medium of instruction (comparing)	Medium of instruction (comparing)		Medium of instruction (attitudes; comparing)
	Learning English (through EMI, before EMI)			Learning English (personal experiences)
			Workload	
				Teacher experience and background

Other categories:

1. Normalcy of lesson observed
2. Background of study; introductory and concluding comments

Coding framework for interviews with STUDENTS:

1. Future career (e.g. as engineer; including internships)
    a. Content and learning for (e.g. importance of topics or lack thereof)
    b. Language needs (e.g. importance of English or lack thereof)
2. Student participation (e.g. student involvement and participation in class; student behavior in class)
    a. Motivation to learn
    b. Language barriers
    c. Affective factors
3. Student comprehension
    a. Of content
    b. Of language
        i. Student L2/English proficiency
        ii. Student L2 Turkish proficiency
        iii. Need for L1/Turkish use
4. Learning strategies
    a. Of content
    b. Of language
5. Teacher characteristics (incl. teacher quality, differences between teachers, etc.)
    a. Teacher quality (e.g. in terms of teaching, personality, etc.)
    b. Teachers' English
    c. Teaching style *(NOTE: **not** related to execution of EMI policy, which would be coded under MoI → Policies)*
6. Department and/or institutional characteristics
    a. Department quality (or institute/university quality)
    b. Department policy (or institute/university policy)
    c. University experience (e.g. personal experiences at the university, department)
7. Class content
    a. Difficulty of
    b. Workload
    c. Exams
8. Medium of instruction
    a. Comparing EMI and TMI
    b. Attitudes towards MoI (incl. reasons for choosing EMI program)
    c. Policies (incl. teacher policies & variations among teachers)
    d. Role of Language (including English, Turkish, math)
9. Learning English
    a. Through EMI
    b. Before university (e.g. primary and secondary school)
    c. Hazirlik and transition to EMI (e.g. English prep at univ. level)
    d. Learning L1 Turkish
10. Normalcy of lesson observed
11. Background of study; introductory and concluding comments

Breakdown of framework for STUDENTS, based on RQs:

Policy	Practice (linguistic)	Practice (content)	Practice (other)	Other perceptions
	Future career (language needs)	Future career (knowledge needed for)		
	Student participation (language barriers)		Student participation (motivation, affective factors)	
	Student comprehension (of language, L2 prof., L1 use)	Student comprehension (content)		
	Learning strategies (language)	Learning strategies (content)		
	Teacher characteristics (teachers' English)		Teacher characteristics (quality)	Teacher characteristics *(style)*
			Department characteristics (quality, policy, experience)	Department characteristics (quality, policy)
		Class content (difficult, workload, exams)		
Medium of instruction (policies, role of lang.)	Medium of instruction (comparing, role)	Medium of instruction (comparing)		Medium of instruction (policies, attitude, comparing, role)
Learning English (hazirlik/ transition)	Learning English (through EM, before univ.)			Learning English (before univ., hazirlik/transition, L1 Turkish)

Other categories:

1. Normalcy of lesson observed
2. Background of study; introductory and concluding comments

Appendix B: Appendices for Chapter 4

Appendix B.1: Regulations pertaining to foreign language education and education in a foreign language in Turkish Higher Education, 1981-2016

Date	Official Gazette No.	Name of regulation	Regulation type
23.03.2016	29662	Regulations Concerning the Principles for Foreign Language Teaching and Teaching in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelik)*	New directive
01.08.2013	28725	Regulations for Amendments made to the Regulations Concerning the Principles for Foreign Language Teaching and Teaching in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik)*	Amendment to directive
06.03.2012	28225	Regulations for Amendments made to the Regulations Concerning the Principles for Foreign Language Teaching and Teaching in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik)*	Amendment to directive
28.06.2009	27272	Regulations for Amendments made to the Regulations Concerning the Principles for Foreign Language Teaching and Teaching in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik)*	Amendment to directive
04.12.2008	27074	Regulations Concerning the Principles for Foreign Language Teaching and Teaching in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelik)*	New directive
10.07.2007	26578	Regulations for Amendments made to the Regulations Concerning Foreign Language Instruction and Instruction in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Eğitim-*	Amendment to directive

		Öğretim ve Yabancı Dille Eğitim-Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik)	
01.04.1996	22598	Regulations Concerning Foreign Language Instruction and Instruction in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Eğitim-Öğretim ve Yabancı Dille Eğitim-Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelik)*	New directive
07.10.1994	22074	Regulations Concerning Foreign Language Instruction and Instruction in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Eğitim-öğretimi ve Yabancı Dille Eğitim-Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelik)*	New directive
27.11.1993	21771	Regulations about Amendments to Some Articles of the Regulations and Provisional Articles added to the Regulations about the Regulations Concerning Foreign Language Instruction and Instruction in a Foreign Language at Higher Education Institutions *(Yükseköğretim Kurumlarında Yabancı Dil Eğitim-Öğretimi ve Yabancı Dille Eğitim-Öğretim Yapan Yükseköğretim Kurumları Hakkında Yönetmeliğin Bazı Maddelerinin Değiştirilmesi ve Yönetmeliğe Bir Geçici Madde Eklenmesi Hakkında Yönetmelik)*	Amendment to directive
28.07.1987	19531	Regulations for Amendments made to the Regulations about Foreign Language Instruction at Higher Education Institutions and Higher Education Institutions that Provide Instruction in a Foreign Language *(Yükseköğretim Kurumlarında Yabancı Dil Eğitim-Öğretimi ve Yabancı Dille Eğitim-Öğretim Yapan Yükseköğretim Kurumları Hakkında Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik)*	Amendment to directive
20.04.1984	18378	Regulations about Foreign Language Instruction at Higher Education Institutions and Higher Education Institutions that Provide Instruction in a Foreign Language *(Yükseköğretim Kurumlarında Yabancı Dil Eğitim Öğretimi ve Yabancı Dille Eğitim - Öğretim Yapan Yükseköğretim Kurumları Hakkında Yönetmelik)*	New directive
19.10.1983	18196	Law on Foreign Language Teaching and Instruction and the Teaching of Different Languages and Dialects to Turkish Citizens (Decision No. 2923) *(Yabancı Dil Eğitimi ve Öğretimi ile Türk Vatandaşlarinin Farkli Dil Ve Lehçelerinin Öğrenilmesi Hakkinda Kanun (Karar No. 2923))*	Legislation
06.11.1981	17506	Higher Education Law (Decision No. 2547) *(Yükseköğretim Kanunu (Karar No. 2547))*	Legislation

Appendix B.2: List of documents reviewed for policy analysis

This appendix provides a list of documents (n=145) reviewed for the policy analysis. It is divided into three sections: (1) national policy documents published in the Official Gazette, (2) other national policy documents, and (3) institutional policy documents.

1. National Policy Documents: Documents in Official Gazette *(Resmi Gazete)*

No. in study	Type of document (*Mevzuat Türü*)	Dated	Official Gazette No.	Name of document
1	Directive	12.06.2018	30449	Öğretim Üyeliğine Yükseltilme ve Atanma Yönetmeliği
2	Directive	07.02.2018	30325	Yabancı Dil Bilgisi Seviye Belirleme Usul ve Esasları Hakkında Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik
3	Directive	20.04.2016	29690	Lisansüstü Eğitim ve Öğretim Yönetmeliği
4	Directive	23.03.2016	29662	Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelik
5	Directive	05.12.2017	30261	Yurtdışı Yükseköğretim Diplomaları Tanıma ve Denklik Yönetmeliği
6	Directive	02.12.2014	29193	Yabancı Dil Bilgisi Seviye Belirleme Usul ve Esasları Hakkında Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik
7	Directive	04.07.2014	29050	Yabancı Dil Bilgisi Seviye Belirleme Usul ve Esasları Hakkında Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik
8	Directive	01.08.2013	28725	Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik
9	Directive	04.01.2013	28518	Yabancı Dil Bilgisi Seviye Belirleme Usul ve Esasları Hakkında Yönetmelik
10	Directive	06.03.2012	28225	Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik
11	Directive	25.04.2010	27561	Yükseköğretim Kurumlarında Önlisans Ve Lisans Düzeyindeki Programlar Arasında Geçiş, Çift Anadal, Yan Dal İle Kurumlar Arası Kredi Transferi Yapılması Esaslarına İlişkin Yönetmelik
12	Directive	28.06.2009	27272	Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik
13	Cabinet Decision	23.07.2009	27297	Yükseköğretim Kurumlarında Yabancı Uyruklu Öğretim Elemanı Çalıştırılması Esaslarına İlişkin Kararda Değişiklik Yapılmasına Dair Karar (Karar No. 15214)
14	Directive	04.03.2009	27159	Millî Eğitim Bakanlığı Yabancı Dil Eğitimi ve Öğretimi Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik

15	Directive	04.12.2008	27074	Yükseköğretim Kurumlarında Yabancı Dil Öğretimi ve Yabancı Dille Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelik
16	Directive	10.07.2007	26578	Yükseköğretim Kurumlarında Yabancı Dil Eğitim-Öğretim ve Yabancı Dille Eğitim-Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik
17	Cabinet Decision	10.01.2007	26399	Yükseköğretim Kurumlarında Yabancı Uyruklu Öğretim Elemanı Çalıştırılması Esaslarına İlişkin Kararda Değişiklik Yapılmasına Dair Karar (Karar No. 11518)
18	Directive	31.05.2006	26184	Milli Eğitim Bakanlığı Yabancı Dil Eğitimi ve Öğretimi Yönetmeliği
19	Cabinet Decision	28.03.2006	26122	Yükseköğretim Kurumlarında Yabancı Uyruklu Öğretim Elemanı Çalıştırılması Esaslarına İlişkin Kararda Değişiklik Yapılmasına Dair Karar (Karar No. 10166)
20	Directive	25.08.2005	25917	Milli Eğitim Bakanlığı Yabancı Dil Ağırlıklı Liseler Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik
21	Directive	30.12.2004	25686	Milli Eğitim Bakanlığı Yabancı Dil Ağırlıklı Liseler Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik
22	Directive	20.08.1999	23792	Milli Eğitim Bakanlığı Yabancı Dil Ağırlıklı Liseler Yönetmeliği
23	Directive	20.07.1996	22702	Millî Eğitim Bakanlığına Bağlı Bazı Derslerin Öğretimini Yabancı Dille Yapan Anadolu Meslekî ve Teknik Ortaöğretim Kurumları Yönetmeliğinin Bazı Maddelerinin Değiştirilmesine Dair Yönetmelik
24	Directive	01.04.1996	22598	Yükseköğretim Kurumlarında Yabancı Dil Eğitim-Öğretim ve Yabancı Dille Eğitim-Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelik
25	Directive	28.07.1995	22357	Milli Eğitim Bakanlığına Bağlı Bazı Derslerin Öğretimini Yabancı Dille Yapan Anadolu Mesleki ve Teknik Ortaöğretim Kurumları Yönetmeliğinin [XXX] Maddesinde Değişiklik Yapılmasına Dair Yönetmelik
26	Directive	19.04.1995	22263	Millî Eğitim Bakanlığı Yabancı Dil Ağırlıklı Lise Yönetmeliğinin Bazı Maddelerinin Değiştirilmesine Dair Yönetmelik
27	Directive	07.10.1994	22074	Yükseköğretim Kurumlarında Yabancı Dil Eğitim-öğretimi ve Yabancı Dille Eğitim-Öğretim Yapılmasında Uyulacak Esaslara İlişkin Yönetmelik
28	Directive	06.09.1994	22043	Milli Eğitim Bakanlığı Yabancı Dil Ağırlıklı Lise Yönetmeliğinin Bazı Maddelerinin Değiştirilmesine Dair Yönetmelik
29	Directive	12.04.1994	21903	Milli Eğitim Bakanlığı Yabancı Dil Ağırlıklı Lise Yönetmeliği
30	Directive	24.02.1994	21859	Milli Eğilim Bakanlığına Bağlı Bazı Derslerin öğretimini Yabancı Dille Yapan Anadolu Mesleki

				ve Teknik Ortaöğretim Kurumları Yönetmeliği
31	Directive	27.11.1993	21771	Yükseköğretim Kurumlarında Yabancı Dil Eğitim-Öğretimi ve Yabancı Dille Eğitim-Öğretim Yapan Yükseköğretim Kurumları Hakkında Yönetmeliğin Bazı Maddelerinin Değiştirilmesi ve Yönetmeliğe Bir Geçici Madde Eklenmesi Hakkında Yönetmelik
32	Directive	09.06.1993	21602	Millî Eğitim Bakanlığı Bazı Derslerin Öğretimini Yabancı Dille Yapan Resmî Okullar Yönetmeliğinin 27 nci Maddesinin Değiştirilmesine Dair Yönetmelik
33	Directive	15.12.1992	21436	Yükseköğretim Kurumları Öğretim Elemanları ile Yabancı Uyruklu Elemanları Geliştirme Eğitimi Yönetmeliği
34	Cabinet Decision	20.03.1992	21177	Örgün ve Yaygın Bütün Resmi ve Özel Öğretim Kurumları ile Resmi ve Özel Kurslarda Eğitim ve Öğretimi Yapılacak Yabancı Diller Hakkında Karar
35	Directive	28.07.1987	19531	Yükseköğretim Kurumlarında Yabancı Dil Eğitim-Öğretimi ve Yabancı Dille Eğitim-Öğretim Yapan Yükseköğretim Kurumları Hakkında Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik
36	Directive	06.10.1986	19243	Yabancı Dil Eğitimi ve Öğretimi Yönetmeliğinin Bazı Maddelerinin Değiştirilmesi Hakkında Yönetmelik
37	Directive	14.09.1985	18868	Yabancı Dil Eğitim ve Öğretimi Yönetmeliği
38	Directive	03.10.1984	18534	Bir Kısım Derslerin öğretimini Yabancı Dille Yapan Resmî Okullar özel Yönetmeliğine B i r Madde Eklenmesi ve Bazı Madde Numaralarının Değiştirilmesi Hakkında Yönetmelik
39	Directive	25.09.1984	18526	Bir Kısım Derslerin Öğrenimini Yabancı Dille Yapan Anadolu Meslekî ve Teknik Öğretim Kurumları Yönetmeliğinin Bazı Maddelerinin Değiştirilmesi
40	Directive	20.04.1984	18378	Yükseköğretim Kurumlarında Yabancı Dil Eğitim Öğretimi ve Yabancı Dille Eğitim - Öğretim Yapan Yükseköğretim Kurumları Hakkında Yönetmelik
41	Cabinet Decision	31.10.1983	18207	Yükseköğretim Kurumlarında Yabancı Uyruklu öğretim Elemanı Çalıştırılması Esaslarına İlişkin Karar (Karar No. 7148)
42	Law	19.10.1983	18196	Yabancı Dil Eğitimi Ve Öğretimi İle Türk Vatandaşlarının Farklı Dil Ve Lehçelerinin Öğrenilmesi Hakkında Kanun, (Kanun No. 2923)
43	Law	13.10.1983	18190	Yükseköğretim Personel Kanunu (Karar No. 2914)
44	Directive	12.09.1983	18163	Yabancı Dil Eğitimli Resmi Okullar Özel Yönetmeliği Değişiklik Yönetmeliği
45	Directive	31.05.1983	18063	Milli Eğitim Bakanlığının, Birkısım Derslerini öğretimini Yabancı Dille Yapan Resmî Okullar özel Yönetmeliğinin Tadiline Dair
46	Directive	02.08.1982	17770	Bir Kısım Derslerin Öğretimini Yabancı Dille Yapan Resmi Okullar Özel Yönetmeliği

47	Law	06.11.1981	17506	Yükseköğretim Kanunu (Karar No. 2547)
48	Directive	29.12.1975	15453	Yabancı Diller Yüksek Okulu Geçici Yönetmeliği
49	Directive	21.09.1971	13963	Bazı Dersleri Yabancı Dille Okutan Lise ve Kolejlerde Çalışan Yabancı Öğretmenlerle İlgili Bölüm Başkanlığı Yönetmeliği
50	Directive	24.12.1970	13704	Millî Eğitim Bakanlığınca Bir Kısım Derslerin Öğretimini Yabancı Dille Yapan Okullara Ait Özel Yönetmelik

2. National Policy Documents: Documents from other sources

No. in study	Source	Dated	Name of document
51	MEB	10.09.2015	Milli Eğitim Bakanlığı (MEB) Stratejik Planı (2015-2019)
52	Executive	26.03.2018	Akademik Teşvik Ödeneği Yönetmenliği
53	ÖSYM	18.07.2014	Yabancı Dil Sınavları Eşdeğerlikleri (18.07.2014; website statement)
54	ÖSYM	16.07.2014	Yabanci Dil Sinavlari Eşdeğerlikleri
55	YÖK website	22.06.2019	Tercihler Öncesinde Öğrenci Dostu YÖK'ten Müjde: YÖK Atlas'a Meslek Atlasi Ve Tercih Listesi Modülleri Eklend
56	YÖK website	05.06.2018	Türkiye'nin Üniversite Mezunu Profili Değişiyor
57	YÖK website	01.06.2018	Avrupa'dan Türk Yükseköğretimine Üç Başlıkta Tam Not
58	YÖK website	22.03.2018	2018 Yurt Dişindan Kabul Edilecek Öğrenci Kontenjanlari: (1) Yurt Dışından Öğrenci Kabul kontenjanları Ön Bilgi
59	YÖK website	22.03.2018	2018 Yurt Dişindan Kabul Edilecek Öğrenci Kontenjanlari: (2) Tablo 4
60	YÖK website	22.03.2018	2018 Yurt Dişindan Kabul Edilecek Öğrenci Kontenjanlari: (3) Koşullar
61	YÖK website	22.03.2018	2018 Yurt Dişindan Kabul Edilecek Öğrenci Kontenjanlari: (4) Information
62	YÖK website	07.12.2017	YÖK Doçentlik Sinav Alanlari: Mühendislik Temel Alanı
63	YÖK website	06.12.2017	Yükseköğretimde İngilizce Eğitim Kalitesinin Geliştirilmesi Toplantısı
64	YÖK website	06.12.2017	YÖK'ten Yükseköğretimde Yabancı Dille Eğitimin Reklam Aracı Olmasına Tedbir
65	YÖK website	11.02.2017	İlk kez yapılacak YÖKDİL sınavına yoğun ilgi - ilk YÖKDİL sınavına 100 bine yakın başvuru
66	YÖK website	01.02.2017	2016 Mali Yılı İdare Faaliyet Raporu
67	YÖK website	27.01.2017	"YÖKDİL Sınavı" Projesi Hayata Geçiriliyor
68	YÖK website	25.11.2015	"Türkiye Yükseköğretiminde İngilizce Eğitiminin Durumu" Mercek Altına Alındı
69	YÖK website	02.11.2015	Akademisyenler İçin İngilizce Konuşma Becerisi Geliştirme Projesi
70	YÖK website	27.10.2015	Yükseköğretim Kurulu Mevzuatı
71	YÖK website	08.10.2015	Global Trends Response from Turkish Higher Education Ecosystem
72	YÖK website	01.06.2014	Yükseköğretimde Kalite İçin
73	YÖK website	21.02.2011	Türkiye Cumheriyeti Tarafından Verilen Yükseköğretim Bursları ile ilgili Yönerge
74	YÖK website	21.02.2011	Türkiye Cumheriyeti Tarafından Verilen Lisanüstü Eğitim Bursları ile ilgili Yönerge

75	YÖK website	01.06.2010	Yükseköğretimde Yeniden Yapılanma: 66 Soruda Bologna Süreci Uygulamaları
76	YÖK website	25.08.2019	Yabancı Uyruklu Öğretim Elemanlarının Yükseköğretim Kurumlarında Çalıştırılması (PPT)
77	YÖK website	n.d.*	2018-2019 Öğretim Yılı Yükseköğretim Kurumlarına Göre Yurt Dışından Öğrenci Kabulü Kriterleri
78	YÖK website	n.d.*	Bologna Süreci
79	YÖK website	n.d.*	Bologna Süreci'nin 10 Eylem Başlığı
80	YÖK website	n.d.*	Bologna Süreci'ne Katılım İçin Gerekli Koşullar Ve İşlemler
81	YÖK website	n.d.*	Bologna Süreci Nasıl İşliyor?
82	YÖK website	n.d.*	Bologna Süreci Nedir?
83	YÖK website	n.d.*	Bologna Sürecine Üye Olan Ülkeler
84	YÖK website	n.d.*	Değişim Programlarına Katılan Ögrencı Sayıları, 2017-2018
85	YÖK website	n.d.*	Dil Eğitimi
86	YÖK website	n.d.*	National Report regarding the Bologna Process implementation 2012-2015
87	YÖK website	n.d.*	Türkiye Cumhuriyeti Anayasası
88	YÖK website	n.d.*	YÖK, Türk Üniversitelerini Dünyaya "Tek Tik" ile Tanitiyor
89	News (Sabah)	07.12.2017	YÖK'ten 'yabancı dille eğitimin reklam aracı olmasına' tedbir

*Last accessed 25.08.2019

3. Institutional Policy documents

No. in study	Document type	HEI	Name of document
90	Hiring Criteria	Elite-1	[Elite-1] Üniversitesi Öğretim Üyeleri Yükseltme ve Atama Esasları
91	Hiring Criteria	Elite-2	[Elite-2] Öğretim Üyesi Yükseltme Ve Atama Kriterleri
92	Hiring Criteria	Small-1	[Small-1] Üniversitesi öğretim üyeliği yükseltilme ve atanma kriterleri
93	Hiring Criteria	Small-2	[Small-2] Üniversitesi Öğretim Üyeliğine Yükseltilme Ve Atanma Yönergesi
94	Hiring Criteria	Large-1	[Large-1] Üniversitesi öğretim üyeliği yükseltilme ve atanma kriterleri
95	Hiring Criteria	Large-2	[Large-2] Üniversitesi Öğretim Elemani Kadrolarina Başvuru, Görev Süresi Uzatimi Ve Performans Değerlendirme Kriterleri
96	Hiring Criteria	Large-3	[Large-3] Akademik Yükseltilme ve Atanma Kriterleri Yönergesi
97	Intro Catalogue	Elite-1	[Elite-1] Mühendislik Fakültesi Tanıtım Broşürü
98	Intro Catalogue	Elite-1	[Elite-1] 2018 YKS Sonuçlarına Göre Bölümlerinin Tavan-Taban Puan Ve Sıralamaları
99	Intro Catalogue	Elite-2	[Elite-2] General Catalog 2015-2017 (see website)
100	Intro Catalogue	Elite-2	(see website)
101	Intro Catalogue	Elite-2	[Elite-2] Tanıtım Broşürü
102	Intro Catalogue	Small-1	(see website)
103	Intro Catalogue	Small-2	[Small-2] Tanıtım Kataloğu

104	Intro Catalogue	Large-1	(see website)
105	Intro Catalogue	Large-2	(see website)
106	Intro Catalogue	Large-3	[Large-3] 2017 Tanıtım Kataloğu
107	Strategic Plan	Elite-1	[Elite-1] Stratejik Amaçlar Stratejik Hedefler Performans Ölçütleri Faaliyetler Ve Sorumlular 2015-2019
108	Strategic Plan	Elite-2	[Elite-2] Stratejik Plan 2011-2016
109	Strategic Plan	Elite-2	[Elite-2] Stratejik Plan 2018-2022
110	Strategic Plan	Small-1	[Small-1] 2014-2018 Stratejik Plan
111	Strategic Plan	Small-2	[Small-2] 2014-2018 Stratejik Plan
112	Strategic Plan	Small-2	[Small-2] 2019-2023 Stratejik Plan
113	Strategic Plan	Large-1	[Large-1] Stratejik Plan 2014-2018
114	Strategic Plan	Large-1	[Large-1] Stratejik Plan 2017-2021
115	Strategic Plan	Large-2	[Large-2] 2015-2019 Stratejik Planı
116	Strategic Plan	Large-2	[Large-2] 2018-2022 Stratejik Planı
117	Strategic Plan	Large-3	[Large-3] 2014-2018 Stratejik Planı
118	Activity Report	Elite-1	[Elite-1] Üniversitesi 2018 Yili Idare Faaliyet Raporu
119	Activity Report	Elite-1	[Elite-1] 2018 Yili Mühendislik Fakültesi Idari Faaliyet Raporu
120	Activity Report	Elite-1	[Elite-1] Üniversitesi 2017 Yili Idare Faaliyet Raporu
121	Activity Report	Elite-1	[Elite-1] 2017 Yili Mühendislik Fakültesi Idari Faaliyet Raporu
122	Activity Report	Elite-1	[Elite-1] Üniversitesi 2017 Yili Idare Faaliyet Raporu
123	Activity Report	Elite-1	[Elite-1] 2017 Yili Mühendislik Fakültesi Idari Faaliyet Raporu
124	Activity Report	Elite-2	[Elite-2] 2018 İdare Faaliyet Raporu
125	Activity Report	Elite-2	[Elite-2] 2017 İdare Faaliyet Raporu
126	Activity Report	Elite-2	[Elite-2] 2016 İdare Faaliyet Raporu
127	Activity Report	Small-1	[Small-1] Üniversitesi 2016 Faaliyet Raporu
128	Activity Report	Small-2	[Small-2] Üniversitesi 2016 Yili Faaliyet Raporu
129	Activity Report	Small-2	[Small-2] Üniversitesi 2017 Yili Faaliyet Raporu
130	Activity Report	Small-2	[Small-2] Üniversitesi 2018 Yili Faaliyet Raporu

131	Activity Report	Large-1	[Large-1] 2017 Yili Faaliyet Raporu
132	Activity Report	Large-2	[Large-2] 2018 Yili İdare Faaliyet Raporu
133	Activity Report	Large-2	[Large-2] 2017 Yili İdare Faaliyet Raporu
134	Activity Report	Large-2	[Large-2] 2016 Yili İdare Faaliyet Raporu
135	Activity Report	Large-3	[Large-3] Üniversitesi 2018 Yili İdare Faaliyet Raporu
136	Activity Report	Large-3	[Large-3] Üniversitesi 2017 Yili İdare Faaliyet Raporu
137	Activity Report	Large-3	[Large-3] Üniversitesi 2016 Yili Faaliyet Raporu
138	Official Gazette	Elite-1	[Elite-1] Üniversitesi Lisans Eğitim-Öğretim Yönetmeliği
139	Official Gazette	Elite-2	[Elite-2] Üniversitesi Lisans Eğitim Öğretim Yönetmeliği
140	Official Gazette	Small-1	[Small-1] Üniversitesi Ön Lisans Ve Lisans Eğitim-Öğretim ve Sinav Yönetmeliği
141	Official Gazette	Small-2	[Small-2] Üniversitesi Lisans Eğitim-Öğretim ve Sinav Yönetmeliği
142	Official Gazette	Large-1	[Large-1] Üniversitesi Önlisans ve Lisans Öğretim Yönetmeliği
143	Official Gazette	Large-1	[Large-1] Üniversitesi Önlisans Ve Lisans Öğretim Yönetmeliğinde Değişiklik Yapilmasina Dair Yönetmelik
144	Official Gazette	Large-2	[Large-2] Üniversitesi Önlisans-Lisans Eğitim Öğretim ve Sinav Yönetmeliği
145	Official Gazette	Large-3	[Large-3] Üniversitesi Önlisans ve Lisans Eğitim-Öğretim ve Sinav Yönetmeliği

Appendix C: Tables from Chapter 5

This appendix provides full tables to support the findings presented in Chapter 5, Section 5.1 and its sub-sections. The tables are numbered in correspondence with their abbreviated version in Chapter 5 (e.g. Table C.2 corresponds to Table 5.2).

Table C.2: Proportion of language use in EMI classrooms

	Mean (%)	SD	Maximum value (%)	Minimum value (%)	Median value (%)
Pauses (0)	15.93	8.78	44.14	3.35	14.94
Aggregated English category (L2+E-t)	57.08	33.10	89.56	0.00	70.32
English (L2)	56.42	32.95	89.30	0.00	69.57
English with Turkish lexical items (E-t)	0.66	0.71	2.23	0.00	0.32
Inter- sentential codeswitching (L1/L2)	3.66	2.43	10.57	0.00	3.25
Aggregated Turkish category (L1+T-e)	23.53	29.90	82.12	1.11	8.94
Turkish with English lexical items (T-e)	8.18	13.67	47.65	0.00	1.74
Turkish (L1)	15.35	19.55	66.22	0.96	7.58

Table C.3: Proportion of classroom talk according to speaker

	Mean (%)	SD	Maximum value (%)	Minimum value (%)	Median value (%)
Pauses (0)	15.93	8.78	44.14	3.35	14.94
Student talk (S)	0.81	1.38	4.91	0.00	0.13
Teacher talk (T)	62.38	17.15	87.52	28.61	64.17
Teacher-student interaction (T-S)	20.66	11.67	45.11	4.90	16.04
Other speakers	0.39	0.48	1.67	0.00	0.31

Table C.4: Language by speaker: frequency of utterances by speaker according to language

Language	Teacher talk		Teacher-Student		Student talk	
	f	*%*	*f*	*%*	*f*	*%*
English (L2)	5669	78.00	883	39.54	31	30.10
English with Turkish lexical items (E-t)	33	0.45	41	1.84	4	3.88
Inter-sentential codeswitching (L1/L2)	98	1.35	381	17.06	8	7.77
Turkish with English lexical items (T-e)	397	5.46	272	12.18	1	0.97
Turkish (L1)	1071	14.74	656	29.38	59	57.28
Total	7268	100	2233	100	103	100

Table C.5: Frequency of codeswitching in EMI classrooms

	Mean	SD	Maximum value	Minimum value	Median value
Student-initiated (SA)	7.2	7.47	36.50	1.00	5.00
Student-induced (SB)	0.02	0.07	0.33	0.00	0.00
Teacher-initiated (TA)	19.41	18.17	75.00	6.00	11.00
Teacher-induced (TB)	0.21	0.40	1.50	0.00	0.00
Total number of codeswitching instances	26.83	20.04	78.50	9.60	16.80

Table C.6: Codeswitching patterns by language across the dataset

Language	Student-initiated (SA)		Student-induced (SB)		Teacher-initiated (TA)		Teacher-induced (TB)	
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*
English (L2)	19	3.54	1	100	603	38.00	2	13.33
English with Turkish lexical items (E-t)	31	5.78	0	0.00	36	2.27	1	6.67
Inter-sentential codeswitching (L1/L2)	289	53.92	0	0.00	116	7.31	12	80.00
Turkish with English lexical items (T-e)	48	8.96	0	0.00	359	22.62	0	0.00
Turkish (L1)	149	27.80	0	0.00	473	29.80	0	0.00
Total	536	100	1	100	1587	100	15	100

Table C.7: Most common functions of language in EMI classrooms (% of class time)

Rank	Function	Proportion *Percent of class time across classroom averages* *M (SD)*	Maximum value *Maximum proportion found across classroom averages*	Minimum value *Minimum proportion found across classroom averages*	Frequency *Times appearing per class* *M (SD)*	Prevalence *Percentage of classrooms in which this function was found*
1	Present or explain new content	50.09 (13.28)	75.08	22.47	53.06 (16.32)	100
2	Ask question related to content	16.45 (7.83)	37.42	6.07	28.31 (18.01)	100
3	Pause	15.93 (8.78)	44.14	3.35	45.05 (23.83)	100
4	Provide “off-content” information related to the course	5.61 (2.81)	11.82	1.84	9.30 (4.40)	100
5	Explain, clarify, or summarize presented content	2.96 (1.54)	5.78	0.82	3.43 (2.28)	100
6	Give math-based example to explain or apply concept	1.75 (1.64)	4.88	0.00	2.97 (4.56)	80.95
7	Introduce new content or concepts	1.54 (0.76)	3.00	0.35	4.43 (2.85)	100
8	Give instructions or procedural commands	1.19 (1.40)	5.57	0.00	2.75 (2.77)	90.48
9	Give daily-life example to explain or apply concept	1.11 (1.44)	5.87	0.00	1.03 (1.05)	76.19
10	Check student comprehension	1.01 (0.80)	2.72	0.09	5.16 (3.96)	100
11	Build rapport	0.89 (1.50)	5.59	0.00	1.14 (1.37)	90.48
12	Emphasize importance of topic for career or future studies	0.48 (0.52)	1.52	0.00	0.61 (0.71)	66.67
13	Manage discipline	0.33 (0.73)	2.81	0.00	0.94 (2.04)	61.90
14	Provide praise or feedback	0.30 (0.28)	1.00	0.00	1.37 (1.54)	80.95
15	Translate technical vocabulary	0.28 (0.36)	1.10	0.00	0.85 (1.03)	71.43
16	Draw students’ attention or focus	0.26 (0.16)	0.58	0.03	1.73 (1.16)	100
17	Encourage participation	0.24 (0.25)	0.86	0.00	1.12 (1.10)	71.43

Table C.8: Functions by language according to frequency and percentage of coding

Function	English (L2)		English with Turkish lexical items (E-t)		Inter-sentential code-switching (L1/L2)		Turkish with English lexical items (T-e)		Turkish (L1)	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Introduce new content or concepts	296	4.49	0	0.00	6	1.22	15	2.24	49	2.72
Check student comprehension	313	4.75	1	1.28	9	1.83	13	1.94	86	4.77
Explain, clarify, or summarize presented content	190	2.88	7	8.97	8	1.62	28	4.17	58	3.22
Ask question related to content	1354	20.53	27	34.62	290	58.82	185	27.57	454	25.18
Translate technical vocabulary	4	0.06	13	16.67	23	4.67	29	4.32	4	0.22
Present or explain new content	3316	50.27	17	21.79	62	12.58	341	50.82	612	33.94
Give math-based example to explain or apply concept	186	2.82	5	6.41	15	3.04	2	0.30	8	0.44
Give daily-life example to explain or apply concept	56	0.85	1	1.28	1	0.20	1	0.15	28	1.55
Manage discipline	28	0.42	0	0.00	9	1.83	1	0.15	22	1.22
Provide praise or feedback	84	1.27	0	0.00	4	0.81	1	0.15	12	0.67
Give instructions or procedural commands	144	2.18	4	5.13	5	1.01	8	1.19	65	3.61
Encourage participation	85	1.29	0	0.00	2	0.41	2	0.30	9	0.50
Draw students' attention or focus	83	1.26	1	1.28	1	0.20	2	0.30	51	2.83
Provide "off-content" information related to the course	388	5.88	1	1.28	48	9.74	39	5.81	288	15.97
Build rapport	31	0.47	1	1.28	9	1.83	0	0.00	45	2.50
Emphasize importance of topic for career or future studies	38	0.58	0	0.00	1	0.20	4	0.60	12	0.67
TOTAL	6596	100	78	100	493	100	671	100	1803	100

Table C.9: Frequency of language functions by speaker across dataset

Function	Student-talk (S)		Teacher-talk (T)		Teacher-Other (T-K)		Teacher-Student (T-S)	
	f	%	*f*	%	*f*	%	*f*	%
Introduce new content or concepts	0	0.00	356	4.90	0	0.00	10	0.45
Check student comprehension	0	0.00	353	4.86	0	0.00	69	3.09
Explain, clarify, or summarize presented content	11	10.68	245	3.37	0	0.00	35	1.57
Ask question related to content	49	47.57	788	10.84	0	0.00	1473	65.97
Translate technical vocabulary	3	2.91	42	0.58	9	23.68	19	0.85
Present or explain new content	17	16.50	4082	56.17	0	0.00	249	11.15
Give math-based example to explain or apply concept	0	0.00	206	2.83	0	0.00	10	0.45
Give daily-life example to explain or apply concept	0	0.00	70	0.96	0	0.00	17	0.76
Manage discipline	0	0.00	46	0.63	0	0.00	14	0.63
Provide praise or feedback	0	0.00	83	1.14	0	0.00	18	0.81
Give instructions or procedural commands	2	1.94	195	2.68	0	0.00	29	1.30
Encourage participation	0	0.00	90	1.24	0	0.00	8	0.36
Draw students' attention or focus	0	0.00	134	1.84	0	0.00	4	0.18
Provide "off-content" information related to the course	9	8.74	492	6.77	28	73.68	235	10.52
Build rapport	12	11.65	33	0.45	1	2.63	40	1.79
Emphasize importance of topic for career or future studies	0	0.00	52	0.72	0	0.00	3	0.13
TOTAL	103	100	7267	100	38	100	2233	100

Table C.10: Functions of codeswitching EMI classrooms (frequencies and percentages of whole data set)

Function	Student initiated (SA)		Student induced (SB)		Teacher initiated (TA)		Teacher induced (TB)	
	f	%	*f*	%	*F*	%	*f*	%
Introduce new content or concepts	1	0.19	0	0.00	59	3.72	0	0.00
Check student comprehension	7	1.31	0	0.00	78	4.91	0	0.00
Explain, clarify, or summarize presented content	12	2.24	0	0.00	74	4.66	0	0.00
Ask question related to content	394	73.51	0	0.00	243	15.31	4	26.67
Translate technical vocabulary	5	0.93	0	0.00	50	3.15	8	53.33
Present or explain new content	30	5.60	1	100	715	45.05	1	6.67
Give math-based example to explain or apply concept	1	0.19	0	0.00	43	2.71	0	0.00
Give daily-life example to explain or apply concept	0	0.00	0	0.00	7	0.44	0	0.00
Manage discipline	4	0.75	0	0.00	22	1.39	0	0.00
Provide praise or feedback	4	0.75	0	0.00	32	2.02	1	6.67
Give instructions or procedural commands	5	0.93	0	0.00	53	3.34	0	0.00
Encourage participation	0	0.00	0	0.00	7	0.44	1	6.67
Draw students' attention or focus	0	0.00	0	0.00	41	2.58	0	0.00
Provide "off-content" information related to the course	58	10.82	0	0.00	141	8.88	0	0.00
Build rapport	15	2.80	0	0.00	13	0.82	0	0.00
Emphasize importance of topic for career or future studies	0	0.00	0	0.00	9	0.57	0	0.00
TOTAL	536	100	1	100	1587	100	15	100

Appendix D: Supplementary data for Chapter 5

This appendix includes supplementary data as further evidence for findings presented in Chapter 5, Section 5.2 and its sub-sections.

Extract D.1: **Students describe variation at elite university**

The follow extract was taken from a focus group at an elite university. The students are enrolled in a 3rd-year Heat Transfer course at a Mechanical Engineering department at Elite-1. In this short extract, students' discuss difference in their teachers' attitudes toward Turkish use in the classroom:

R: Do your teachers ever tell you to talk in English?
S2: If there are foreign students, yeah. The teacher tells us to ask English. But some teachers are more strict than others.
S3: Yeah. I agree.
R: What do you mean, more strict?
S2: Some want us to ask English, maybe because it is the rule, I don't know. This is what I think. They want to follow the rule. But some teachers, they are not so strict. They are more relaxed. If we ask in Turkish, they respond. They don't care.
S5: Yeah, the teacher normally answers in English. Like, if we ask Turkish, they answer English, because there might be a foreign student. But sometimes they forget, I think, and they start speaking some Turkish. Not all teachers, but we have some teachers who are more relax and sometimes speak in Turkish.

(Teacher 10, Elite-1, Focus group)

Table D.1: Turkish use in English-dominant, teacher-centered lectures

Teacher	Context in which Turkish was used	Example	Translation
T-3, Small-1	To clarify or summarize presented content (e.g. at the end of the lesson)	S: Hocam bu nasıl oluyor? Türkçe açıklayabilir misiniz? T: Şey veriyorsunuz, bir işte bir istek gönderiyorsunuz…	S: Teacher, how does this work? Could you explain in Turkish? T: You're giving a think, a, for example you're sending a request…
T-7, Small-2	To check student comprehension; to clarify or summarize presented content (e.g. at the end of the lesson)	T: Gençler, adezyon ne demek? S: Asınma mı, hocam, sürtünme-- T: Değil. Asınma, adezyon asınmanın bir türü.	T: Guys, what does adhesion mean? S: Is it wear, teacher, friction— T: No. Wear is a type of adhesion.
T-8,	Get students	"Arkadaşlar oturabilir miyiz	"Friends, can we sit down

Elite-1	attention at the beginning of class (To draw students attention)	bir dakka? Bir misafirimiz var.”	for a minute? We have a guest today.”
T-9, Elite-1	When computer stopped working (To provide off-content information)	“Uh, neyse biz devam edelim, olmadı ikinci dersin başında başka bilgisayardan açarız. Okey?”; “Evet, kontrol ettik çalışıyordu [internet], ama şimdi yeni çalışır mı?”	“Uh, whatever, let’s continue, it didn’t work, we’ll open another computer at the start of the second lesson. Okay?”; “Yes, we checked and it was working, but will it work now?”
T-10, Elite-1	When answering student questions about exam or course (To provide off-content information)	“Yani, iki saat fazla, doksan dakika olacak herhalde”; “Ya yeterince, yeterince soru çözdük arkadaşlar.”	“Well, two hours is too much, it’s probably going to be ninety minutes” [exam length]; “That’s enough, we’ve solved enough problems, friends.” [students ask to solve more problems in class]
T-11, Elite-2	To greet students at the beginning of class (to draw students’ attention); to discuss ‘off-topic’ matters related to the course	“Sinav var mı akşama? Bugün sinavınız var mı akşama? Sınıf boş biraz. … Günaydin gençler.”	“Is there an exam tonight? Is there an exam today in the evening? The class looks a little empty… Good morning guys.”
T-12, Elite-2	To check student comprehension	“Tamam mı?”; “Anlaştık mı?”	“Okay?”; “Are we good?”
T-13, Elite-2	To manage discipline	“Arkadaşlar biraz sessiz olalım.”	“Guys, let’s be a little bit quiet.”
T-14, Large-1	To provide ‘off-content’ information related to the course; to clarify or summarize presented content	“Şimdi size geçen hafta ders yapamadık, bu dönem biraz şanssızlık başlamış sizden.”	“Now we weren’t able to do a lesson with you last week. This semester is starting off with a bit of bad luck for you.”
T-15, Large-1	To respond to questions *during breaks*	“Okay let's take a, ten minutes now, ten minutes break, and then come back to that. Uh, easy way of calculation. Sorusu olan varsa soru sorabilir bu	“Okay let's take a, ten minutes now, ten minutes break, and then come back to that. Uh, easy way of calculation. If anyone has any questions you can ask

		arada.”	now by the way.”
T-19, Large-3	To give procedural commands; to clarify or summarize presented content	“Hayır, hayır buraya aynı denklem geliyor buraya da kaç derece ısındıysa oraya kadar gelecek dördün sıcaklığı kırk beşin sıcaklığı kırkbeş.”	“No, no, the same equation comes here, here also however many degrees it was heated it’s going to come to that much there. The temperature at four is forty, the temperature at five is forty five.”

Extract D.2: Pair work in Teacher 4’s class

The follow extract is from Teacher 4’s 1st-year Computer Programming course at a Mechanical Engineering department at a small university. In the extract, the teacher is walking around and providing support to students who are working on computers in the computer lab with their neighbors.

S: Hocam birşey soracağım— [*Teacher, can I ask something—*]
T: Script file'da çalışın, yoksa bakmam. Command window'de çalışmayız, script file'de çalışın.
[*Work in* script file, *otherwise I won’t look. We don’t work in* command window, *work in* script file.]
S2: Teacher--
T: Buraya girmeden önce meshgrid'u kullanmalısınız. Meshgrid fonksiyonu. r h'la [=*hash*] çarpamazsın ki. Iki elemanlı, sekiz elemanlı, çarpamaya kalkarsan hata verir.
[*Before entering here, you need to use* meshgrid. *The* meshgrid *function. You can’t multiple r and h. It will give an error message if you try to multiple two elements and eight elements.*]
S2: Bunu— [*This—*]
T: Dene, bakın. Evet, matrix dimensions must be the same. h, sekiz elemanlı, r iki elemanlı, çarp.
[*Try and see. Yes,* matrix dimensions must be the same. *H has eight elements, r has two elements, multiple them.*]
S2: Oh.
T: Bunları meshgrid fonksiyonuyla, iki boyutlu halinde oluşturup matriks haline getireceğiz. Meshgrid fonksiyonu hatırlamıyor musunuz geçen haftadan?
[*With the* meshgrid *function, you will make these two-dimensional and bring them to a matrix. Do you remember the* meshgrid *function from last week?]*
S2: X'le, x new, y, new. [*X and,* x new, y new]
T: Vallahi, meshgrid'i hatırlatalım size. [*Okay, let me remind you of* meshgrid.]

(Teacher 4, Small-2, Observation 4)

Extract D.3: Teacher 1's quiz questions on slides

This is an extract from Teacher 1's 2nd-year Statics course in a Civil Engineering department at a small university. This extract illustrates how the teacher and students engage with English resources during the lesson. In this example, students solve a 'Concept Quiz' on the slides.

T: Evet. Şimdi concept quiz. Devam ediyor. Şu şekilin ucuna bakın.
[*Yes. Now,* concept quiz. *It continues. Looks at the end of this figure.*]
<pause, 6 seconds>
T: <*reading*> Assume you know the geometry of the ropes. In which system above can you not determine forces in the cables? Hangisinde kablolarındaki kuvveti bulmayabilirsiniz? [*In which of them may you not be able to find the strength of the cables?*]
<pause, 4 seconds>
Sg: C'de [*In c.*]
S: C
T: C. Neden? [*C. Why?*]
Sg: Açıları bilmiyoruz. [*We don't know the angles.*]
T: Açıları bilmiyoruz. [*We don't know the angles.*]
S: O zaman b, b'indeki da bilmiyoruz. [*Then b, we don't know them for b.*]
T: Ve ben sana açıları veriyorum. [*And I'm giving you the angles.*]
<*all laughing*>
T: Tamam mı? Tüm açılar senin olsun. [*Okay? All the angles are yours.*]
<*all laughing*>
S: Hadi, hadi. [*Come on, come on.*]
T: Hadi bul bakalım. Sana diyorum ki bak, bu birinciki on derece, iki yirmi x'e yaptığım için, bu otuz, bu da kırk. Verdim.
[*Come on, find it, let's see. I'm telling you that, look, this first one is ten degrees, because I'm doing this to two twenty x, this is thirty, this is forty. I've given them.*]
<pause, 3 seconds>
T: Sorgulamak için, bak, yanlış anlama. Sorgulama için, kendini sorgula.
[*To examine it, look, don't misunderstand. To examine, examine it yourself.*]
<pause, 6 seconds>
T: Hm?
Sg: Tam ortadan mı basınç oldu? [*Is this pressure from right in the middle?*]
T: Şuradan mı? Hayır bak, açıyı verdim, ne yapacaksın, onu düşün. Açıyı verdim, ne yapacaksın?
[*From here? No, look, I gave you the angles. What are you going to do? Think about that. I gave the angles. What are you going to do?*]
S2: Bunlardan sadece ağrılığını biliyoruz ama eh kuvvetileri bulmuyoruz ki yani kuvvetleri bulmamışız.
[*But we only know the weight from those, eh, we aren't finding the forces. I mean, we didn't find the forces*.]
T: Tamam kuvvetleri soruyor zaten, kuvvetleri bulabilir miyim?

[*Okay, it's asking the forces anyway, can I find the forces?*]
<Ss mumbling>
T: Bunu bulamaz mıyım? [*Can I not find them?*]
S2: Ya ondan tamam, onu buluruz. b ve, b ve c bulamayız.
[*From that, okay, we'll find that. We can't find b and, b and c.*]
T: Bundan, bunun açıyı verdim düşün. Bunu da buluruz. Bundan?
[*From this, think, I've given you this angle. We can find this. From this?*]
S3: Ondan da buluruz. [*We can find it from that too.]*
T: Açıyı verdim. Bunu da mı buluruz? [*I gave you the angle. Can we find this too?*]
S2: Onu da buluruz. [*We can find it.*]
T: Nasıl bulacağız? [*How are we going to find it?*]
<Ss calling out at once>
T: Hm?
S3: Bileşkenden iki tane verirseniz buluruz.
[*If you give us two from the component we'll find it.*]
T: Söyleyin, tamam. Söyleyin, denklemi yazdırın bana.
[*Tell me, okay. Tell me, tell me how to write the equation.*]
S4: Bulamayız hocam çünkü dört bilinmeyen—
[*We can't find it, teacher, because there are four unknowns—*]
T: Ha! Oldu işte. Bulamayız çünkü dört tane ip var orada, dört tane bilinmeyen var, değil mi? Four unknowns but two equations. Anlaştık mı?
[*Ha! That's it. We can't find it because there are four ropes there, there are four unknowns, right?* Four unknowns but two equations. *Do we understand?*]
S: Aynen [*Exactly.*]
T: İstiyorsanız elde edelim, t biliyorsunuz, orada free body oluşturken, bak, burada ne yapacaksın mesela? Bu t, bu da t. Aynı. Bu da, bu da t, bak, burada t-bir, t-iki, t-üç, t-dört. Dört tane ip var.
[*If you want, let's obtain it, we know t, while creating the* free body *there, look, what are you going to do here for example? This is t, this is also t. They're the same. And this, and this is t, look, here is t-one, t-two, t-three, t-four. We have four ropes.*]
S2: Aynı ip olsa hocam <mumbling> [*What if it's the same rope, teacher?*]
T: Evet, o yüzden bunun cevabı, c olacak. Why? There are more unknowns than equations, değil mi?
[*Yes, therefore the answer is going to be c.* Why? There are more unknowns than equations, *right?*]

(Teacher 1, Small-1, Observation 3)

Extract D.4: Teacher 18's concerns about grammatical correctness

The following is an excerpt from an interview with Teacher 18. It illustrates the teacher's preoccupation with grammatical correctness, which extended into the interview. Here, he draws attention to his lack of confidence while lecturing in English.

T: Ben de şu anda sizle konuşurken bazı şeyleri kafamda tense olarak kuramıyorum. Mesela bugün geçen ders şunu yaptık diye başladım ama past perfect kullanmadım, simple past kullandım.
[*While talking with you now, I can't put the* tense *of some things together in my head. For example, I started today like, last class we did this, but I didn't use the* past perfect, *I used the* simple past.]

R: Ama simple past olabilir orada.
[*But the* simple past *can work there.*]

T: Olabilir mi? Ama kullanırken mesela emin olamıyorum. Ben hala bunu yaşıyorsam öğrenciler de yaşıyordur.
[*It can work? But when using it for example I can't be sure. If I'm still experiencing this, the students must be experiencing it too.]*

(Teacher 18, Large-3, Interview 2)

Extract D.5: Language focus on 'yield'

In this extract, Teacher 18 explains meaning of yield in order to help students understand the solution to the equations. Note: the teacher does not say the word yield; rather, he writes in on the board while providing an explanation to the problem in Turkish.

T: Geri kalan kısmen matematik ne yapıyoruz? İşte dengeleri yazacağız. Alüminyum'un cross sectional area, nasıl bir alanı? Yani zorla dikkat edin.
[*The rest of it just math, what are we doing? We're going to write the balance. The* cross section area *of aluminum is what kind of an area? Pay close attention.*]

<Ss call out, mumbling>

T: İçindeki çıkartıyoruz, değil mi? O tüp şekilde çünkü.
[*We're taking about the inside, right? Because it's shaped like a tube.*]

<pause, 10 seconds; T writes: "Solving Eq (1) and (2) simultaneously yields F-a-i = 30 N, F-b-i = 15 N">

T: Bu yeilds kelimesi, bu tars kullanıldığı zaman denklem bir ve ikinin aynı anda çözümünden, bu çıkartma gibi bir anlamı geliyor, malzemedeki yield, bakma anlamındaki değil bu.
[*This word* yields, *when it's used like this, from solving equation one and two at the same time, it means something like this is the solution. Don't look at the* yield *from materials, that's not the meaning of this.*]

(Teacher 18, Large-3, Observation 3)

Extract D.6: Language focus on 'arbitrary'

In the following extract, Teacher 18 provides a Turkish translation of the word 'arbitrary,' a word which appears in the text of the slide from which he is reading. The extract begins with the teacher summarizing the previous slide, pausing, and the reading the next slide.

T: Yani, bu San Bernard Principle'den bahsettiğimiz uygulma noktalarındaki non uniform olayı hesaba katılmamız gerek yok, bunun genel problemi düşündüğümüzde çok küçük bir etkisi var ama San Bernard prensipinde ne olduğunu diyelim, gerçekten burada ve bunlarında, non-uniform diye bir strain ve stres uygulamasından stres noktaları var.
[*So, in the application points of this* San Bernard Principle *that we've been talking about, there's no need for us to add any of this* non-uniform *stuff to the calculation. But there's a little bit of an affect when we think about this as a general problem. Let's say this is what happens with the* San Bernard *principle, really here and in theses, there are stress points in the application of what's called* non-uniform *stress and* strain.]
<pause, 13 seconds>
T: <*reading*> Using the method sections the differential elements of the length d-x. And cross sectional area a of x. Is isolated from the bar at arbitrary position. <*reading ends*> Arbitrary? What's the meaning? Arbitrary position. Rastgele. [*Random*] <*reading*> Where the modulus of elasticity is e of x. The free body diagram is shown in figure d.

(Teacher 18, Large-3, Observation 1)

Extract D.7: Language focus on grammatical structure: 'if f-b were a negative quantity…'

In the following extract, Teacher 18 draws attention to the grammatical structure of an English sentence he has written on the board: '*if f-b were a negative quantity…'* In the extract, the teacher asks students to make sense of the grammatical structure and provides a Turkish translation.

T: Since the answer for f-b is positive, and, and b can touch the wall at b prime, as originally assumed. If f-b were a negative quantity, what does it mean?
S: Yetişmeyin anlamına mı geliyor? [*Does it mean that it doesn't reach?*]
T: Mhm
Sg: Kuvvetin mi? [*The force?*]
S: [??]
T: Negatif çıktı. Negatif birşey çıktı. O assumption demiştik ya, onu kabul--doğru mu, yanlış mı gösteriyor. Negatif çıkması ne demek? F-b'in hangi yöne olması demek? [*It came out negative. It's a negative thing. That assumption that we said, was it accepted—does this show that it's true or false? What does it mean that it's negative? It means f-b must be in which direction?]*
S: Ters, ters [*The opposite, the opposite]*

T: Sağa doğru olma ihtimalı var mı? Duvara bastıran bir şey? Tekrar kuvvetin sağa doğrusu? O zaman şöyle yazalım.
[*Is there a possibility that it could be going to the right? Is it pressing into the wall? Is the force again to the right?]*

S: İmkansız. [*It's impossible]*

<pause 12 seconds, T writing: *'If F-b were a negative quantity, the problem would be statically determinate.'*>

T: Were. A negative quantity. Olsaydı gibi. [*Like 'if it were'*]

<pause, 4 seconds; T finishes writing>

T: The problem. Would be. Statically determinate. Not indeterminate.

(Teacher 18, Large-3, Observation 3)