

**T.C.
ERCIYES UNIVERSITY
INSTITUTE OF EDUCATIONAL SCIENCES
DEPARTMENT OF FOREIGN LANGUAGES
EDUCATION**

**MAPPING OUT METADISCOURSE IN CLASSROOM
DISCOURSE: A CORPUS ANALYSIS OF ENGLISH
MEDIUM INSTRUCTION LECTURES**

**Prepared by
SİNEM BİLGİN YÜCEL**

Master's Thesis

**September 2023
KAYSERİ**

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**Supervisor
ASSOC. PROF. DR. ERDEM AKBAŞ**

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BİLİMSEL ETİĞE UYGUNLUK

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Sinem BİLGİN YÜCEL

YÖNERGEYE UYGUNLUK

Mapping out Metadiscourse in Classroom Discourse: A Corpus Analysis of English Medium Instruction Lectures adlı Yüksek Lisans tezi, Erciyes Üniversitesi Lisansüstü Tez Önerisi ve Tez Yazma Yönergesi'ne uygun olarak hazırlanmıştır.

Hazırlayan

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Assoc. Prof. Dr. Erdem AKBAŞ

KABUL VE ONAY

Eğitim Bilimleri Enstitüsü Müdürlüğüne,

Sinem BİLGİN YÜCEL'in hazırladığı **Mapping out Metadiscourse in Classroom Discourse: A Corpus Analysis of English Medium Instruction Lectures** başlıklı bu çalışma jürimiz tarafından **Yabancı Diller Eğitimi Ana Bilim Dalı, İngiliz Dili Eğitimi Bilim Dalında Yüksek Lisans Tezi** olarak kabul edilmiştir.

Jüri Başkanı

Unvan Ad SOYADI

.....

Jüri Üyesi (Danışman)

Unvan Ad SOYADI

.....

Jüri Üyesi

Unvan Ad SOYADI

.....

Bu tez Erciyes Üniversitesi Lisansüstü Eğitim, Öğretim ve Sınav Yönetmeliği'nin ilgili maddeleri uyarınca yukarıdaki jüri üyeleri tarafından ... / ... / tarihinde uygun görülmüş ve Enstitü Yönetim Kurulunca ... / ... / tarihi ve sayılı karar ile kabul edilmiştir.

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ÖZ

SINIF SÖYLEMİNDE ÜSTSÖYLEMİN HARİTALANMASI: ÖĞRETİM DİLİ İNGİLİZCE OLAN DERSLERİN DERLEM ANALİZİ

Sinem BİLGİN YÜCEL

**Erciyes Üniversitesi, Eğitim Bilimleri Enstitüsü
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Danışman: Doç. Dr. Erdem AKBAŞ**

Uluslararasılaşma ve küreselleşmenin etkisiyle İngilizce her alanın vazgeçilmez bir iletişim aracı haline gelmiştir. Bu alanlardan birisi de şüphesiz ki eğitimidir. İngilizce dilinin geniş kullanımından dolayı birçok kurum (örn. üniversiteler) akademik içerikleri kendi bağlamında aktarmak için İngilizce'yi araç dil olarak kabul etmiştir. EMI derslerinde, içeriğin öğrenciler tarafından anlaşılabilmesini sağlamak ve etkili öğretimi gerçekleştirmek için sınıf söylemi büyük öneme sahiptir. Daha önceki çalışmalar, öğretim elemanları ve öğrenciler tarafından oluşturulan sınıf söylemi analizi açısından nispeten sınırlı kalmıştır. Ayrıca, EMI derslerinde sınıf söylemini vurgulayan önceki çalışmalar spesifik bağlamlara hitap etmiştir. Bu tez, Türkçe bağlamında, pozitif bilimlerde akademik içeriği, İngilizce aracılığıyla aktaran EMI öğretim elemanları tarafından kullanılan organizasyonel üstsöylem belirleyicilerinin bir analizini sunmayı amaçlamaktadır. Tezde, Vande Kopple (2012)'in ve Tang (2017)'in taksonomisinden faydalanılmıştır. Bulgulara göre, EMI öğretim elemanları, içeriği sıra ile aktararak söylemi düzenlemeyi kolaylaştırmak ve öğrencilerin konuyu kolayca algılamalarını sağlamak için çoğunlukla sıralama bildiren kelimeler (örn. ilk olarak, daha sonra) kullanmaya meyillidirler. Buna ek olarak, öğretim elemanları, devam eden etkinlik belirleyicileri (örn. burada yapmaya çalıştığımız şey...) kullanarak ne yapacaklarını ve öğrencilerden ne yapmalarını istediklerini işaret etmeye çalışırlar. Ayrıca, bulgular, öğretim elemanlarının, daha önceki sohbet bağlaçlarını kullanarak öğrencileri geçmiş bilgileri hatırlamaları konusunda uyarmaya çok dikkat ettiğini göstermektedir. Bulgularımız EMI bağlamlarında öğretmen konuşmasını geliştirmeye yönelik pedagojik uygulamaların geliştirilmesine katkıda bulunacaktır.

Anahtar Sözcükler: Sınıf söylemi, EMI, organizasyonel üstsöylem, sözlü söylem.

ABSTRACT

MAPPING OUT METADISCOURSE IN CLASSROOM DISCOURSE: A CORPUS ANALYSIS OF ENGLISH MEDIUM INSTRUCTION LECTURES

Sinem BİLGİN YÜCEL

Erciyes University, Institute of Educational Sciences

Master's Thesis, September 2023

Supervisor: Assoc. Prof. Dr. Erdem AKBAŞ

With the effect of internationalization and globalization, English has become an indispensable medium of communication in every field. One of these areas is undoubtedly education. Due to the widespread use of English, many institutions (i.e., universities) have initiated English as a medium of instruction (EMI) to convey academic content in their context. Classroom discourse gains great importance in EMI classrooms to ensure that the students can understand the content and to allow effective teaching. Earlier studies are relatively limited in terms of the functional analysis of the classroom discourse created by the lecturers and students and how they communicate. Additionally, previous studies that emphasized classroom discourse in EMI settings addressed specific contexts. This thesis aims to present an analysis the organizational metadiscourse markers used by the EMI lecturers in the classes from hard sciences in the Turkish context. We utilized from Vande Kopple's (2012) and Tang's (2017) taxonomy. According to the findings, the EMI lecturers mostly tend to use sequencers (i.e., first, then) in order to facilitate the lecturer to organize the discourse by conveying the content in a sequence and for the students to perceive the subject easily. Moreover, by using ongoing activity markers (i.e., what we're trying to do here,), the lecturers attempt to signal what they would do and what they would want the students to do. Additionally, findings show that lecturers pay close attention to alerting students to remember past information by using earlier conversation connectives. Our findings will contribute to the development of pedagogical frameworks for improving the teacher talk in EMI contexts.

Keywords: Classroom discourse, EMI, organizational metadiscourse, spoken discourse.

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LIST OF ABBREVIATIONS

EAI	English Aided Instruction
EMI	English as Medium of Instruction
Geo	Geometry
GISAM	Audio-Visual Systems Research and Applications Centre
HE	Higher Education
IRE	Initiate-Response-Evaluate
METU	Middle East Technical University
PRV	Probability and Random Variables
TMI	Turkish as Medium of Instruction

CHAPTER I

INTRODUCTION

This dissertation presents a novel perspective on English-medium instruction (EMI) within the context of higher education in Türkiye. Specifically, the study focused on the discourse used by lecturers in the hard sciences, analysing their employment of organizational metadiscourse markers. In this chapter, the statement of the problem, the significance of the study, and the purpose of the study, including the research questions, the assumptions, the limitations, and the key definitions, are presented.

1.1. Statement of the Problem

Globalization is one of the elements which affects the spread of English all over the world. Block and Cameron (2002) defined globalization as “a complex phenomenon, with positive and negative social impacts, embracing economics, culture, identity, politics and technology” (p.2), and Ege (2020) supported this idea by stating that “it has become an important phenomenon in many fields” (p.2). In addition to these definitions, Gardt and Hüppauf (2004) associated globalization with the use of English as a second language around the world, emphasising that it has a greater effect especially in countries whose mother tongue is not English. Looked at from the perspective of higher education (HE), Coleman (2006) pointed out, “While the global status of English impels its adoption in HE, the adoption of English in HE further advances its global influence” (p.4). Furthermore, Kruseman (2003, as cited in Coleman, 2006) emphasised the necessity of English by stating “That is the language we have to use if we wish to prepare our students for an international career in a globalizing world” (p.4).

With widespread internationalization and globalization, there has been a significant increase in the use of English in HE (Akbaş & Bal-Gezegin, 2022; Keleş & Yazan, 2022; Kırkgöz & Dikilitaş, 2018; Kotake, 2017; Lasagabaster, 2022; Williams, 2015). Due to the widespread use of English, many institutions (specifically universities) have established English as a medium of instruction (EMI) to convey academic content in their context.

As studies on EMI started to intensify, classroom discourse and how to analyse this discourse began to gain importance. Classroom discourse analysis is necessary both for the lecturer to see his/her own competence in conveying the content through English and to determine how well the students understand the subject.

EMI, classroom discourse and metadiscourse functions, which form the basis of the current study, are important in many respects, such as transferring the subject, effective communication and students' perception. Metadiscourse functions can be used by lecturers to deliver the course flow correctly and effectively, to design the transitions between the subjects well and to enable the students to understand the academic content more easily. Metadiscourse can help to clarify the confusion of teaching in a non-native language for lecturers and students. Moreover, metadiscourse can encourage students to participate in the lesson as it helps them to understand and comprehend the content. Despite its common use, very few studies (Bernad-Mecho, 2017; in press; Bernad-Mecho & Fortanet-Gómez, 2019; Molino, 2018; Tang, 2017) have addressed metadiscourse in classroom discourses at the HE level, particularly in EMI. In line with this, we therefore believe that it is important to delve into how metadiscourse devices are employed in order for lecturers to convey the content of their classes effectively in Turkish EMI classes. This study was designed to offer a different perspective from the studies conducted within the scope of EMI by analysing the organizational metadiscourse markers used by EMI lecturers in classes from hard sciences in the Turkish context.

1.2. Significance of the Study

The search of the literature on EMI showed that there are some studies which stand out on this subject. First, most of these studies seem to address general pedagogical issues. These topics have been lecturers' and students' views on English education (Jiang et al., 2019), lecturers' and students' language proficiencies (Williams, 2015), comparisons of native and non-native English-speaking lecturers (Qiu & Fang, 2022), understanding of the content delivered, and the positive and negative effects of English use on their educational development (Phuong & Nguyen, 2019). As a result, we saw that although these studies have been on EMI, they have tended to focus more specifically on pedagogical aspects. These studies, the effects

of EMI on lecturers and students, and their thoughts on the subject have been outlined. In addition, the difficulties experienced by the instructors in conveying the academic content to the students in a language which is not their mother tongue and the reasons for these difficulties have been elaborated on. The difficulties of comprehending academic content in a language which the students have not yet mastered and the reasons for this have also been addressed. Finally, suggestions have been made for solutions to the problems caused by the EMI setting. In particular, it has been emphasised that EMI should be included in instructors' pre-service and in-service training programs.

Second, there are studies which have examined metadiscourse markers used by lecturers in EMI settings. These studies which emphasised classroom discourse in EMI settings addressed particular contexts, such as Korean (Williams, 2015), Italian (Molino, 2018), Malaysian (Ibrahim & Ahmad, 2020), Chinese and Spanish (Doiz & Lasagabaster, 2022), Spanish (Bernad-Mecho, 2017, in press, 2024; Bernad-Mecho & Fortanet-Gómez, 2019), Singaporean (Tang, 2017) and Turkish (Akbaş & Bal-Gezegin, 2022) since EMI research requires a context-sensitive understanding in particular academic settings. As a result of these studies, it has been reported that the metadiscourse functions helped the lecturers and had a positive effect on the students' understanding of the content. In addition, the researchers concluded that most lecturers are aware of the importance of using metadiscourse.

The current study bridges a gap in the existing literature by focusing on organizational metadiscourse markers used in EMI classrooms. Previous studies have explored EMI classroom discourse whereas the current study stands out by specifically examining the linguistic strategies which EMI lecturers employ to structure content delivery and enhance student understanding. Furthermore, previous studies often focused on specific contexts within EMI settings. Our research broadens the scope by encompassing the context of hard science classes. This wider scope allows a more comprehensive understanding of how metadiscourse markers are employed in diverse academic disciplines. Moreover, our application of the taxonomies of Vande Kopple (2012) and Tang (2017) to analyse metadiscourse markers contributes to the field of linguistics. By demonstrating how these taxonomies can be applied in an EMI context, we have created a practical example which future researchers can build upon. This study can serve as a stepping stone for further research in EMI classroom discourse. Future researchers might delve into

cross-cultural comparisons or explore the impact of metadiscourse markers on student engagement, expanding the knowledge base in this evolving field. In summary, therefore, the present study not only enriches the understanding of EMI classroom discourse in hard science classes within the Turkish context but also offers practical insights for educators, contributes to linguistic theories, and opens avenues for continued research.

1.3. Purpose of the Study

This study was designed to bring a different perspective to teacher talk in EMI for the Turkish context. For this purpose, we analysed the organizational metadiscourse markers used by the lecturers while conveying the academic content. In this regard, the research questions which shaped the design of the current study were as follows:

- RQ1. What are the most frequent organizational metadiscourse markers used by the lecturers in EMI classes at the tertiary level?
- RQ2. How does the use of organizational metadiscourse markers contribute to the lecturer's transfer of course content and management of course flow?

1.4. Assumptions

Within the scope of the study, some assumptions have been made. First, it is assumed that the research design described in the methodology section is compatible with the purpose of the study. Second, the way of transcribing the data is assumed to be valid and reliable. Finally, the way of analysis and the tool used are assumed to be appropriate for the design of the study.

1.5. Limitations

There are some limitations of this study. First, we analysed only two disciplines, Electrical and Electronics Engineering, and Maths from the hard sciences. In order for a wider comparison, soft sciences could be added to the research design. Another limitation of this study is that it is lecturer-oriented and students' comments are not included in the analysis. In future studies, a multi-faceted analysis could be carried out by including the comments of students in the analysis.

Also, this study focused only on organizational metadiscourse markers from the various metadiscourse function types. There are other types of metadiscourse function which are also important for classroom discourse analysis. Therefore, such metadiscourse markers could also contribute to helping lecturers to teach more effectively, and to helping to students to understand content better.

1.6. Definitions

Definitions of essential notions have been made in order to better understand the following sections.

English as Medium of Instruction (EMI): This refers to the use of English to convey academic content (other than English itself) in countries where the mother language is not English (Molino, 2018; Macaro et al., 2018).

English for Specific Purposes (ESP): This is the use of English for the specific needs of the learners (Hutchinson & Waters, 1987). ESP consists of English language teaching, which is related in content (in its themes and topics) to particular disciplines, occupations and activities (Johns & Dudley-Evans, 1991, p.298).

Classroom Discourse: This refers to all of those forms of talk which can be found within a classroom or other educational setting (Jocuns, 2012, p.1).

Metadiscourse: This is the commentary on a text made by its producer in the course of speaking or writing and it is a widely used term in current discourse analysis and language teaching (Hyland, 2017, p.16).

CHAPTER II

REVIEW OF LITERATURE

2.1. Introduction

English as a Medium of Instruction (EMI) has gained significant attention and popularity in the field of education globally. In this section, we discuss the definition and background of EMI as well as the international trend of its implementation in different educational contexts, especially in universities and HE institutions where courses and programs are offered in English to attract international students and foster multicultural learning environments.

2.2. English as a Medium of Instruction (EMI)

EMI is the use of English as an intermediary language for transferring the content related to departments in educational institutions of countries where the native language is not English (Molino, 2018). It is commonly defined as “the use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language of the majority of the population is not English” (Macaro et al., 2018, p.37). EMI is gaining importance with the effect of increasing internationalization and globalization (Akbaş & Bal-Gezegin, 2022; Akıncioğlu, 2022; Coleman, 2006; Phuong & Nguyen, 2019). It is thought that EMI is the main element of internationalization and it is an important step in modernization (Khan, 2013; Macaro et al., 2018).

Today, EMI is a trend which manifests itself at every stage of education and is rapidly spreading (Dearden, 2014). HE has the largest share of this growth (Brenn-White & Faethe, 2013; Smit, 2010; Wachter & Maiworm, 2014). Increasingly, many universities around the world are making great efforts to teach in English (Earls, 2016; Lasagabaster et al., 2014). If we are to say something clear about this issue, it is necessary for a university on the way to the internationalization of EMI. We can list these needs as the aim of universities to attract foreign students, the place of English in the private sector, the competition between the state and the private sector in this context, and the efforts of university professors to bring their work and research fields to the international level (Macaro et al., 2018).

EMI contributes to the communication between lecturers and students of different nationalities by crossing the language barrier. At the same time, it enables the integration of languages with different cultures in knowledge transfer. It enables students to develop English having a universal quality and to increase their level and competence in it. Considering the contribution of EMI to internationalization, students have opportunities for participation in exchange programs such as Erasmus+ (Coleman, 2006; Toprak-Yıldız, 2022) and also thanks to EMI programs, international students have access to jobs and can exchange ideas about different cultures (Galloway, 2020). Ekoç (2020) examined the EMI setting in HE and commented on the advantages and disadvantages of EMI: the advantages included easy access to various English-language resources and the opportunity to work or study abroad. On the other hand, students in EMI classrooms might have difficulties in understanding both linguistics and content. In addition, the lack of English proficiency of some teachers negatively affects learning in EMI classrooms.

Türkiye is a country where English is not the mother tongue but is taught as a second language, as is the case in, for example, China, Korea, Spain and Portugal. At a time when English has come to the fore in every field and is indispensable in almost every profession, universities have started to take steps towards internationalization in HE. Many universities, especially the Middle East Technical University (METU), have made English the language of instruction. Some universities have introduced 100% English education, whereas others have changed the language of instruction to 40% English (Kırkgöz, 2009). This situation has brought with it some requirements. Foreign-languages schools have been established to provide language support to departments and language proficiency to students with low levels of English. The intention of this is that when they start their own academic departments, they should not have difficulties in English-medium courses. The fact that the language of instruction is English and that different disciplines are transmitted through English led to the beginning of studies on the subject of EMI in Türkiye and its increase day by day.

2.3. Classroom Discourse in EMI Settings

Classroom discourse refers to the language and communication that takes place in a classroom setting between lecturers and students, as well as among

students themselves (Thoms, 2012). On the other hand, Jocuns (2012) offered a broader perspective on the concept of classroom discourse by acknowledging the various forms of communication that occur within an educational setting. He stated that the definition of classroom discourse is not limited to specific types of interaction but encompasses all forms of communication which take place in a learning environment. He suggested that the term 'classroom discourse' can be expanded to encompass 'discourse in educational settings' which indicates that the concept goes beyond traditional classroom boundaries. This expanded view recognizes that discourse in educational settings goes beyond formal lecturer/student interactions and includes a wide range of verbal exchanges, discussions and conversations among various participants, including students, lecturers and even peers. Finally, it is necessary to consider the wider context in which learning takes place and how communication shapes educational experiences. In this regard, the need to recognize and analyse the various forms of communication that contribute to the learning process in educational settings emerges.

Classroom discourses started to be analysed in terms of determining the lecturer's output for the lesson and making evaluations based on the language use of the lecturer in the classroom. These analyses were done initially, but rarely recorded classroom discourse. It is therefore difficult to reach the records of the 1970s, but in the following years, classroom discourses began to be recorded by means of cassette players and radio-microphones (Edwards & Westgate, 1994). Classroom discourses have gained importance with the realization of their effect on the lecturer/student relationship, the meaning and comprehension of what is explained, and their positive effects on the learning process. The tendency and interest in classroom language increased after a study by Barnes et al. (1969) entitled 'Language, the Learner and the School' (Edwards & Westgate, 1994). Limitations experienced by students in their discourse and in making meanings prompted many practitioners to think about the practices which they use and to analyse them. A lecturer listening to the recording which she made in her lesson said "The more I listened to the tapes, the less I talked in class, and the more my teaching energies went into devising contexts in which learners' talk could take place naturally and fluidly, without my having to interfere with it" (Edwards & Westgate, 1994, p.1). Furthermore, analysing lecturers' talk gives them greater awareness, which could contribute to their development (Sert, 2019). As can be seen, there are many benefits of recording classroom talks.

Listening to the recordings and transforming them into a format for analysis are of great importance for better effective classroom discourse and the self-evaluation of the lecturer in the classroom. Moreover, lecturers can contribute to research by making their own recordings (Martin, 1984). In the light of this, it can be understood that analysing the classroom discourse enables lecturers to make their courses better and to teach more effectively.

Classroom discourse is of great importance in EMI classrooms in order to ensure that the lesson content can be understood by the students and to enable effective teaching. Earlier studies were relatively limited in terms of the functional analysis of the classroom discourse created by the lecturers and students and how they communicate. Additionally, as has already been explained, previous studies which emphasized classroom discourse in EMI settings addressed very specific contexts, such as Italian (Molino, 2018), Chinese and Spanish (Doiz & Lasagabaster, 2022) and Korean (Williams, 2015) since EMI research requires a context-sensitive understanding in particular academic settings. Exploring how classroom discourse in the Turkish EMI context is established and managed by lecturers is relatively less researched (Akbaş & Bal-Gezegin, 2022), especially with a focus on communication built and signalled by the use of metadiscourse devices by lecturers.

2.4. Metadiscourse in Classroom Discourse

Metadiscourse is an important concept in terms of organizing the content of a lesson and reflecting the speaker's attitudes, beliefs and thoughts about the content (Tang, 2017). In addition, Hyland (2000) described metadiscourse as "the linguistic resources used to organize a discourse or signal the writer's stance toward its content or the reader" (p.109). Koople (2012) saw metadiscourse in terms of written texts. This draws attention to the importance of metadiscourse in texts in different languages and emphasises the importance of metadiscourse in the complex structure of language, its analysis and transmission. Bernad-Mecho (2017) stated that metadiscourse is a linguistic phenomenon which operates within a text to guide readers, shape a narrative and convey the author's stance. This essentially means language which comments on an ongoing discourse, serving various functions such as directing the reader's focus, signposting the structure of the text and revealing the writer's attitude towards the content. From the point of view of spoken discourse,

metadiscourse enables interlocutors to better understand and integrate the content. Lemke (1990) emphasized the role of interaction and content in classroom discourse and stated that metadiscourse is a very important strategy for teachers to manage the flow of activity and their talk. Reveles et al. (2004) defined metadiscourse as a tool which students use to get lecturers to talk about the scientific content which they want to convey and added that lecturers want to enable students to think like a scientist or a mathematician by stimulating their own thinking skills through metadiscourse. Reveles and Brown (2008, as cited in Tang, 2017) referred to “a type of metadiscourse designed to help students connect their past, present, and future science learning” (p.552) and identified text connective, activity connective and projection for this purpose.

Tang (2017) mentioned the features of metadiscourse which enable previous and future topics to contribute to the current topic, play a role in subject exchanges, and connect with the external environment. In this context, Tang (2017) analysed how teachers and students use metadiscourse functions by using video recorded data from a science classroom. He developed his own metadiscourse taxonomy which contained two headings: organizational metadiscourse (text connective, knowledge connective and activity connective) and evaluative metadiscourse (attitude marker, epistemology marker and interpretive marker). He divided them into sub-categories such as earlier conversation, prior knowledge, ongoing activity and so on. He emphasised that metadiscourse has vital importance in ensuring effective communication between lecturer and student in classroom discourse and in transferring and perceiving meaning.

One specific form of metadiscourse, known as organizational metadiscourse, assumes the role of structuring and organizing the discourse in a coherent manner (Bernad-Mecho, 2017). Organizational metadiscourse serves as a valuable linguistic tool used by lecturers to guide their students through the progress of a lecture. It helps the lecturer to signal the direction which they are taking, making it easier for listeners to anticipate the flow of information. This ensures that the content is presented in a logical sequence, fostering cohesion and clarity in the lecture. In academic lectures, different concepts and ideas are often interconnected. Organizational metadiscourse aids in establishing these connections by explicitly linking current content to previously discussed topics or upcoming points. This not

only enhances the overall coherence of the lecture but also helps students to grasp the relationships between different parts of the material (Bernad-Mecho, in press).

2.5. Earlier Studies on EMI Classrooms

Researchers have studied the EMI setting in which English is used to teach academic content at the tertiary level. Recent studies on EMI classrooms have emphasised general pedagogical aspects (e.g., lecturers' and students' language proficiencies (Williams, 2015), understanding of the content taught and the positive and negative effects of English use on their educational development (Phuong & Nguyen, 2019), lecturers' and students' views on English-medium education (Jiang et al., 2019) and comparison of native and non-native English-speaking lecturers (Qiu & Fang, 2022).

Williams (2015) examined published studies and research in South Korean HE and analysed the language proficiency of lecturers and students and the EMI support which it enabled. The findings showed that EMI learning and teaching had negative effects for both lecturers and students, and that this effect was due to the lack of adequate support for students and lecturers in line with their linguistic needs. As a result, it was stated that the impact of English-language teaching on lecturers and their needs should be taken into account. In addition, it was emphasised that students should be aware of the necessity of EMI courses and that this requirement might vary according to individual differences.

Phuong and Nguyen (2019) studied EMI by investigating students' perceptions of the EMI program at a university in Vietnam. They conducted qualitative and quantitative research through questionnaires and individual interviews. The findings showed that the EMI program had a positive effect on students. In particular, access to resources, improving English skills and contributing to their perspectives on job prospects showed the importance of EMI. On the other hand, low proficiency in English and lack of vocabulary were seen as the most significant difficulties experienced by students in the EMI program. Jiang et al. (2019) observed students' perceptions and how English was applied by lecturers in an EMI setting at a university in China, where academic content was taught through English. They examined the thoughts of lecturers on EMI and the motivation of students and discussed how lecturers taught lectures and the contribution of

additional English for specific purposes (ESP) courses to students' English insufficiency. They concluded that lecturers' perceptions of EMI negatively affected students' language learning and stated that ESP training would positively affect EMI learning in terms of both the instructor and the learner.

Qui and Fang (2022) approached EMI learning from a different perspective. They examined the behavior and results of native and non-native lecturers in EMI programs. The findings showed that students learned more effectively with different communicative methods in the courses given by native English-speaking lecturers. Nevertheless, it was found that they could not achieve a cultural gain. Local lecturers were able to share ideas about students' learning difficulties by establishing a cultural bond. However, these lecturers' courses were lecturer-centered.

In conclusion, it can be stated that earlier studies on EMI programs in the literature were about general pedagogical aspects. They emphasised lecturers' and students' perceptions and perspectives, as well as the positive and negative effects of EMI programs on lecturers and students. Furthermore, they pointed out what kinds of difficulty and shortcomings caused the negative effects. They made suggestions for the elimination of the problems and deficiencies.

2.6. An Overview of Context-Specific Studies on EMI Classroom Discourse

It has become very common to use English as a tool to convey course content in countries where the native language is not English. In EMI settings, where English is used as a medium of instruction, lecturers make use of various metadiscourse markers in order to teach the content to students better and improve their comprehension. Many researchers have therefore focused on classroom discourse in EMI classrooms in different contexts, and have also studied the metadiscourse markers used by lecturers. Next, I shall consider valuable studies which have analysed EMI classroom discourse in different contexts in order to identify any gaps in the literature. After that, I shall discuss in detail two significant articles which prompted the current study.

2.6.1. Some studies of EMI classroom discourse

Previous studies of EMI and the use of metadiscourse markers have focused on different metadiscourse functions in specific contexts (e.g., comparison of English

as a medium of instruction (EMI), English-aided instruction (EAI) and Turkish as a medium of instruction (TMI) (Sert, 2008) and have analysed EMI classes in Italy (Nardo, 2017; Molino, 2018), in Malaysia (Ibrahim & Ahmad, 2020), in Türkiye context (Akbaş & Bal-Gezegin, 2022; Ege et al., 2022) and in China and Spain (Doiz & Lasagabaster, 2022).

Sert (2008) brought a different perspective to the issue of EMI and examined it in an interesting concept. EAI means that lectures are taught in Turkish but materials and exams are in English and TMI means that all academic content is delivered in Turkish. Sert's (2008) study was carried out with data obtained from students and lecturers from three universities. The results showed that although the EMI setting contributed positively to the development of language skills it was nevertheless not successful in conveying the academic content effectively. Moreover, it was concluded that neither EMI, nor EAI nor TMI were adequate or effective in teaching academic content and teaching English.

Nardo (2017), working from the perspective of EMI, first gave information about the academic EMI setting in non-native English-speaking European countries and then addressed various teaching strategies in terms of EMI in academic lectures at an Italian university. Third, she examined the metadiscursive tools, which she called "signposting language markers", used by lecturers in the same academic lectures. The findings showed that students had difficulties in listening comprehension and that the most frequently used signposting markers were analysing markers, emphasising markers and sequencers. Another findingI was that the lecturers were aware of the importance of these signposting markers, which contributed to the effective use of EMI by explaining the content more easily, and to the comprehension of their students. Molino (2018) also studied the use of metadiscourse markers by lecturers teaching EMI classes at an Italian university. He analysed a corpus obtained from courses in Physical Sciences and Technology. He used Adel's (2006) metadiscourse taxonomy, which includes personal metatext and impersonal metatext. These metadiscourse markers were divided into sub-categories and he included students in the analysis by using audience interaction. The results showed that expressions of impersonal metatext used to organize the discourse, especially sentences formed with 'we', were frequently used. The most common expressions of impersonal metatext are 'saying and defining' markers such as 'call', 'question' and 'define'. Moreover, the frequency of use of various sequencers for

discourse organization under the title of phoric management attracted attention. Finally, it was determined that audience interaction was used less than metatext, and this use emerged when the lecturers drew the attention of the students to the lesson content.

Ibrahim and Ahmad (2020) conducted a metadiscourse analysis at the HE level in Malaysia by examining the functions of the metadiscourse tools used by non-native-speaking lecturers who taught engineering courses in English. They investigated metadiscourse markers under categories such as managing topics involving including topics, concluding topics and limiting topics, and managing phorics including reviewing, reminding, previewing and overviewing. The findings showed that the participating Malaysian lecturers were aware of the importance of using metadiscourse to enable students to understand the academic courses which they taught in English. In addition, it is found that students needed help in understanding and comprehending the lessons. On the other hand, the authors recommended that teaching the use of metadiscourse functions be added to the training programs for new lecturers. Finally, it was emphasised that it is important to strategically deploy metadiscourse functions for an effective course and to consider these functions in terms of managing topics and managing phorics.

Akbaş and Bal-Gezegin (2022) focused on the multifunctionality of the discourse marker ‘okay’ within classroom discourse in the context of EMI in Turkey. They investigated how a lecturer at an EMI university used the discourse marker and the functions which it served in facilitating communication and creating a dialogic space. The study used both corpus linguistics and conversation analysis methodologies to analyse a specialized corpus of mathematics lectures at the undergraduate level. It was found that the lecturer consistently used the discourse marker in a meaningful and engaging manner to achieve both educational and interactional objectives within the class. The findings also showed the distinctive use of the discourse marker just before providing translations of unfamiliar words or concepts in the target language. At this point, it can be understood that the usage of discourse markers in EMI classes draws students’ attention to unknown words which are not in their mother tongue and contributes to their comprehension of these words. The findings shed light on how the discourse marker was used by the lecturer to enhance communication, encourage engagement and create a conducive environment for learning within EMI classrooms.

Focusing on different strategies in EMI classrooms, Ege et al. (2022) analysed the discourse strategies used by seven faculty members from five different Turkish universities. The findings showed that the use of fillers, self-rephrasing and code-switching were the most frequently used devices. It was stated that the discourse strategies used were effective in eliminating language-related problems and in ensuring students' understanding of the content. On the other hand, the authors emphasised that in order for the strategies to lead to more effective benefits in terms of communication, importance should be given to the vocational training of the lecturers in this regard.

Doiz and Lasagabaster (2022) took a different approach to researching the EMI setting by comparing two corpora in terms of metadiscourse use in China and Spain. They examined the effect of metadiscourse markers on the organization of the course and the accessibility of the academic content to the students. The findings showed that the use of transition markers by the lecturers in both contexts was similar and that they used these markers most commonly. On the other hand, they found differences in the use of frame markers, reminders and code glosses. Reminders were used the least in the Chinese context whilst frame markers were used the least in the Spanish context. The authors commented that this might be due to the cultural differences between these two countries, the mother tongue used, the English proficiency levels of the lecturers, or their own style of expression.

2.6.2. Analysing teachers' use of metadiscourse: The missing element in the classroom discourse analysis carried out by Tang (2017)

Tang (2017), whose framework was used in the current study, analysed the metadiscourse markers used by primary and secondary school teachers in the field of science in Singapore context in their EMI classrooms. The primary school teachers were from the field of science, and the secondary school teachers were from the fields of physics and chemistry. He compiled data from classroom observation, video recording, field-notes, artifact collection, student focus group discussions and lecturer interviews. Since the focus was on classroom discourse, the main data of the study were collected from classroom videos. The study was carried out in three stages. In the first phase, the course videos were segmented in a meaningful way. These sections were categorised according to classroom activities. A list of course

activity types was prepared for further analysis. In the second phase, the sections were transcribed and coded. Three methods were employed for the analysis of the sections: interaction discursive, content-semantics and metadiscourse analysis. Temporary coding schemes were created for each expression. In the final phase, the codes from the previous stages were interpreted. The researcher emphasized that the codes should be interpreted together with the event, as there is a link between what was said before and what was said afterwards.

Interaction-discursive, content-semantics and metadiscourse analysis were the three methods of analysis used in that study. First, interaction-discursive analysis focused on the interactional aspects of classroom discourse, such as turn-taking, questioning and feedback, and how these aspects contribute to the development of scientific knowledge. Second, content-semantics analysis examined the propositional content or ideational meaning of the talk, such as the main semantic relationships among the words within an utterance or across several utterances within an initiate-response-evaluate (IRE) / initiate-response-follow-up (IRF) exchange. This method helped to identify the science content which the participants were constructing for that episode. Tang (2017) described the final method as follows:

The last analytical method was metadiscourse analysis, which identified and examined the parts of talk that were not used primarily for building science content (content-semantic analysis) nor managing the interaction with the students (interaction discursive analysis). This could include how teachers used talk to signal different parts of the talk (organizational metadiscourse) or reflect their stances, attitudes, and points of view toward the content (evaluative metadiscourse) (p.9).

He initially used Vande Kopple's (2012) framework involving text connectives, code glosses, illocution markers, epistemology marks, attitude markers and commentary. He then developed his own typology which comprised the categories of text connective, knowledge connective, activity connective, attitude marker, epistemology marker and interpretive marker. In this regard, his classroom analysis emphasized the importance of using metadiscourse functions in quality interaction, content development and transfer of the subject. In addition, he concluded that the lecturer in the classroom used metadiscourse frequently for opening and reviewing previous topics during the introductory phase. He drew attention to the use of metadiscourse by lecturers to initiate a topic or question,

interpret it and revise the discussion. At this point, it will be helpful to give some examples from his study to demonstrate the functions of metadiscourse:

- (1) What did we discuss earlier? (Tang, 2017, p.557).
- (2) Okay, we will learn more about the metal displacement reaction in the next few chapters. Likewise for electrolysis ... (Tang, 2017, p.558).

The researcher pointed out that text connectors are widely used by teachers. In *earlier conversation*, he referred to a past topic and used it to associate the current spoken topic with a previously spoken topic, as in example (1). Likewise, the teacher used future conversations to prepare students for a topic or idea which they will learn later, as in example (2). The author emphasised that earlier and future conversation text connectors have an important place in classroom discourse.

- (3) We need to start off with how it happens first, all right? And then we connect them using our theory which is the kinetic model of matter. And then finally we ... (Tang, 2017, p.558).

In example (3), the lecturer is guiding the flow of information by structuring the content in a clear sequence. By using the sequencers ‘start off’ and ‘first’, the lecturer indicates to the students that they will be starting with a foundational concept or step which serves as the initial point of discussion. The next sequencer, ‘And then’ maintains the sequential structure by introducing the second step in the discourse. This transition guides the listeners’ expectations, indicating that the following information will build upon the initial point. The use of ‘And then finally’ introduces the final part of the sequence, suggesting that the upcoming content will conclude the series of steps or concepts being discussed. This example illustrates how sequencer markers are employed to enhance the organization and coherence of discourse in an EMI classroom. They assist the lecturer in conveying complex information in a digestible manner for students, ensuring that each step is clearly understood before moving on to the next.

- (4) For *scenario 1a*, we were talking about two skaters pushing against each other ... And then when we moved on to 1b, where only Shen is pushing Henry ... And then we looked at scenario 2 when our spring balance was pulled (Tang, 2017, p.560).

Tang (2017) stated that in example (4), topicalizers (‘for’, ‘moved on to’ and ‘looked at’) draw attention to different topics and scenarios. This also shows that topicalizers can be used in conjunction with other text connectives such as earlier

conversation ('we were talking about ...') and sequencers ('And then'). Moreover, Tang (2017) emphasized that "Topicalizers play an additional role in condensing previously discussed information into short labels and then juxtaposing these labels for quick contrast and comparison" (p.560).

(5) So what we are trying to do here is ... Class, what we're trying to do here is, we are trying to match whatever that we know about solid, liquid, gas to the description here (Tang, 2017, p.558).

In example (5), the lecturer employs ongoing activity markers to clarify the purpose of the ongoing discussion and to engage the students in the learning process. The repeated introductory phrase 'So what we are trying to do here is ...' serves as an indicator that the lecturer is about to give an explanation or clarification. It primes the students to pay attention and prepares them for a concise summary of the current direction of the lecture. The subsequent address to the class, 'Class, what we're trying to do here is', reaffirms the ongoing activity marker and reinforces the lecturer's focus on engaging the students directly. This repeated personal address to the class creates a sense of involvement and emphasizes the collaborative nature of the learning experience. By utilizing ongoing activity markers in this example, the lecturer not only provides a clear roadmap for the ongoing discussion but also involves the students in the learning process. The markers help to bridge the gap between the lecturer's intentions and the students' understanding, facilitating active participation and comprehension within the classroom setting.

(6) Very good, all right? The forces of attraction have been overcome. So this is an important link between the two. So when you talk about molten state, you need to explain to me what do you mean by molten state. (Tang, 2017, p.559).

Tang (2017) stated that the attitude marker, which indicates the lecturer's stance towards the content, is the most common sub-heading of evaluative metadiscourse. He emphasised that the most frequently used attitude marker included in this group is 'importance'. The lecturer underlined how important it is to understand and remember the content with this marker. The lecturer also emphasised the importance of the content which he mentioned with the utterance 'So this is an important link between the two' (6).

(7) On page 159, your textbook will have explained this as well perhaps using another way of phrasing. However, the way for us to craft an answer in Physics, right, is the same. (Tang, 2017, p.560).

Another metadiscourse category which the author examined was interpretative metadiscourse. Paraphrase was the subtitle of this category and it was a metadiscourse tool used by the lecturer to help students to understand the subject better and to cover it from a different perspective. More specifically, the lecturer once again tells the subject or idea in a different way for the students to understand. e.g., ‘Let me put it another way’ or ‘What I’m trying to say here’ (Tang, 2017, p.564). In addition, as in example (7), sometimes the lecturer might want the students to see a different approach to a subject or idea by directing them to the expression of different sources.

Finally, Tang (2017) mentioned three stages, the opening stage, the developing stage and the reviewing stage, and evaluated these stages in terms of interaction-discursive, content-semantic development and metadiscourse. The opening stage was stated as the stage in which the lecturer began to make the explanation by making basic preparations. At this stage, it was pointed out that when the use of metadiscourse was high, student/lecturer interaction and content-semantic development were low, as in example (8). The developing stage was the stage in which the explanation was developed by working on the data obtained from lecturer and students’ opinions. It was stated that the use of metadiscourse was very low and content-semantic development was high, as in example (9). Finally, the reviewing stage was when the description was summarized and reviewed. It contained a high amount of metadiscourse usage, as in example (10).

(8) Let’s try to phrase it together, all right? (Opening, interaction-discursive, ongoing activity) (Tang, 2017, p.572)

(9) Okay, so what happens when the air particles are inside the balloon? Brad? (developing, interaction-discursive, content-semantic) (Tang, 2017, p.573)

(10) And then we connect them using our theory which is the kinetic model of matter (lecturer pointed at the boxes). (reviewing, interaction-discursive, sequencer) (Tang, 2017, p.574)

In conclusion, Tang (2017) argued that interaction-discursive, content-semantic development and metadiscourse should be analysed as a whole. The

widespread use of organizational metadiscourse drew attention in the findings. For this reason, it was emphasised that an analysis without organizational metadiscourse would be limited to only interaction and content analysis, which would ignore important results, and that metadiscourse has an important role in different stages of explanation.

2.6.3. Building successful communication in EMI contexts: a multimodal approach to organizational metadiscourse in intercultural lectures by Bernad-Mecho (in press)

Bernad-Mecho (in press) argued that the transmission of meaning in communication is achieved in more than one way and accordingly various metadiscursive tools are needed, and he emphasised organizational metadiscourse in EMI classes. He analysed the video recordings of three EMI lessons in a Spanish context in terms of organizational metadiscourse and also examined the effect of multimodal features such as gestures, facial expressions and head movement on communication. He found that the use of organizational metadiscourse and multimodal features in intercultural EMI courses enabled successful communication between lecturers and students.

(11) Around 11, we finish. And then, uh, you will have as always about 25, 30 minutes to rest. The break, and then we'll come back and, again, an additional hour to help us. (AE1013 – 00:25 – Contextualizing) (Bernad-Mecho, in press, p.13).

(12) Um, and this is the end of the exercise. So, with this last part, exercise one will be finished. (AE1013 – 1:04:15 – Concluding topic) (Bernad-Mecho, in press, p.13)

(13) Um, we will start our lab session solving this exercise from this, uh, solution. (AE1013 – 1:36:17 – Previewing) (Bernad-Mecho, in press, p.13)

Bernad-Mecho (in press) gave examples of the use of organizational metadiscourse functions in the EMI classroom. In example (11), the lecturer gave information about the general operation of the course. At the same time, organizational functions help to introduce the main topic by connecting previous material with future material and help students to have a general idea about the

lesson. Furthermore, the researcher stated that the use of metadiscourse tools decreased in the middle of the lesson period. These metadiscourse markers often referred to the transition to a new topic or idea, to the conclusion part, as in example (12), or to some part to review information. In these three examples, the author drew attention to the use of organizational metadiscourse functions for concluding, reviewing information or situation (example (13)), and referencing future lectures.

As a result, the author deduced that organizational metadiscourse is widely used in terms of introducing, reviewing, previewing and contextualizing a topic. It has been stated that most organizational metadiscourse tools are predominantly used in the structuring sections and subject transitions of the courses. In the structuring sections, he showed the prevalence of the use of multimodal ensembles such as paralanguage, gestures, gaze and facial expressions as support for organizational metadiscourse.

2.7. Summary and Research Gap

In this section, I have discussed studies of the discourse markers used by lecturers in EMI courses at university level. In these studies, the relations between non-native English-speaking lecturers and students in different contexts and in different academic departments and the discourse markers used in EMI settings were examined. I have addressed the questions of which metadiscursive tools the lecturers used, the purposes for which they used them, and how effective these markers were in conveying academic content. Likewise, through the consideration of these studies, I have underlined that the use of metadiscourse functions helped the lecturers and had a positive effect on students' perception of the content. Moreover, some researchers (Bernad-Mecho, in press; Tang, 2017) studied metadiscourse functions, specifically organizational metadiscourse, in EMI settings and pointed out that the organizational metadiscourse markers contributed to organizing the flow of courses, conveying the academic content effectively, drawing the students' attention and helping the students to comprehend the content better. Finally, some researchers (Ege et al., 2022; Ibrahim & Ahmad, 2020) stated that lecturers are aware of the importance of using metadiscourse markers and also that they need training on these markers for EMI courses.

To sum up, the current study was designed to present a different perspective from previous studies conducted within the scope of EMI by analysing the organizational metadiscourse markers used by the EMI lecturers in classes in the hard sciences (Departments of Electrical and Electronics Engineering and Maths) in the Turkish context. Additionally, the research sought to shed light on how these markers are employed to structure classroom communication and enhance the comprehension of academic content by students. The findings of the study are expected to contribute to a deeper understanding of EMI discourse strategies in a specific academic and linguistic context, thus enhancing the broader comprehension of effective teaching practices in internationalized educational settings.



CHAPTER III

METHODOLOGY

3.1. Introduction

In this chapter, information will be presented about the research design of the current study and the research questions will be set out. Following this, the procedures for data collection and data analysis will be explained in detail. The focus of the study is on the use of organizational metadiscourse functions in EMI classes by the lecturer. In this section, the metadiscourse tools which will be used in the study will be described, justified and exemplified.

3.2. Research Design

In the design of any research project, the research method should first be determined. There are three different research approaches: qualitative, quantitative and mixed methods (Creswell et al., 2017; Ortiz & Greene, 2007). The qualitative approach is used to examine and interpret a phenomenon in detail and involves the collection, analysis and evaluation of non-numerical data such as images, observations and audio recordings in order to gain an insight into the behavior, thoughts and beliefs of individuals or groups (Hesse-Biber, 2010; Starman, 2013; Teherani et al., 2015). “The quantitative approach is based on collection and analysis of numerical data using statistical methods” (Aliaga & Gunderson, 2000, as cited in Almalki, 2016, p.3). In this research type, the researcher should put forward a hypothesis which can be tested and he/she should interpret the research based on empirical data (Almalki, 2016). The mixed research method can be defined as a combination of the qualitative and quantitative techniques (Johnson et al., 2007). The current study falls within the scope of the qualitative research approach because the data obtained from video recordings were analysed and interpreted within the framework of the researcher’s own subjective views without using numerical and empirical values.

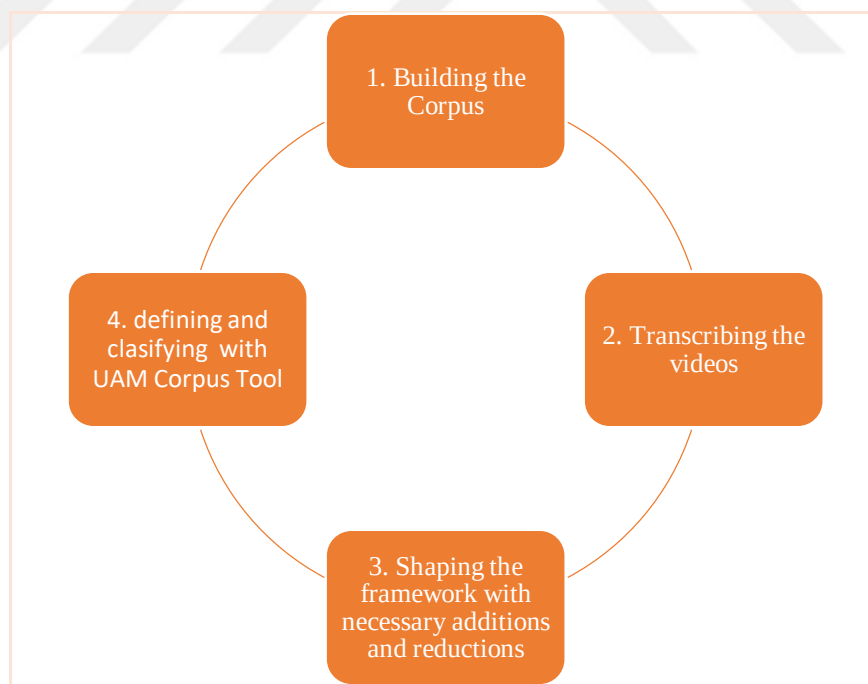
It will be useful first to define corpus linguistics and corpus-based research. First, a corpus is a collection of texts that can be accessed by electronic means and stored in various databases. Nardo (2017) defined corpus linguistics as “a systematic

and computerised collection of authentic language used for linguistic analysis” (p.63). McEnery, Xiao and Tono (2006, as cited in Taylor, 2008) stated that “corpus linguistics is a whole system of methods and principles of how to apply corpora in language studies and teaching/learning, it certainly has a theoretical status. Yet, theoretical status is no theory in itself” (p.180).

A corpus-based approach is a research methodology which involves analysing large collections of authentic language data, known as corpora, to identify patterns and regularities in language use. In the context of discourse markers, a corpus-based approach involves analysing spoken or written language data to identify the frequency, distribution and functions of different discourse markers in different contexts. This approach enables researchers to draw firm conclusions from the analysis of spoken and written language data and to obtain more reliable results (Ding & Wang, 2015). A corpus-based approach was therefore adopted for the current study. Figure 1 presents the design of the research.

Figure 1

Overall view of the research design



In this study, we examined the use of metadiscourse markers by lecturers in EMI settings at the tertiary level. We focused on the usage of organizational

metadiscourse markers in the Turkish context. For this purpose, we shaped the study to address the following two research questions:

- RQ1. What are the most frequent organizational metadiscourse markers used by the lecturers in EMI classes at the tertiary level?
- RQ2. How does the use of organizational metadiscourse markers contribute to the lecturer's transfer of course content and management of course flow?

3.3. Data Collection

For the purpose described above, we compiled a corpus of EMI lectures at the tertiary level of Middle East Technical University at an online platform (METU Open-Courseware) on YouTube, which contained approximately 150,000 words. In order to use video recordings to facilitate the study's purposes, the required permissions were obtained by contacting METU's Audio-visual Systems Research and Applications Centre (GİSAM). The data involved two lecturers from the hard sciences; the Department of Electrical and Electronics Engineering and the Department of Maths. We selected courses with better sound and image quality. The transcriptions of the videos were downloaded by utilizing the subtitle feature of YouTube, and then the researcher checked the transcriptions manually. After the transcription, the data were converted to a computer-readable form in order for statistical analyses to be performed.

3.4. Data Analysis

The framework used in this study came from Tang's (2017) original framework. Some new categories which emerged during the data analysis were added owing to the nature of the data. The new categories which were not included in Tang's (2017) original framework are shown with an asterisk in Figure 2.

Figure 2

Main and sub-categories of organizational metadiscourse functions



The reason why Tang's (2017) framework was adopted and revised for the present study was because it allows comprehensive and detailed taxonomy for organizational metadiscourse. Originally Tang (2017) took the idea from Vande Kopple (2012) whose framework included text connectives, code glosses, illocution markers, epistemology markers, attitude markers and commentary. Tang (2017) modified this framework and produced his own taxonomy by dividing it into two broad categories, organizational metadiscourse and evaluative metadiscourse. For the present study, a taxonomy was used which consisted of a combination of metadiscourse markers selected from the taxonomies of both researchers and focused on organizational metadiscourse markers. In addition, some sub-categories which were noticed during the analysis of the existing data were added to the framework of the study in light of the literature review. This resulted in a new model with new categories designed specifically for the current study. The organizational metadiscourse functions will be explained in detail. The functions of the

organizational metadiscourse markers used by the two lecturers were analysed and discussed by dividing them into sub-categories. These discourse markers were defined, classified and coded using UAM Corpus Tools 3.3 collection tools which enabled the researcher to annotate the data manually and to tag the sentences in the data by using categories identified in different layers. Furthermore, this tool presented general text statistics, comparative statistics and additionally the frequency of use of the categories in the study per 1000 words regarding their use in each course. During the data analysis, the data were regularly re-analysed and the annotations were regularly checked.

In this chapter, the methodology chosen for this study has been presented and justified and the framework used in the study has been described. What must be taken into consideration when designing any research project was explained, and then the research questions which guided the current study were set out. The HE institution where the data were collected and the method of collection were then explained. Finally, the data analysis process and the tool used for the analysis were described.

CHAPTER IV

FINDINGS

4.1. Introduction

This section presents the qualitative findings, visual elements and interpretations from the analysis of the study. Each metadiscourse marker is defined and presented according to the framework described in the previous chapter. The numbers and frequency of organizational metadiscourse functions are identified and discussed.

4.2. The Types of Organizational Metadiscourse Marker

As explained above, a revised version of Tang's (2017) taxonomy was used to analyse the spoken discourse used by the lecturers in two EMI classrooms. This taxonomy consisted of categories and sub-categories. In this context, organizational metadiscourse consists of three main headings: text connective, knowledge connective and activity connective. Table 1 shows the main and sub-categories of organizational metadiscourse, their functions, and examples from the data.

Table 1

The Types of Organizational Metadiscourse Marker

<i>Category/Sub-category</i>	<i>Function</i>	<i>Examples from the corpus</i>
<i>A. Text Connective</i>	<i>To connect the parts in a conversation</i>	
Earlier Conversation	About a previous conversation	Let's start today by doing a quick review of <u>last time</u> .
Future Conversation	About a future conversation	<u>We will explore this later on.</u>
Sequencer	To connect parts of a speech in sequence	<u>First of all</u> we call this a typical signalling because we are sending the two opposite poles, one and minus one.
Topicalizer	To focus on a specific topic or part of the conversation	<u>Look at</u> Phi of negative ABY symmetry, it must be exactly the same as this area here from A up to infinity
Closure	To highlight the closing in a conversation	Ok, <u>this is the end of our hour.</u>

Table 1 continued		
<i>B. Knowledge</i>	<i>To connect the knowledge</i>	
<i>Connective</i>	<i>to the current conversation</i>	
Prior Knowledge	To indicate the prior knowledge	<u>You are familiar with</u> the basic notions of geometry
Apply Knowledge	To apply the knowledge to a current situation in a conversation	<u>You can apply</u> the cosine rule in the triangle ZAB.
<i>C. Activity Connective</i>	<i>To connect a conversation to activities engaged in by participants</i>	
Ongoing Activity	To highlight actions that are or will be performed	<u>What are we looking for?</u> <u>We are looking for</u> the number of integers from the total number of integers staying in their original locations.
External Activity	About activities outside the class	<u>I start driving to work every day at some randomly chosen time from eight a.m. to eight thirty.</u>
Announcing an Activity	About announcing forthcoming events, transitions or changes	<u>I invite you</u> to think about the following question.
<i>D. Exemplification</i>	<i>Highlight the Examples</i>	<u>Here is an example</u> that I think is interesting and fun regarding the expectation of the binomial random variable.

Note 1. From ‘Analyzing teachers’ use of metadiscourse: The missing element in classroom discourse analysis.’ *Science Education*, 101(4), 548-583. by Tang, K. S. (2017) in <https://doi.org/10.1002/sce.21275>

Note 2. Metadiscourse functions are underlined.

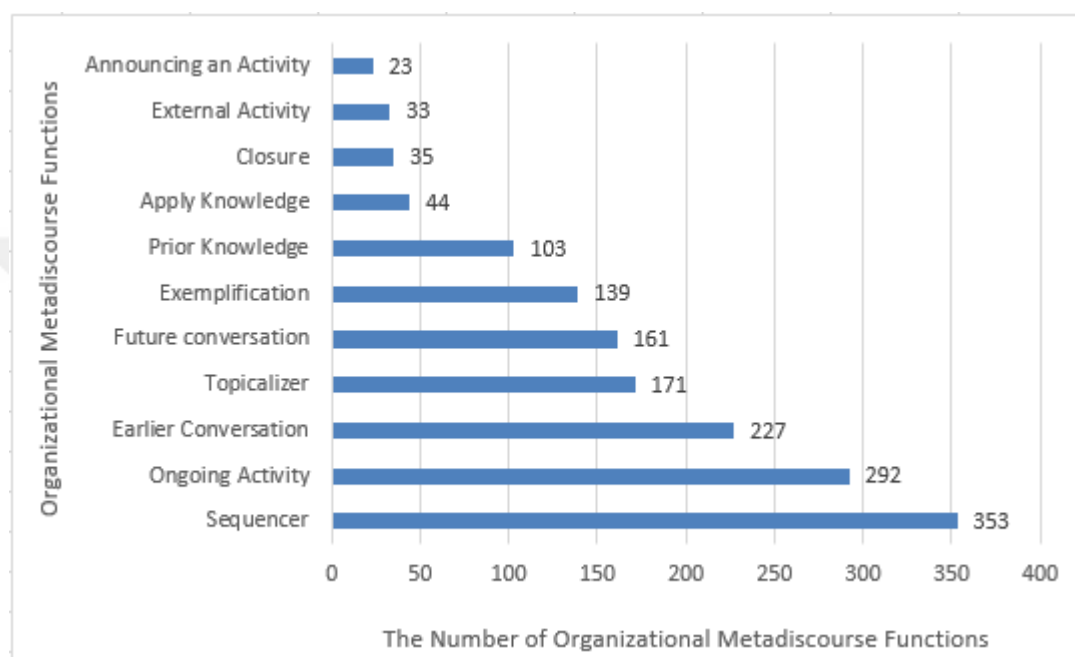
4.3. An overview of the Most Common Organizational Metadiscourse Markers

The corpus collected from 32 lectures and the transcription of the data contained 150,617 words. In total, 11 organizational metadiscourse markers types and 1581 organizational metadiscourse functions were identified in the spoken discourse of the lecturers. Although the emergence and frequency of organizational metadiscourse markers use differed in each spoken discourse of the lecturers, one in particular (i.e., sequencers) was preferred by both lecturers. In Figure 3, the number of organizational metadiscourse markers is represented ranking from the most to the

least frequent ones, that is, use of sequencer (n = 353), ongoing activity (n = 292), earlier conversation (n = 227), topicalizer (n =171), future conversation (n = 161), exemplification (n =139), prior knowledge (n = 103), apply knowledge (n =44), closure (n =35), external activity (n = 33) and announcing an activity (n = 23).

Figure 3

The Numbers of Organizational Metadiscourse Functions in the data



Since a corpus of 150,617 words was used, the normalized frequency of the organizational metadiscourse markers was calculated based on the markers' occurrences per 1,000 words which is shown in Table 2. From Figure 3 and Table 2, it can be seen that the numbers of sequencers and the frequency of their usage in 1000 words were higher compared with other markers. Likewise, ongoing activity appears to be in the second place. In the light of this finding, it can be concluded that both organizational metadiscourse marker types have great importance in EMI classrooms. It can be stated that the use of earlier connective markers was clearly high. On the other hand, it can be said that announcing an activity had the lowest number and frequency of usage.

Table 2*Frequency of organizational markers within the corpus*

Organizational Metadiscourse Functions	Number per class	Frequency per 1000 words
Sequencer	11.03	2.33
Ongoing Activity	9.12	1.93
Earlier Conversation	7.09	1.50
Topicalizer	5.34	1.13
Future conversation	5.03	1.06
Exemplification	4.34	0.92
Prior Knowledge	3.21	0.68
Apply Knowledge	1.37	0.29
Closure	1.09	0.23
External Activity	1.03	0.22
Announcing an Activity	0.71	0.15

As can be seen in Table 2, the number of organizational metadiscourse markers per class supports the results. Sequencer markers per class had the highest number over other markers. Additionally, ongoing activity and earlier conversation connectives follow respectively. Comparison of the main categories shows that the text connective markers had the highest value among the others (see Table 3).

Table 3*The numbers and frequency of main categories in organizational metadiscourse functions*

Organizational Metadiscourse	Number	Frequency per 1000 words
Text Connective	953	6.29
Knowledge Connective	149	0.98
Activity Connective	352	2.32
Exemplification	139	0.92

4.4. The Functions of the Organizational Metadiscourse Markers

In this section, the organizational metadiscourse functions analysed within the scope of the study are described in detail. Examples suitable for these definitions were taken from the acquired data and interpreted. The detailed explanation of the organizational metadiscourse markers used by the EMI instructors and the examples selected help to express the results of the study in a clearer and more understandable way.

4.4.1. Text connectives

The most common category of organizational metadiscourse was the text connective. It is used to indicate how parts of texts are linked together. The use of text connectives had the highest frequency of all types of organizational metadiscourse marker, as seen in Table 2. They comprise earlier connective, future connective, sequencer, topicalizer and closure.

4.4.1.1. Earlier conversation

Text connectives to previous talk are very common because lecturers frequently use the phrase ‘Last time we talked about ...’ to remind students of a previous topic or prepare them for a new topic at the beginning of the class. They can also be used by a lecturer to remind the students about some specific idea or notion by saying ‘Remember this, I told you!’ during the ongoing conversation. The use of earlier conversation was the third most frequently used organizational marker type by the instructors in their spoken discourse, as shown in Table 2 and Figure 2. Lecturers usually seek to prepare students for a class by reminding them about previous topics at the beginning of the class. In addition, this device uses various earlier conversation functions in order to bring students’ background knowledge to the forefront and to establish a relationship with the current lesson between lessons.

(14) In my last lecture, I talked about what I like to call basic features of the classical triangle. (Geo_Wk_3.1.)

In example (14), the earlier conversation connective ‘In my last lecture’ is used to establish a link between the current topic being discussed and the preceding lecture. This marker serves as a reminder to the students about the content covered in the previous class, specifically addressing the ‘basic features of the classical triangle’. By referencing the earlier discussion, the lecturer wants to refresh the students’ memory, establish continuity and create a sense of progression in the subject matter. This approach is valuable for building a coherent and cumulative learning experience.

(15) Remember we define(d) conditional expectation last time (PRV_Wk_7.1.)

The earlier conversation connective ‘Remember’ functions in example (15) as a direct prompt to bring the students’ attention back to a specific concept previously covered – in this case, the definition of ‘conditional expectation’. The addition of ‘we define(d)’ emphasizes that this definition was discussed in the past. By invoking the earlier conversation, the lecturer wants to activate the students’ memory and background knowledge, preparing them for the current lesson which is likely to build upon the concept of conditional expectation. This technique helps to establish connections between different class sessions and assists students in assimilating new information within an existing framework.

(16) All right; last time we talked about conditional probability, Bayes’ Rule and total probability theorem and we saw the number of interesting problems. (PRV_Wk_3.2.)

The lecturers often used earlier conversation connectives at the beginning of the class. The aim in example (16) was to remind the students about the topic which they had discussed in the previous lesson and to prepare them for the current lesson. At the beginning of the class, the adaptation of the students can be very low. To attract their attention and to prepare them for the new topic are some of the goals of the lecturers who used earlier metadiscourse markers. Furthermore, they sought to help their students to link between the previous topic/idea and the current talk. Finally, the use of earlier conversation connectives serves to tie the current discourse to previous discussions, providing context and continuity, and aiding students in recalling relevant concepts. This strategy not only supports students’ understanding but also reinforces the structure and coherence of the course material.

4.4.1.2. Future conversation

Future conversations with text connectives are used to prepare the students for a topic which they will learn later. Another purpose of future conversation connectives to inform the students about an idea will also be discussed. In this case, the lecturer sets the stage for what the students will learn in the course of the lecture.

(17) You will know what a line is, what a point is, what an angle is what circles are, what conic sections are, so on and so forth. (Geo_Wk_1.1.)

The phrase ‘You will know what a line is, what a point is, what an angle is, what circles are, what conic sections are, so on and so forth’ in example (17) serves as a roadmap for the upcoming content. By using the phrase ‘You will know’, the lecturer employs a future conversation connective to convey to the students that they will acquire knowledge about these concepts as the lecture progresses. Moreover, the inclusion of ‘so on and so forth’ suggests that the list is not exhaustive, further intriguing the students by implying that there is more to explore beyond what has been explicitly mentioned. In sum, the use of future conversation connectives in this example serves to orient the students towards the upcoming content, fostering anticipation and engagement while also outlining the scope of the lecture’s coverage.

4.4.1.3. Sequencers

Tang (2017) described a sequencer as “another type of text connective which connects parts of a conversation in a sequence with some conjunctions (e.g., first, then), words with temporal meaning (start, later on)” (p.557). In the current study, the most frequently used organizational metadiscourse marker by the lecturers was the sequencer. We can understand that sequencers play an important role in the organization of a discourse because lecturers have to convey topics, ideas and notions in a sequence in order for the students to comprehend them easily and completely. Furthermore, conveying the content in an order enables the lecturer to organize the discourse.

(18) I would like you to consider as my first remark; my second remark is actually a very nice exercise in elementary geometry. (Geo_Wk_1.2.)

(19) First of all we have Y which is the lifetime of the light bulb and what is my observation? (PRV_Wk_10.3)

(20) The final thing we will do today is give a name to the PDF in the example. (PRV_Wk_8.1.)

(21) Let me show you how it is done. Let’s start with the fact that the area of triangle ... (Geo_Wk_3.2.)

The sequencer ‘first’ in example (18) indicates the initial point of the discussion, introducing the concept of a ‘first remark’. The lecturer then progresses to ‘my second remark’, establishing a sequential framework. This structured approach aids students in following the lecturer’s train of thought. The use of ‘First

of all' in example (19) clearly marks the commencement of a series of points or concepts. The sequencer guides students through the first point about 'Y', creating a basis for understanding before moving on to further explanations. The lecturer's use of 'The final thing' in example (20) reinforces the sequential structure by indicating the conclusion of the presented content. The phrase 'Let's start with' in example (21) functions as a sequencer, introducing the beginning of the discussion on the area of a triangle. This preparatory statement creates a context for the forthcoming topic. In all these examples, the sequencer markers help the lecturers to present their ideas coherently and logically. They ensure that the content is comprehensible by signaling the order in which information will be presented, which is especially crucial in educational contexts such as EMI where clarity and effective communication are paramount.

4.4.1.4. Topicalizers

The next type of text connective is topicalizers, which are words that focus attention on a particular phrase. Tang (2017) defined topicalizers as words which "are frequently used to reintroduce information that was previously discussed, connect bits of information to one another, or mark a change in the topic of discussion" (p.560). Additionally, topicalizers are used to signify a change in the topic of discussion, helping both lecturers and students to navigate through the evolving content. These markers not only enhance the overall organization of the discourse but also contribute to the comprehension and engagement of students within educational settings.

(22) Look at this very thin triangle. This angle is alpha, this angle is gamma.
(Geo_Wk_1.1.)

(23) If you look at this disjoint distribution, X is exactly as likely to be to the right hand side of the x equals zero line as it is to be on the left.
(PRV_Wk_10.1.)

In example (22), the topicalizer 'Look at' is used to direct the students' attention to the subject of discussion, which is the 'very thin triangle'. The phrase 'Look at' serves as a command, indicating that the students should pay close attention to the triangle being described. The use of the topicalizer helps to guide the students' focus to the specific details being presented. In example (23), the

topicalizer ‘look at’ functions similarly to the previous example, drawing the students’ attention to the ‘disjoint distribution, X’. The topicalizer helps to establish the context for the discussion of the distribution’s characteristics.

(24) Let’s move over to the first second order that we will define which is variance. (PVR_Wk_5.1.)

In example 24, the topicalizer ‘Let’s move over to’ serves as a transitional phrase that directs the students’ attention from the current topic to a new topic, which is the ‘first second order’ being defined. The phrase signals a shift in focus and prepares the reader for the upcoming explanation of the concept of variance. The topicalizer aids in the smooth transition between different concepts within the text.

4.4.1.5. Closure

Closure markers serve as essential linguistic cues which signal the conclusion of a conversation or segment of discourse. As the discourse nears its end, closure markers play a pivotal role in indicating to both the lecturer and the students that the topic under discussion is wrapping up. By utilizing closure markers, lecturers can effectively guide the conversation towards a natural end point, enabling students to mentally process and consolidate the information presented.

(25) That brings us to the end of this hour. (PRV_Wk_8.1.)

In example (25), the closure connective marker ‘That brings us to the end of this hour’ is used to signal the conclusion or wrap-up of the current discussion. It functions as a clear indication that the topic being discussed has been covered and that the conversation is coming to a close. The phrase ‘brings us to the end’ emphasizes the transition from the ongoing discourse to the final moments of the hour. By employing this closure connective marker, the lecturer effectively informs the students that the current segment of the conversation is concluding, enabling them to mentally prepare for the end of the interaction. Closure markers such as this help create a sense of organization and structure to the discourse, guiding the audience through different stages of the conversation and facilitating a smooth and coherent flow.

4.4.2. Knowledge connectives

The second category of organizational metadiscourse is the knowledge connective, which creates a link between students' knowledge and the content of the speech. Tang (2017) commented that "Such linkages are very common as teachers relate to students' prior knowledge or get students to apply knowledge to the current conversation" (p.551). Prior knowledge connectives can be confused with earlier conversations from text connectives discussed earlier. In both, the lecturer seeks to make a connection between the ongoing speech and the past by referring to a previous subject or knowledge again. The intention of this is to increase the students' interest in and understanding of the subject. If the lecturer talks about knowledge which the student learned a long time ago, such as in high school or a few years ago, within the scope of the current topic and wants to remind them of this, s/he prefers the use of a prior knowledge connective, as in example (26). On the other hand, if the lecturer wants to remind them of something in the recent past, such as the previous lesson or the lesson a week ago, s/he uses earlier conversation connectives, as in example (27). In addition, Tang (2017) stated that the, "knowledge connective is also dependent on the audience (i.e., students' knowledge). As text connective is located in the text, it is independent of the audience" (p.561).

(26) You must have come across at some time in your career as a part of elementary geometry and you must have seen some applications of it (Geo_Wk_3.1.) (Knowledge connective - prior knowledge)

(27) In my last lecture I talked about what I like to call basic features of the classical triangle. (Geo_Wk_3.1.) (Text Connective – earlier conversation)

4.4.2.1. Prior knowledge

Prior knowledge refers to the establishment of a connection with the current subject by bringing knowledge that the student has acquired or learned in the past to the agenda again. The lecturer wants to make the students brainstorm and activate their minds by reminding them of their previous knowledge. Moreover, the lecturer checks the students' previous learning and associates it with the subject which s/he is currently talking about or will talk about so that the students can better understand it.

(28) Do we already know these marginals? (PRV_Wk_7.3.)

In example (28), the prior knowledge connective marker ‘Do we already know’ is used to establish a connection between the current topic (marginals) and knowledge which the students might have acquired in the past. By posing the question, the lecturer is prompting the students to recall and retrieve their existing understanding or familiarity with the concept of ‘marginals’. This not only engages the students’ prior knowledge but also serves as a bridge between what they already know and the subject being discussed. The use of the connective marker encourages active participation and helps students to relate their prior learning to the current context, aiding their comprehension and retention of the new material.

(29) You are familiar with basic facts about elementary Euclidean Geometry.
(Geo_Wk_1.1.)

In example (29), the prior knowledge connective marker ‘You are familiar with’ explicitly acknowledges the students’ pre-existing knowledge about a specific topic – in this case, ‘basic facts about elementary Euclidean Geometry’. By affirming the students’ familiarity, the lecturer establishes a link between their prior learning and the forthcoming discussion. This approach helps to create a sense of continuity and relevance, as the students are reminded of what they already know before embarking on more advanced or related concepts. The connective marker contributes to a smoother transition from past knowledge to the current subject matter, enabling students to build upon their existing understanding and facilitating a deeper engagement with the subject. In summary, prior knowledge connective markers serve as valuable tools for educators to activate and leverage students’ existing knowledge, making the learning process more meaningful and effective. These markers bridge the gap between the familiar and the new, helping students to connect the dots and facilitating a more comprehensive grasp of the subject matter.

4.4.2.2. *Apply knowledge*

The lecturer uses applied knowledge connectives to help students to apply something which they already know to the current situation. These markers serve as instructional tools which bridge the gap between theoretical understanding and practical application. They empower students to transfer their knowledge effectively, fostering a more holistic and active approach to learning.

(30) The perpendicular bisector is in fact exactly the set of points which are equidistant to the two extreme points of the line segment right so that is a very simple thing; now let's apply this to the triangle. if you take a triangle ... (Geo_Wk_1.1.)

In example (30), the apply knowledge connective ‘apply this to the triangle’ is used by the lecturer to guide students in utilizing a previously introduced knowledge or idea and incorporating it into the context of the current discussion, which involves a triangle. By using the term ‘apply this’, the lecturer is prompting students to take what they have learned or understood earlier and use it to analyse, solve or understand the properties or characteristics of the triangle under consideration.

The apply knowledge marker serves as a directional cue, indicating that the knowledge being referred to has a practical application in the specific scenario of examining a triangle. This approach not only reinforces the relevance of the prior knowledge but also demonstrates its utility in real-world or problem-solving situations. By encouraging students to apply what they know to new contexts, the lecturer enhances their critical thinking skills and helps them develop a deeper understanding of how concepts interrelate and can be employed to address different challenges or tasks.

4.4.3. Activity connectives

The third category of organizational metadiscourse is the activity connective, which refers to the action process in which the participants are currently engaged. It is different from text connectives and knowledge connectives since it does not have linkage to the past or the future or to any specific knowledge. It is concerned with students’ current actions and work processes (Tang, 2017).

4.3.3.1. Ongoing activity

The most common type of activity connective is ongoing activity. With these metadiscourse markers, lecturers express the activities which they are currently performing and what they want their students to do. In addition, ongoing activity markers are used to attract students’ attention and activate their participation in the

class. In the findings of this study, the second most frequently used organizational metadiscourse marker type was ongoing activity.

(31) I'm talking about the angle between lines and not about half lines or rays.
(Geo_Wk_1.1.)

In example (31), the ongoing activity marker 'I'm talking about' is used to indicate the ongoing discourse action of the lecturer. The marker helps to maintain a clear and coherent flow of the lecture by highlighting the specific topic being addressed. It is a way to draw attention to the current discussion and focus the students' attention on the concept of 'the angle between lines' while distinguishing it from related concepts such as 'half lines' or 'rays'. This use of metadiscourse helps to guide students' understanding and clarifies the subject matter.

(32) It is discrete random variable and it takes two possible values, okay. Let's plot the PMF of the random variable X. (PRV_Wk_5.1.)

The ongoing activity marker 'Let's plot' in example (32) serves as a directive to initiate an activity. In this case, it prompts students to take action by plotting the PMF of a random variable X. The use of this marker encourages student engagement and participation in the learning process as it clearly indicates the specific task they are expected to perform. It also helps to organize the lecture's content by breaking it down into actionable steps.

(33) What are we trying to do? We are trying to find S which is R to the A plus to the A plus one all the way up to R to the B. (PRV_Wk_4.2.)

In example (33), the ongoing activity marker 'We are trying to find' serves to explain the current goal or objective of the lecture. It creates a sense of direction and purpose, indicating that the lecture is about the process of finding a value represented by 'S', which involves a series of calculations described as 'R to the A plus to the A plus one all the way up to R to the B'. This metadiscourse marker helps the students to grasp the purpose of the upcoming content and primes them for the information that follows. In all these examples, ongoing activity markers are used to guide the students' attention, outline the tasks or objectives, and create a coherent structure within the lecture. They serve as signposts for the ongoing discourse, making it easier for students to follow and engage with the subject being presented.

4.3.3.2. *External activity*

Another type of activity connective is external activity which is related to activities which take place outside the class. Lecturers connect the subject with an out-of-class example or activity so that the students can better understand and contextualize the topic. In this way, the students can more easily visualize and make sense of the described content. In example (34), the lecturer gives examples from daily life while explaining probability. The same lecturer utilizes an image from a movie by expressing the speed of The Iron Man in example (35). Moreover, lecturers make references to types of topic from the real-world which the students are familiar with, such as popular places, as in example (36).

(34) I start driving to work everyday at some randomly chosen time from eight a.m. to eight thirty. (PRV_Wk_8.1.)

(35) We have two examples in this topic coming from the world of fantasy fiction. This is the one the speed of Iron Man flying past an air traffic radar [which] is modeled as an exponentially distributed random variable with a mean two hundred kilometers per hour, pretty fast. The radar sensor will measure the speed of any targets within within an additive error. (PRV_Wk_10.1.)

(36) The annual snowfall at Elmadağ Mountain in Ankara is modelled as Gaussian random variable with a mean of a hundred and fifty centimeters. (PRV_Wk_9.1.)

External activity markers enable the lecturer to express the current topic or idea easily. Additionally, they help the students to comprehend the topic/idea explained by means of outside things with which they are familiar. Moreover, by anchoring classroom discourse to recognizable external activities or examples, lecturers empower students to relate, comprehend and apply the presented content in a more holistic and meaningful way.

4.3.3.3. *Announcing an activity*

Announcement activity markers fulfill a straightforward yet vital role in guiding classroom communication. As their name suggests, these markers are employed to announce forthcoming events, transitions or changes within the instructional setting. By using announcement markers, lecturers can seamlessly

inform students about shifts in the discourse or upcoming activities, fostering a sense of preparedness and engagement. For instance, a lecturer might use an announcement activity marker to signal the introduction of a new topic for the next session, providing students with a glimpse of what to expect and encouraging them to mentally prepare for it. This proactive approach helps learners to focus their attention and align their expectations with the educational agenda. Similarly, announcing an activity can be related to the beginning or end of the event, as in example (37) or it can be used to indicate a direction in an ongoing activity, as in example (38). Incorporating announcement activity markers into discourse not only facilitates the logistics of the educational experience but also fosters an environment of transparency and clarity. By clearly announcing events or transitions, lecturers demonstrate their commitment to open communication and give students the necessary information to actively participate and stay engaged in the learning journey.

(37) I will actually stop here and give you one or two applications of not the cosine rule but the Stewart's relation itself. (Geo_Wk_3.2)

In example (37), the announcement marker 'I will actually stop here and give you' is used to signal the conclusion of one segment of the lecture and the beginning of a new phase or activity. The marker indicates that the lecturer is transitioning from discussing a particular topic (possibly the cosine rule) and will now introduce and explain applications of Stewart's relation. By using this marker, the lecturer manages the flow of the lecture, prepares the students for a shift in content, and gives a clear structure to the presentation.

(38) I invite you to think about the following question. Now what happens if you don't take the triangle ABC, but let's say take the triangle HBC? (Geo_Wk_1.2)

In example (38), announcing the activity marker 'I invite you to think' fulfills the role of guiding classroom communication by directing the students' attention to a specific activity, which is thinking about a question. The example serves the purpose of informing students about the upcoming activity of thinking about a question. It lets them know that there is a change or transition in what they should focus on.

Announcing an activity marker gives clarity about transitions, responsibilities and the scope of the activities, ensuring effective communication and facilitating the students' comprehension and engagement. Although these markers play a crucial role

in guiding students through the lecture and maintaining a structured and organized learning experience, the findings showed that the least used marker type found in the study was announcing an activity. Perhaps this is because it has similar functions to other markers such as ongoing activity, sequencer, topicalizer, future conversation and closure. It could therefore have been overshadowed by other markers during the analysis.

4.4.4. Exemplification

The final category of organizational metadiscourse is exemplification which we added to the framework which was adopted. The findings showed that the lecturers often used this type for giving examples in a conversation. The reason for a lecturer to use exemplification markers is to diversify the subject, clarify it in the minds of the students and help them understand the subject.

(39) Let's use these in an exercise. Here is an example. A coin is tossed five times. (PRV_Wk_10.2.)

In example (39), the exemplification marker 'Here is an example' is used to introduce a specific instance or case that illustrates the concept being discussed. By providing an example of a coin being tossed five times, the lecturer wants to make the subject matter more tangible and relatable to the students. The marker serves as a bridge between theoretical concepts and practical application, enabling the students to see how the discussed ideas can be implemented in real scenarios.

(40) Let me give you some examples. (Geo_Wk_1.1.)

In example (40), 'Let me give you some examples' is used to indicate a shift in the lecture's focus towards providing concrete instances which illustrate the concepts being discussed. The marker serves as a clear signal to the students that the lecturer is about to present practical cases to help them better understand and grasp the subject matter. The students can expect to encounter specific instances that demonstrate how the concepts play out in practice, thereby facilitating deeper understanding and engagement.

4.4.5. Multifunctioning organizational metadiscourse

Within the scope of the study, it is suggested that some of the examples obtained from the data serve more than one function in terms of organizational

metadiscourse markers. By using more than one marker in these utterances, the lecturers perhaps wanted to make the expression more understandable for the students or to make it easier for them to comprehend the content. In addition, they may have used these markers together to direct the flow of the lesson. In this part, some examples from the data will be discussed which have one unit but more than one function.

(41) The *next* topic which [we] will address on Thursday is discrete probability models. (PRV_Wk_2.1.) (Sequencer in italics, future conversation underlined)

Example (41) in general gives a preview of the lesson next Thursday. In fact, in this single statement, the lecturer gives information about what will happen and at what time. In other words, this utterance acts as an implicit announcement. Maybe, with this utterance, the lecturer is sending the message that s/he wants the students to come to the next lecture in order to study the subject of discrete probability models. Moreover, if ‘which [we] will address on Thursday’ is removed from this utterance, the word ‘next’ appears as a sequencer.

(42) ... this sample average will play a big role later on in this class when we talk convergence. (PRV_Wk_7.3.) (Future conversation underlined, sequencer in italics)

In example (42), the sequencer marker ‘later on’ serves to connect parts of the conversation in a chronological sequence. It indicates that the concept of ‘sample average’ will be relevant and significant in forthcoming discussions. Additionally, the future conversation marker ‘when we talk convergence’ prepares the students for a topic that will be addressed in the future. The combined use of these markers not only provides a temporal sequence but also alerts the students to expect a detailed discussion on ‘convergence’ later in the course.

The interplay between sequencer and future conversation markers contributes to the organization and coherence of the discourse. Sequencers help to structure the conversation in a logical sequence whereas future conversation markers give a preview of topics to come. This combination serves to guide students through the lecture material, create anticipation and ensure that they are prepared for forthcoming content. It also helps the lecturer to maintain a clear and orderly presentation of concepts.

(43) We are *starting something really important*. (PRV_Wk_10.3) (Sequencer in italics, announcing an activity underlined)

In example (43), the phrase ‘We are starting’ serves as both a sequencer and an announcing an activity marker. As a sequencer, the word ‘starting’ itself indicates the initiation of a new phase or step in the ongoing discourse. It sets the stage for what is to come, suggesting a subsequent sequence of events or information. This use of a sequencer helps to structure the lecture by signaling the beginning of a significant topic or segment. As an announcing an activity marker, the phrase ‘starting something really important’ also functions as an announcement, clearly informing the students that a crucial and relevant topic is about to be introduced. It not only emphasizes the significance of the upcoming content but also generates anticipation among the students. This marker prepares them for an engaged and focused learning experience by drawing attention to the importance of the material being presented. Combining these two functions, the example effectively introduces a new sequence within the discourse while also announcing the commencement of a meaningful activity or topic. This approach aids in both organizing the lecture’s content and engaging the students’ attention, ensuring they are mentally prepared for the important subject matter that follows.

CHAPTER V

DISCUSSION, CONCLUSION, AND IMPLICATIONS

5.1. Introduction

In this final chapter, the findings from the analysis of the two lecturers' discourse in an EMI setting are discussed in relation to the literature. In addition, this section addresses the limitations of the study and offers suggestions for future studies of this topic. Finally, the pedagogical implications of the results are presented.

5.2. Discussion of the Findings

In the scope of the study, we analysed two lecturers' courses using an amended version of Vande Kopple's (2012) and Tang's (2017) taxonomies. The main categories and subcategories were *text connectives* (comprising *earlier conversation*, *future conversation*, *sequencer* and *topicalizer*), *knowledge connective* (including *prior knowledge* and *apply knowledge*) and *activity connectives* (comprising *ongoing activity* and *external activity*). Three additional markers were added which we thought would contribute to the organization of the discourse as organizational metadiscourse functions. We added *closure* as a sub-category of text connectives, *announcing an activity* as a sub-category of activity connectives, and finally, *exemplification* as a main category. Adel (2010) did not include exemplification in organizational metadiscourse functions in her study, but we evaluated it under organizational metadiscourse functions, which forms the basis of the current study, with the thought that it can contribute to the organization of a lesson and discourse. Regarding the first research question of the study, we can classify the organizational metadiscourse functions used by the EMI lecturers at the tertiary level. It was found that the most used organizational metadiscourse markers by the lecturers in the hard science courses analysed in the study were sequencers. Following this, the use of ongoing activity, earlier conversation and topicalizers were heavily preferred.

The second question sought to determine how the use of organizational metadiscourse markers contributes to the lecturer's transfer of course content and the

management of course flow. In this context, it will be useful to examine the discourse tools which were analysed in the study in terms of frequency of use and functions. This study focused on the use of organizational metadiscourse functions by EMI lecturers in the Turkish context. The findings shed light on how these lecturers steered classroom communication, engaged students' attention and conveyed the topic effectively.

The utilization of sequencers as organizational metadiscourse markers in EMI lectures, as the findings show, underscores their significant role in structuring discourse and facilitating effective communication. Sequencers serve as valuable tools for guiding both lecturers and students through the content in a coherent and comprehensible manner. The finding that sequencers were the most frequently used markers suggests their central role in ensuring the logical flow of information within a lecture. Sequencers contribute to the overall organization of a lecture. By structuring the content sequentially, lecturers create a framework which helps them to present a topic or idea systematically. This in turn helps students to anticipate the flow of information and mentally organise the content as they progress. This supports Tang's (2017) comment that sequencers are used to highlight sequential steps in an explanation and enable students to prepare for the next topic by putting events into a specific order in their minds.

In essence, the prevalence of sequencers in the findings emphasises their role as crucial signposts for discourse organization. They assist in breaking down complex content, promoting understanding and creating a cohesive learning experience. The findings suggest that sequencers not only contribute to the effective communication of information but also facilitate the learning process by supporting students' cognitive processes and engagement.

Another significant finding was the extensive use of ongoing activity markers. The lecturers used these markers to indicate their current actions in the discourse and communicate their expectations to students. This practice can enhance student engagement and foster an interactive learning environment. This finding matches Tang's (2017) comment on ongoing activity: both of them highlight the benefits of making ongoing activities explicit through metadiscourse. Furthermore, they allow a comprehensive view of the significance of highlighting ongoing activities in the classroom through metadiscourse, emphasising its potential impact on student engagement and meaningful learning.

The lecturers were found to use connectors to earlier conversations, linking previous topics or ideas with ongoing discussions. This was commonly employed at the beginning of a lecture or during developing sections. Reminding students of prior discussions during the developing phase can refresh their memory and promote focused engagement with the topic. The findings show that the lecturers particularly enhanced students' attention and participation by recalling previous topics, especially during the developing phase of the lecture. This practice aids students in maintaining focus on the subject matter and facilitates smoother comprehension of the lecture's flow. Some previous researchers have commented on earlier conversation markers on this subject. Tang (2017) and Bernad-Mecho (in press) mentioned the importance of referring to past issues. Tang (2017) stated that earlier conversation connectives are metadiscourse devices which link the ongoing discourse to previously discussed topics, ideas or information and also emphasised that they facilitate the flow of conversation by connecting current points of discussion to relevant past content. Tang (2017) also pointed out that "the meaning of an ongoing conversation is dependent on how it is connected to some other texts and events in the past or possible future" (p.557). Bernad-Mecho (in press) referred to the talk about the past in the reviewing section and emphasised that the lecturer often contextualized the current explanation with previous information.

The findings showed that the lecturers also used other metadiscourse markers such as topicalizers, future conversation, exemplification, prior knowledge, apply knowledge, closure, external activities and announcing an activity. These markers play a pivotal role in promoting deeper understanding and effective communication. Tang (2017) stated that "in the opening stage, organizational metadiscourse (e.g., sequencer, prior knowledge, ongoing and external activity) was predominantly the instrument used by the lecturers to set the context and requirement of the question, such as how it was related to other activities or what to take note of in later discussion". (p.576). The current findings partially support this comment. At the beginning of the lesson or, as Tang (2017) said, in the opening stage, the lecturers in the current study most frequently used sequencers, earlier conversation and future conversation connectives. Contrary to Tang's (2017) finding, however, the lecturers used ongoing activity, prior knowledge and topicalizers during the developing stage of the lecture.

Nardo (2017) analysed concluding markers (called ‘closure’ in the current study) and exemplifiers (‘exemplification’ in the current study) and topicalizers. First, he noted that the lecturers did not use concluding markers effectively in their context. Second, he defined exemplifiers as signposts which offer examples in order to explain a theoretical topic (p.87). Finally, he pointed out that the lecturers used topicalizers to signal a change in the topic. The current findings support his ideas about those three markers. The use of closure markers was not high. From exemplification markers, students are able to convert theoretical knowledge into practice, and by visualizing it in their minds, they can grasp the subject more thoroughly. Exemplification markers play a crucial role in diversifying the subject matter, enhancing understanding and clarifying abstract concepts by providing concrete and relatable examples. They contribute to creating a richer and more comprehensible learning experience for the students.

Topicalizers were found to be the fourth most frequently used organizational marker in the current study. The use of topicalizers was to guide the students’ attention, introduce new topics or concepts and facilitate the organization and coherence of the text. They play a crucial role in connecting different pieces of information and helping students to follow the flow of the discussion. In conclusion, this study examined the use of organizational metadiscourse functions by EMI lecturers in Türkiye and illustrated how these functions influence students’ attention and engagement. The findings underscore important considerations for teaching methods and communication strategies.

5.3. Conclusion

The influence of internationalization and globalization has elevated the indispensability of the English language across various domains worldwide. This phenomenon has deeply impacted the field of education, where English has gained prominence as a medium of instruction (EMI) in educational institutions, particularly universities. The application of EMI seeks to deliver academic content to students effectively. Central to this endeavour is the discourse which unfolds within the classroom and has importance for conveying complex subject matter and ensuring comprehensive understanding. In this context, the current study has sought to shed light on an underexplored aspect of EMI, specifically the role of organizational

metadiscourse markers in facilitating effective communication within Turkish EMI classrooms in the HE context, particularly in the realm of hard sciences. The findings fill a significant gap in the literature by investigating how EMI lecturers in Türkiye employ metadiscourse devices to structure and signal their discourse.

The findings of this study have revealed noteworthy patterns. EMI lecturers frequently employed sequencers such as ‘first’ and ‘then’ to meticulously structure their discourse. This strategic employment of sequencers provides a coherent and sequential presentation of content and eases students’ comprehension. Furthermore, the use of ongoing activity markers serves as a bridge between lecturers’ actions and students’ involvement. This practice fosters engagement and guides students in order to make the learning process effective. Additionally, the findings underscored the lecturers’ preference for using earlier conversation connectives, a practice which enhances students’ retention of past information and links current discussions to prior knowledge.

The distinctiveness of this research emanates from several facets: first, its exclusive focus on the Turkish EMI context; second, the exploration of diverse disciplinary perspectives, reflecting the multifaceted nature of EMI in Turkish HE academic settings; and third, the rigorous application of corpus analysis methodologies, a robust approach to bridging the gaps in our understanding of language utilization in EMI contexts. In summation, this study illuminates the critical role of organizational metadiscourse in the Turkish EMI landscape and offers invaluable insights into how metadiscourse serves as a guiding thread, facilitating knowledge transfer and shaping the trajectory of academic discourse. By acknowledging the significance of metadiscourse markers, this research lays the foundation for informed pedagogical practices which can benefit the potential of metadiscourse to enhance comprehension, foster engagement and elevate the overall quality of EMI classroom communication.

5.3.1. Limitations of the research and suggestions for future studies

There are inevitably some limitations in this study. Since the study was limited to only two disciplines, the results are evaluated within the framework of specific fields. In order to evaluate the issue on a broader perspective, further research could be carried out in EMI classes in different disciplines. We analysed

metadiscourse functions in EMI classes by specifically examining the hard sciences. Soft sciences could usefully be discussed in future studies. We examined the organizational metadiscourse functions used when the lecture was organized by the lecturer. There are different types of metadiscourse which will affect the flow of a lecture and help students to understand the content better. Future researchers could therefore shed light on discourse analysis in EMI classrooms by examining other metadiscourse devices. In addition, investigating the role of metadiscourse functions used in EMI settings in terms of lecturer/student interaction would be useful for studies and applications in this field. Future research could also delve further by conducting similar analyses in different teaching contexts and languages to deepen understanding of this subject. Finally, we believe that the framework which was created for the study will be useful for future studies. It can be taken as a model.

5.3.2. Pedagogical implications

The findings of the study offer valuable insights for EMI lecturers in hard science fields. For lecturers, the use of sequencers enhances their ability to guide the conversation and lead students through the topic's development. By providing a roadmap for themselves and their students, lecturers can navigate complex subjects with clarity and coherence. Utilizing metadiscourse, specifically activity connectives, to accentuate ongoing activities is a valuable instructional strategy. It empowers students to better understand their actions and learning objectives, fostering a more interactive and meaningful learning experience. Understanding how lecturers use earlier conversation connectives to remind students of previous information demonstrates a pedagogical approach which reinforces key concepts. This can inspire educators to adopt similar strategies in their teaching methodologies, leading to better retention and engagement among students. The findings can also contribute to the development of pedagogical frameworks for improving the quality of lecturer talk in EMI contexts. Furthermore, these findings highlight the importance of training lecturers in the use of organizational metadiscourse in EMI contexts, particularly in the light of the challenges of implementing EMI. Finally, conducting this research within the Turkish context offers a culturally relevant perspective on EMI classroom discourse. The findings can inform both local and global educators

about the linguistic practices which resonate with Turkish students, contributing to a more culturally sensitive educational approach.



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Corpus Metadata Sample

[illegible]

ÖZGEÇMİŞ

KİŞİSEL BİLGİLER

Adı Soyadı:	Sinem BİLGİN YÜCEL
Uyruğu:	Türkiye Cumhuriyeti

EĞİTİM

Derece	Kurum	Mezuniyet Tarihi
Yüksek Lisans	Erciyes Üniversitesi	
Lisans	Erciyes Üniversitesi	2017
Lise	Cumhuriyet Süper Lisesi	2004

İŞ DENEYİMLERİ

Yıl	Kurum	Görev
2017-2020	Erciyes Üniversitesi Yabancı Diller Yüksekokulu	Öğretim Görevlisi
2023-	Erciyes Üniversitesi Araştırma Dekanlığı	Öğretim Görevlisi

YABANCI DİL

İngilizce (95.00)s