Journal of Studies in Language Learning and Teaching

Paper Type: Original Article

Metadiscourse Markers in Laboratory Sections: Types and Functional Analysis

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Abstract

The present study examines the application of metadiscourse markers according to Hyland's (2005) metadiscourse model in laboratory sections. The researchers manually searched an 80580-word corpus of eight laboratory sections collected from the Michigan Corpus of Academic Spoken English to identify different types and functions of metadiscourse markers. As shown by the findings, interactional metadiscoursal markers had a higher frequency in laboratory sections than interactive ones. More specifically, the speakers relied mostly on engagement markers (a metadiscourse marker with interactional function) followed by code glosses (a metadiscourse marker with interactive function). As implied, audience involvement through engagement markers and facilitating their comprehension through code glosses are the primary functions of metadiscourse markers used in a laboratory. It is possible to incorporate this finding into the syllabus designed to teach academic spoken genres, including laboratory sections.
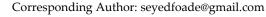
Keywords: Functional analysis, Laboratory sections, Metadiscourse markers, Spoken discourse.
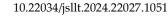
I | INTRODUCTION

One of the main challenges that university students, especially those with a non-English mother tongue, have to deal with is the comprehension of academic speech in numerous settings and the ability to participate in academic spoken genres. It can be challenging for the learners of English as a Foreign/Second Language (EFL/ESL) to convey information, ideas, or concepts to the interlocutor due to their lack of familiarity with academic discourse. More importantly, they might fail to speak clearly and understandably. Hence, speakers need to go beyond the correct use of syntax and lexis (Lee, 2015), seeking to use language to organize the discourse for their audience and make it as understandable as possible. This organizational audience-oriented function of language is fulfilled by using metadiscourse markers introduced by Zelling Harris (1959) to reflect the writer's or speaker's efforts for the connection and organization of the texts while also guiding the perceptions of their audience. In Hyland's (2005) view, the term represents a cover for the self-reflective expressions employed to negotiate interactional meanings in a text, facilitating the writer or speaker's presentation of viewpoints and engagement with readers or listeners as members of a specific community. As clarified by Hyland, texts should connect with their audience to ease the process of comprehension. Hyland (ibid) proposed the Interpersonal Model of Metadiscourse (IMM), clarifying that

metadiscourse is both related to how writers organize texts (through interactive metadiscourse resources) and how they express their personality to establish an involving relationship with their audience (through interactional metadiscourse resources). Mauranen (2010) considers metadiscourse as an essential component of any communication, without which the comprehension of any discourse would be a daunting challenge for the audience.

Previous studies have focused on metadiscourse markers across various written genres, including research articles (Ghahremani & Biria, 2017; Hyland & Jiang, 2018; Khedri et al., 2013; Lee & Subtirelu, 2015; Zali et al., 2020), theses, and dissertations (Hyland, 2004). According to Mauranen (2010), metadiscourse contributes more crucially to the spoken than the written discourse since managing spoken discourse and keeping the audience engaged in real-time contexts is a more demanding task. Yet, there have been fewer investigations on the application of metadiscourse markers within the spoken discourse (Lee & Subtirelu, 2015; Matroudi & Ebrahimi, 2022). Thus, drawing on the IMM (Hyland 2005), this study investigates the application of metadiscourse markers through laboratory sections. Additionally, it seeks to discover which metadiscourse markers are more frequently used and for what function in laboratory sections. Accordingly, the research questions to answer are as follows:

1. How frequent are interactional and interactive metadiscourse markers in laboratory sections?
2. How frequent are the sub-types of interactive and interactional metadiscourse markers in laboratory sections?
3. What functions do metadiscourse markers have in laboratory sections?

II. REVIEW OF LITERATURE

This section thoroughly explains the Interpersonal Model of Metadiscourse by introducing its categories and providing some examples for each. It also reviews the studies examining the application of metadiscourse markers across different academic contexts.

The interpersonal model of metadiscourse (IMM)

Hyland (2005) shows the metadiscourse related to how writers organize texts and how they express their personality to establish an involving relationship with their audience. In his IMM, Hyland distinguishes *interactive* and *interactional* resources. The former is related to how writers organize texts and what they consider necessary to transfer to their readers, while the latter is concerned with in what ways the writers express their personality and attitude and establish an involving relationship with their audience. The five metadiscourse markers, including transition markers, frame markers, endophoric markers, evidentials, and code glosses, belong to the interactive resources. The first one focuses on expressing the semantic relations of independent clauses, including addition (*moreover*), contrast (*in contrast*), or consequence (*therefore*). The second group signals the changes in the speaker's main communicative acts for different purposes, such as showing sequence (*first*, *lastly*, and *next*), labeling (*in sum*, *as an introduction*, *to conclude*), declaring the discourse objectives (*I seek to*, *the main purpose of this study*), and indicating topic changes (*in regard to, on the other hand*). Endophoric markers direct the hearers to different parts of the utterance to access the supplementary information (*as noted above*, *as it can be seen in Table X*, and *see Figure X*). The outsourced content can be distinguished from the original one using evidentials (e.g., *according to X or Y states that*), which also represent the speaker's position concerning the hearer's persuasion. Another particular contribution of evidentials is to ensure the availability of various dimensions of highly accurate utterances for the hearers. Ultimately, speakers use code glosses to help their hearers comprehend the content better by the message elaboration (*in other words*, *namely*) and providing definitions (*defined as*) and examples (*for example*, *such as*). Accordingly, the speakers consider the cognitive abilities of the hearers while supporting assumptions about their understanding and subsequently deciding on the required supplementary information.

Meanwhile, the audience is engaged in the message being conveyed by establishing an involving relationship between itself and the writers/speakers through the interactional metadiscourse markers, including hedges, boosters, attitude markers, self-mentions, and engagement markers. Hedges qualify statements (*almost, might*), boosters show certainty (*actually, clearly*), attitude markers express an affective position (*I agree, prefer*), self-mentions represent a reference to oneself (*we, me*), and engagement markers ensure audience involvement in the discourse (*Let's, we*).

Metadiscourse markers in academic discourse

As mentioned earlier, previous research focuses on the application of metadiscourse markers within various academic writing genres utilizing Hyland's taxonomy. In an attempt to investigate how interactive metadiscourse markers were used in the abstracts of research articles, Khedri et al. (2013) analyzed a corpus of 60 research article abstracts in soft sciences (applied linguistics and economics), indicating transition markers as the leading category of interactive markers used by the authors, next to which there were code glosses, endophoric markers, frame markers, and evidentials in a sequential order.

Kashiha & Marandi (2018) examined the application of interpersonal metadiscourse markers in the rhetorical moves of research article introductions in applied linguistics and chemistry to provide a deeper understanding of their critical role. The writers in both disciplines strongly depended on interpersonal metadiscourse markers to establish organization and cohesion in the tone of their papers. However, the chemistry writers indicated a greater tendency toward utilizing interactive markers because the experimental nature of their discipline necessitated a well-organized and easily understandable text. Transition markers and code glosses were the most frequent, while the frame and endophoric markers had the lowest frequency across both disciplines.

Ghahremani & Biria (2017) studied the application of interactive and interactional metadiscourse markers in the discussions of 100 research articles by Iranian authors in social and medical sciences. They found that those social science writers preferably used interactive markers (transitions, frame markers, and evidentials) more frequently, while medical science writers tended to use more interactional markers (hedges, boosters, and self-mentions). It was also shown that endophoric markers, code glosses, and attitude markers were equally applied throughout both disciplines.

In their paper, Hyland & Jiang (2018) explored how metadiscourse usage changed throughout academic writing in a corpus including 2.2 million words from articles associated with soft and hard science fields. The results of their study showed a marked rise and a considerable decline in interactive and interactional markers, respectively. The authors of soft sciences used fewer interactional markers, while the writers of hard sciences had a substantial tendency for these markers.

Kashiha (2018) explored how student writers used metadiscourse markers in their essays. The subjects were Malaysian diploma students participating in a course on English for Academic Purposes. Drawing on Hyland's IMM taxonomy, the researcher revealed that, among interactive markers, transition markers and evidentials received the most and the least attention, respectively, even in student writing. Of the interactional features, engagement markers accounted for the majority of the used metadiscourse markers, while attitude markers had the lowest frequency.

In another study on student writing, Zali et al. (2020) explored how undergraduate writers in computer science and business administration used metadiscourse in a corpus of 200 evaluative essays. As they showed, interactive markers had a higher frequency than interactional markers throughout the two fields. They also observed that the student-writers used transition markers, self-mention, attitude markers, evidentials, and frame markers in a descending order of frequency.

With a shift towards more public science genres, Farnia & Mohammadi (2018) examined the persuasive role that interpersonal metadiscourse markers played in British and Iranian local newspapers. They

analyzed a corpus of opinion articles, in which hedges and epistemic verbs had the highest frequency. The authors tended to present their opinion cautiously to be less intrusive, yet more persuasive. However, compared to the Iranian newspapers, British ones employed more emphatic markers due to their tendency for being direct and to-the=point. The writers used attitudinal markers quite frequently to make their opinion even more persuasive since they could embellish their message with emotional terms and engage their readers more in what was being conveyed.

Lee & Subtirelu (2015) compared the metadiscourse markers of EAP lessons and university lectures. They indicated the significant dependence of EAP teachers and university lecturers on interactional markers because signaling their stance and engaging students were more crucial for them compared to the organization of their discourse. Both groups used hedges, self-mentions, and engagement markers more than attitude markers and boosters. On the other hand, EAP teachers used interactive metadiscoursal markers (frame markers and endophric markers) more frequently than university lecturers. However, university lecturers used transitions more often than their counterparts.

Farnia & Ebrahimi (2024) explored metadiscourse markers in academic correspondence between students and professors. They randomly selected 200 student e-mails written from 2019 to 2022 and analyzed them based on Hyland's (2005) model of metadiscourse markers with the two categories of interactive and interactional metadiscourse markers. As the findings showed, interactional metadiscourse markers were used more than interactive metadiscourse markers in the corpus. Also, the engagement marker and transitive markers were the most frequently used interactional and interactive markers in the corpus.

In a recent study on the use of metadiscourse features in academic speech, Matroudy & Ebrahimi (2021) analyzed a corpus of PhD dissertation sessions to investigate four metadiscoursal functions including "metadiscourse comments", "discourse organization", "speech act labels", and "references to the audiences". According to the results, disciplinary variation played a pivotal role in the maneuvering metadiscoursal function. For example, while hard sciences made references to the audience more frequently, soft sciences paid greater attention to metalinguistic comments.

The review of the literature in the field shows consistent findings by numerous studies examining the application of metadiscourse markers within written genres, while speech genres have not received sufficient attention. Thus, the present research investigated how metadiscourse markers were used throughout laboratory sections, and which markers for what functions had the highest frequency in this genre.

III. METHODOLOGY

1. Research Design

A qualitative approach was adopted in this study to examine how interlocutors used metadiscourse markers in laboratory conversations. The approach was consistent with the research on metadiscourse by Hyland (1998, 2005), stressing the more qualitative nature of research on metadiscourse markers while highlighting that such an approach focuses merely on the illustrative functions of these markers.

2. Corpus

The current research was conducted on an 80580-word corpus of eight laboratory sections extracted out of the Michigan Corpus of Academic Spoken English (MICASE) site, where researchers have free access to the transcribed corpora. The laboratory sections were sourced from eight different fields, namely Chemistry, Biology of Birds Field Lab, Biology of Fishes Field Lab, Biology of Fishes,

Biopsychology, Hydraulic Problem-Solving, Cognitive Psychology Research, and Intro Statistics. Table 1 illustrates the corpus details.

Table 1. Corpus of the study.

	Laboratory section	Word	Time
1	Chemistry Lab	8,169	47 min
2	Biology Of Birds Field Lab	11,769	92 min
3	Biology Of Fishes Field Lab	11,370	89 min
4	Biology Of Fishes Lab	8,153	95 min
5	Biopsychology Lab	9,455	52 min
6	Hydraulic Problem-Solving Lab	10,398	78 min
7	Cognitive Psychology Research Lab	14,839	82 min
8	Intro Statistics Lab	6,427	47 min

3. Data Analysis

The study took a few steps for corpus collection and analysis. The conversion of the selected laboratory sections from XML into Microsoft Word format was the primary step, followed by the manual analysis of the recorded files to determine metadiscourse markers. Different color codings were used because there were sometimes two metadiscourse markers in one utterance. The researchers checked the overall occurrences of the markers to clarify their communicative functions as much as possible. The researchers also conducted an independent investigation to avoid subjectivity, while a more careful examination of the context of specific uses facilitated the clarification of the functions in the case of disagreements. The next steps included coding and tabulating all the extracted markers for frequency count measurement.

According to the metadiscursive analysis of the recorded files, the occurrence of metadiscourse markers in the laboratory sections was greatly dependent on their practicality and the authors' intuition. According to Ädel (2006), the potential multi-functionality of the metadiscourse devices may be related to their context-dependence throughout the academic discourse. Accordingly, metadiscourse resources can represent socio-contextual meanings in addition to linguistic features. In this regard, a thorough examination of all the extracted markers was conducted across their context of use to examine their desired and underlying functions. Ultimately, an expert in applied linguistics and academic writing helped the researchers determine the functions of individual markers within the laboratory sections to ensure achieving sufficiently reliable functional analysis.

IV. RESULTS AND DISCUSSION

This study sought to investigate whether metadiscourse markers could enhance communication among interlocutors in laboratory conversations and which metadiscourse markers were mainly used in this context. The overall findings of the study are presented in section 4.1, and the subsequent sections illustrate the obtained results regarding each category of metadiscourse markers separately.

1. Overall Findings

The raw and normalized frequencies of different metadiscourse marker categories in laboratory sections under study are presented in Table 2.

Table 2. Raw and normalized frequencies of metadiscourse markers.

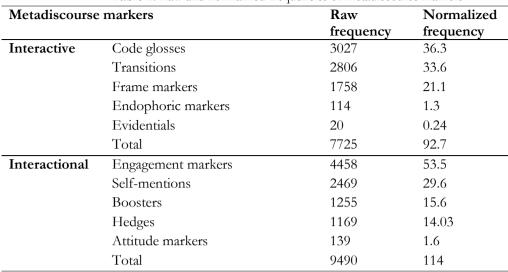| Metadiscourse markers		Raw frequency	Normalized frequency
Interactive	Code glosses	3027	36.3
	Transitions	2806	33.6
	Frame markers	1758	21.1
	Endophoric markers	114	1.3
	Evidentials	20	0.24
	Total	7725	92.7
Interactional	Engagement markers	4458	53.5
	Self-mentions	2469	29.6
	Boosters	1255	15.6
	Hedges	1169	14.03
	Attitude markers	139	1.6
	Total	9490	114

Table 2 indicates a more significant use of interactional than interactive metadiscourse markers, with the normalized frequencies (NF) of 114 and 93, respectively. From the category of interactive markers, code glosses had the highest frequency with an NF equal to 36.3, followed by transition and frame markers (shift topic), recording NFs of 33.6 and 21.1, respectively. Finally, endophorics and evidentials ranked the last with NSs of 1.3 and 0.24, respectively. Out of the category of interactional markers, those related to engagement were at the top (NF = 53.5), after which there were self-mention (NF = 29.6), boosters (NF = 15.06), hedges (NF = 14.03), and attitude markers (NF = 1.6). The findings of previous studies also confirmed that interactional markers were more frequently used in both the written and spoken texts in hard sciences since they were experimental in nature and in need of clear, well-organized, and comprehensible presentation (Ghahremani & Biria, 2017; Hyland & Jiang, 2018; Kashiha & Marandi, 2019; Lee & Subtirelu, 2015).

The findings indicated that hard science writers and speakers paid greater attention to the connection with their audience compared to the relationship within their text elements because audience involvement is an integral part of their discourse (Hyland, 2009). In other words, hard science registers, such as laboratory conversations, present mentally demanding content; therefore, the speakers need to facilitate their audience's comprehension through linguistic elements, such as interactional metadiscourse markers, to make such content understandable. On the other hand, previous studies have shown that soft science writers and speakers tend to use interactive markers more frequently as cohesion is important for them (Kashiha & Marandi, 2019; Lee & Subtirelu, 2015).

2. Use of Interactional Metadiscourse Markers

2.1. Engagement Markers

The laboratory participants of the current research strongly preferred engagement markers with an NF of 53.5. The most frequent tokens were 'you' (1949 out of 4458), 'we' (730 out of 4458), and 'see' (247 out of 4458) in a descending order. Khedri & Kritsis (2018) believe that engagement markers assist writers in bringing readers into discourse, ensuring their involvement in argumentations. Given the fundamental role of involvement in academic speech (Lee & Subtirelu, 2015), it is not surprising that laboratory speakers strongly prefer engagement markers, including "you" and 'we', as the key elements for the establishment of involvement (Lee, 2009). As previous studies also found similar results (Lee & Subtirelu, 2015), it can be implied that academic speech related to hard sciences strongly depends on speaker-audience connection to include hearers in the ideas being uttered successfully. In addition, previous studies found that even students tended to use interactional markers, in general, and engagement markers, in particular, as they also need to participate in the discourse and involve their

audience in the best way (Kashiha, 2018). Extract 1 shows how "you" has been mainly used in the laboratory context to build an explicit relationship.

Extract 1:

- *What kind of swallows do **you** think they are? Ove there, landing.*
- *We can't ignore it **you** guys come on.*
- *How come **you** came up to the BioStation?*

The other two terms used more frequently are "we" and "see". Extract 2 shows how the terms 'you" and "see" have been used in the context:

Extract 2:

- *How many did **we** get Carrie?*
- *Wait you guys can **we** decide what these are?*
- *Yeah, but just because we **see** a big group of birds doesn't mean it's starlings?*
- *Did you guys **see** what's at the top of this tree here?*
- *Look up the Evening Grosbeak **see** if they have white tail feathers.*

2.2. Self-Mention

The frequency of use for self-mention was 29.6, highlighting the awareness of the research participants of the vital role of building a relationship with each other simultaneously and explicitly. Consistent with the findings of previous studies (Camiciottoli, 2005; Fortanet, 2004; Hyland, 2009), the most frequent tokens of this type were 'I' (1403 out of 2469), 'we' (730 out of 2469), and 'me' (123 out of 2469). According to Alyousef (2015), self-mentions reflect the presence of the writer through first-person pronouns and possessives. Writers use self-mentions to express the information associated with position and character (Gholami et al., 2014). The examples below provide more explanations.

Extract 3:

- *All **i** can see is dark*
- ***I** don't know*
- ***I** guess we can't count it yet.*
- ***We** have five minutes (xx) start.*
- *Do **we** even know (the meadowlark?) What's that*
- *(want **me** to) hold those?*

2.3. Self-Mention

The next most frequent marker was boosters, rating an NF of 15.6. Markers, including 'know' (327 out of 1255), 'think' (275 out of 1255), and 'really' (147 out of 1255) were the most frequently used tokens of this type. They were used frequently when the interlocutors needed to emphasize certainty and explicitly express their position, indicating the greater frequency of the co-existence of engagement markers, self-mentions, and boosters to highlight the writer's stance and emphasize certainty or close relationship (Hyland, 2005). As stated by Khedri & Kritsis (2018), boosters help to avoid various opinions or potential objections. The use of boosters aims at showing the writers' certainty rather than doubt to leave no contradictory arguments (Gholami et al., 2014). The application of boosters revealed the writers' authorization to claim firmly, which is typical of hard sciences, such as laboratory lessons. The participants used 1255 boosters throughout the laboratory conversations in the current research. As shown below, the speakers utilized three types of boosters to express certainty.

Extract 4:

- *I **know** cuz you **know** Francie'll be like wrong. Um that's not that.*
- *(Do you **know** what's twenty?)*
- *But if we don't **know** for sure though*
- *I don't **think** that's a meadowlark.*
- *I don't **think** so. Hear a peedee? I don't **think** so.*
- *That's **really** strange... Sounds like a cuckoo…*
- *I rea- i **really** wanna know what the hee haw is.*

3. The Application of Interactive Metadiscourse Markers

3.1. Code Glosses

Among interactive markers, code glosses had the most significant usage frequency in different laboratory sections. Therefore, it can be implied that speakers realized the importance of elaboration by giving additional examples in this setting. This should be expected as the content demands elaboration due to its experimental nature, and code glosses are used to facilitate comprehension through elaboration, giving definitions, and providing examples (Hyland, 2005). In a previous study, Kashiha & Marandi (2019) also found that chemistry writers tended to use code glosses since they, too, needed to clarify their content as much as possible. They also found that code glosses were not only used for elaboration but also for defining and explaining technical terms or discipline-specific expressions, which also held true in laboratory sections. Among the code glosses (Hyland, 2005: 50), brackets had the highest preference (2033 from 3027), after which hyphen (339 from 3027) and then or X (287 from 3027) had the next ranks. Although code-glosses were slightly more frequent than transition, there was only one single sub-type of code-glosses that occurred quite more frequently. In contrast, the rest of the code-glosses subtypes seemed to be either less frequent or relatively underrepresented. The most frequent types of code-glosses were brackets and hyphens (2033 and 339 out of 3027, respectively). According to Hyland (2005), code glosses help the writer's desired meaning, rewording, explaining, defining, or clarifying the sense of usage according to the writer's assessment of the reader's knowledge, usually presenting the reformulation in parentheses or marking it as an instance, etc. As mentioned by Kashiha & Marandi (2019), code glosses represent how concerned the writers/speakers are about adapting their content to the cognitive level of their audience; therefore, they are employed more frequently in settings where content creates cognitive load for the audience. The following is a set of examples of how code-glosses are used in a laboratory context:

Extract 6:

- *SU-f: There's a little **(snag)***
- *SU-f: And that's definitely iridescent blue?*
- *SU-f: I don't see the **(snag) (xx)***
- *SU-m: Is it small and blue? it's indigo blue*
- *SU-f: Small **(glossy)***
- *SU-f: Do you see that little **(snag?)***
- *SU-m: Yeah*
- *SU-f: Um I saw_ I was wi- wishing someone else saw it too, but it was definitely a swallow and I saw [SU-f: I s- I saw some swallow] (rusty stuff,) yeah. It definitely had rusty stuff on its breast.*

In the present context, the speakers used code glosses to provide further information through explanations, rephrasing, or illustration. They also used code glosses to illustrate challenging concepts by examples. Therefore, it is possible to achieve clarity, which is essential in hard sciences, through code glosses (Cao & Hu, 2014).

3.2. Transition Markers

They had the second highest frequency among interactive metadiscourse markers with an NF of 33.6, and the most frequent tokens were 'and', 'so', and 'but', which was in line with previous research results (Ghahremani & Biria, 2017; Lee & Subtirelu, 2015; Zali et al., 2020). However, other studies found transition markers as the top category among interactive metadiscourse markers (Kashiha, 2018; Kashiha & Marandi, 2019; Khedri et al., 2013), which might be due to the soft nature of the disciplines that they investigated, such as economics in Khedri et al. (2013). The writers fulfill textual unity through the logical integration of ideas, achieved by transitions (Huh & Lee, 2016). Therefore, their high frequency signals the importance of creating such unity and cognitive relations between different content elements in a setting (Khedri et al., 2013). In a context such as a laboratory session, a large amount of content is presented, whose successful presentation requires coherence and cohesion (Lee & Subtirelu, 2015). Moreover, the academic content of a laboratory session is usually offered at length, which adds to the burden of heavy content. Therefore, to accomplish the objectives of ongoing speech, lecturers must clarify the associations of various elements of the content through linguistic expressions and help their audience follow the discourse effortlessly. The other reason behind the use of transitions lies in their rhetorical function (Kashiha, 2018). Similar to writing, speech follows some stages or moves, which should be fulfilled by the speakers to follow the rhetorical structure of the speech. Transitions can assist them in bridging the different moves of their speech. The following are some examples of how the transitions are used in laboratory conversations:

Extract 7:

- *SU-f: There's something pretty yellow over there.*
- *SU-f: Yeah, it had a sort of a... r- rust- or not rusty but, yellowish, breast.*
- *SU-f:* **And** *it's not sitting in the place for a Northern Flicker, it's on, the end of a branch.*
- *SU-f: There were like ten of those in there* **and** *they all just like flew up and then went down.*
- *SU-f:* **So,** *what's in this tree behind us here?*
- *SU-f: Um, like it doesn't to like show itself on a branch,* **so** *they're hard to find*
- *SU-m: I've never seen one really out of a group (xx)*
- *<SU-f: LAUGH>*
- *SU-m: But I, I've seen like one or two on a wire,* **but,** *never together*
- *SU-f: We discussed lots,* **but** *we changed them all.*

3.3. Frame Markers

Frame markers rated an NF of 21.1, whose most frequent tokens were 'so', 'well', and 'now'. As stated by Cao & Hu (2014), the use of frame markers mainly aims at organizing the text for the readers. Overall, articles indicate the topic shift and maintain the flow of speech straightforward using frame markers. When a text is staged, there is a need to signal the shift from one stage to another. Previous studies have pinpointed the existence of such a need in research article abstracts (Khedri et al., 2013) and introductions (Kashiha & Marandi, 2019), as well as students' essays (Kashiha, 2018), all of which utilize frame markers to introduce the overall structure of the text, shifts in topic, and new arguments. In the present study, the researchers found 1758 out of 7725 frame markers, among which shift markers were the most frequently used (1054 out of 1758). According to Swales (2001), university lectures (even laboratory conversations) are staged, and frame markers are needed to signal shifts in discourse (Camiciottoli, 2005), thereby making it easier to follow. It is assumed that the speakers tend to utilize shift topics more than the other subtypes of frame markers in their speaking. Furthermore, frame markers also serve the purpose of indicating sequences in research procedures. Since laboratory conversations revolve around sequential procedures, it is not surprising that the speakers used frame markers more frequently to indicate these sequences for their audience. The following examples show frame markers used by the speakers, highlighting that the writers used frame markers with specifically different functions.

Extract 8:

- *S1: Okay, **now** what do I need to go here?*
- *S1: **Now** I know if you find a, thirty-pound bass that it really is thirty pounds.*
- *S1: **Well,** that doesn't help either does it...?*
- *S1: **Well,** it's a little like, Mismer and Prentice marsh, I think.*

V. CONCLUSION

This study examined the application of metadiscourse markers throughout laboratory sections. As the results showed, these sections contained more interactional markers than interactive ones. The engagement markers had the highest productivity, while attitude markers were the least productive among metadiscourse markers.

Overall, different disciplines have goals to fulfill. To this end, they create content to represent a wide range of audience. The nature of these disciplines determines how to cognitively demand their presentation. Moreover, it implies how crucial it is for the content presenters to involve their audience. Since the content is presented in linguistic forms, a significant way to lessen the amount of cognitive load and engage the audience is through linguistic features, employed to organize discourse, facilitate its comprehension, and establish a presenter-audience relationship. In academic settings, content presentation and comprehension are significant challenges, primarily for university students. To overcome this challenge, they need a certain level of familiarity with these linguistic features of academic discourse, one of the most important of which is the use of metadiscourse markers. These markers are frequently used in academic writings and speech settings, such as laboratory conversations, serving different functions. Based on the nature of each discipline, specific markers tend to be used more frequently than others. In a context, such as laboratory sections, more attention is paid to interactional markers since discourse participants need to get involved in an engaging relationship initially. The organization of discourse through the application of interactive markers is also considered more seriously. Therefore, students need to be familiar with the frequent metadiscourse markers of their discipline, along with their types and functions to facilitate their participation in the discourse, better comprehension of the content, and more successful production of the content.

This study can possibly extend our understanding in relation to the use of metadiscourse markers in one of the pivotal spoken genres. Thus, the research findings pave the way for further focus on other academic spoken genres by investigating and exploring the usages and functions of metadiscourse markers.

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