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THE ACQUISITION OF DISCOURSE MARKERS BY ESP UNDERGRADUATES: UNCOVERING SUSTAINABLE PRACTICES IN DESCRIPTIVE ESSAY WRITING

Abstract. The acquisition of discourse markers (DMs) by undergraduate students of English for Specific Purposes (ESP) constitutes a research problem that has not been thoroughly investigated from the vantage point of sustainable practices associated with the explicit and implicit modes of instruction. In the article, we present a quantitative study aimed at uncovering whether the acquisition of DMs would be sustainable within the period of one semester. To this end, the material of the study involves a corpus of descriptive essays written by a group of ESP undergraduates whose first language (L1) is Ukrainian and another foreign language is Russian (hereafter referred to as participants). One part of the corpus was written by the participants during the explicit mode of instruction, whereas another part was written during the implicit mode. The corpus was analysed using the software program AntConc (Anthony, 2022) to examine possible changes in the frequency of DMs over time. The quantitative investigation of the participants' essays revealed the following key findings: while the explicit mode of instruction was associated with a substantial increase in the frequency of the occurrence of DMs in the participants' descriptive essays, the implicit mode of instruction led to an abrupt decrease in the frequency of DMs as well as the narrowing of their repertoire. The findings, the novelty of the study and the pedagogical implications that arise from the findings are further discussed in the article.

Keywords: descriptive essays; discourse markers (DMs); English for Specific Purposes (ESP); sustainable practices.

Introduction

The notion of sustainability and the associated sustainable development goals have found their way into the teaching and learning of English as a Foreign Language (EFL) as well as English for Specific Purposes (ESP) (Arslan & Curle, 2024; Luchenko & Yurchenko, 2023). Specifically, sustainability in the realms of EFL and ESP presupposes the quality of education, lifelong learning opportunities, and sustainable learning possibilities that empower the learners to contribute to their own and societal well-being, knowledge development and maintenance, and prosperity in harmony with nature and the environment (Kapranov, 2021; UNESCO, 2021). It should be, perhaps, noted that ESP is typically defined as the teaching and learning of “specific kind of English to learners who will use it in a particular professional setting, which could be occupational, academic or scientific” (Knezović, 2017, p. 319). To be precise, ESP settings are characterised by a strong applied dimension (Hyland, 2025) that focuses on communicative competences that are relevant to specific occupational contexts (Roothoof, Breeze, & Meyer, 2025) or educational settings (Šliogerienė et al., 2025). Written communication is thought to form an invaluable part of ESP students’ competences (Luchenko et al., 2024; Uzun, 2024). From this perspective, written communication in ESP contexts involves an ESP learner’s acquisition, maintenance and use of writing skills that are not only effective (Kapranov, 2017) and genre-appropriate (Catenaccio, 2025) but pragmatically-oriented (Richards, 2006) and sustainable (Zhang & Zhang, 2021).

One of the skills that ESP as well as EFL students should master includes awareness of and attention to the use of metadiscursive means, such as discourse markers (Appel & McKay, 2025; Hyland, 2025; Lasagabaster & Bier, 2025). Discourse markers (DMs) are defined as a class of lexical expressions (for instance, *but*, *in addition*, *so*) that signal a relationship between two adjacent discursive segments, such as sentences (S) and/or clauses (C), for example S/C 1 and S/C 2 (Fraser, 1999). DMs occur, typically, as a part of S/C 2, as illustrated below:

- (a) We were late, *but* no one seemed to mind.

(b) We were late. *But* no one seemed to mind. (Fraser, 2009, p. 298)

The DM *but* functions as a connector between the two clauses in (a) and two sentences in (b) and plays an important discursive role in the stretches of discourse without exhibiting a clear lexical and semantic value (Fraser, 2006, 2009).

In terms of the role of DMs in ESP writing, Hyland (1996) notes that an ESP student's rhetorical consciousness of DMs constitutes a critical facet of ESP-related writing skills. Accordingly, the need to foster an ESP student's awareness and active use of metadiscursive means inclusive of DMs is deemed to be crucial in ESP instruction (Mariotti, 2024). In this regard, there is a widely recognised argument that ESP courses should, among other aspects, provide a clear focus on the use of metadiscursive means and, particularly, DMs (Hyland, 1996, 2012; Kim et al., 2018; Okan & Özer, 2018).

While scholarly attention to DMs in an ESP student's writing is uncontested, little is currently known about their acquisition, particularly among cohorts of ESP undergraduates majoring in engineering and agricultural engineering (del Saz Rubio, 2011; Hyland, 2023; Kapranov & Voloshyna, 2023). Furthermore, there is a paucity of research studies that seek to uncover the acquisition of DMs in ESP writing seen through the lens of the explicit vs. implicit modes of instruction. In an attempt to generate new knowledge about the aforementioned gap, we present a quantitative study on the acquisition of DMs in descriptive essay writing by a group of ESP undergraduates majoring in agricultural engineering (hereafter, participants). Critically, the study builds on two research conditions: (i) the explicit mode of instruction in DMs within ESP undergraduate writing and (ii) the implicit mode of instruction thereof. A "before-and-after" intragroup design is employed to unpack whether the participants' acquisition of DMs is sustainable across these two modes over the course of one semester. We intend to measure the participants' sustainable practices associated with DMs in their descriptive essay writing by means of calculating the frequency of the occurrence of DMs in the series of descriptive essays written by the participants (i) after they have been exposed to the explicit teaching and learning of DMs in ESP writing in the first half of the autumn semester, and (ii) after they have experienced the implicit mode

of instruction related to DMs in the second half of the semester. Specifically, our research aim consists in answering the following research question (RQ):

RQ: Is the participants' acquisition of DMs in descriptive writing sustainable in the implicit mode of instruction?

The novelty of the study lies, firstly, in its focus on an underexplored area: DMs in ESP undergraduate writing. As existing research remains limited, we intend to provide a deeper and more contextualised insight into this domain. Secondly, we contend that while the participants' essays could reflect a possible improvement after a training period and a possible decline in the absence of monitoring in the implicit mode of instruction, this "improvement-and-decline" curve has not been documented among students who study under the extreme conditions and enormous stress of the on-going war. To reiterate, our participants, whose detailed description we provide further in the article, are first year ESP undergraduates at a university in Ukraine, which has been at war with Russia since February 2022. Given the extreme teaching and learning conditions, our study contributes to scholarship by examining the acquisition of DMs in situations that pose direct threat to life as well as numerous educational, cognitive, and psychological challenges (see Junina (2025)).

Further, this paper proceeds as follows. Firstly, an outline of the literature on DMs in ESP settings is provided. It should be observed that the literature review focuses exclusively on DMs in ESP contexts and does not involve an analysis of published research on DMs in EFL settings. Secondly, the present study is described in conjunction with its corpus, participants, research methodology, results and their discussion. Thirdly, a summary of the major findings is offered in unity with a number of methodological suggestions associated with the context of sustainable multilingualism.

Outline of the Literature on DMs in ESP Settings

Whereas DMs "have been a topic of research for 30 years under many different names" (Fraser, 2009, p. 293), for instance, discourse connectives

(Hall, 2007), discourse particles (Schourup, 1999), and pragmatic connectives (van Dijk, 1979), the present outline of the literature does not pretend to be exhaustive (see, for instance, Fraser (1990, 1999, 2009), Jucker and Ziv (2011), and Schiffrin (2005) for detailed reviews of the literature). In contrast to the prior reviews of the literature, however, this outline focuses on relatively recent studies on DMs in ESP contexts, which could be grouped in accordance with the following research themes: (i) ESP writing, (ii) ESP reading, (iii) ESP course books, and (iv) ESP lectures.

As far as the research theme of DMs in ESP writing is concerned, Hyland (2025) mentions the importance of metadiscursive means, inclusive of DMs, which should be taught to ESP students. Hyland's (2025) argument, presumably, is based upon his earlier study (1996), which shows that DMs and other metadiscursive means belong to an ESP student's repertoire of skills that should be fostered in ESP courses. Hyland (1996) contends that ESP students' writing should make use of DMs in order to express their views accurately and genre-appropriately. It is inferred from Hyland (1996, 2025) that DMs form part of the ESP student's writing strategy that should be taught explicitly, so that the students would be able to recognise the genre-appropriate DMs and use them accordingly. Hyland's (1996) views on metadiscourse and DMs in ESP writing correlate with research publications by Aidinlou and Mehr (2012), Kapranov (2018), Pavlović and Đorđević (2020), and Andayani (2024). Specifically, Aidinlou and Mehr (2012) regard DMs as metadiscursive means of enhancing ESP students' awareness of genre-appropriate writing conventions. They further indicate that the use of DMs in ESP students' writing has a positive impact upon their writing skills.

In line with Hyland (1996), Aidinlou and Mehr (2012) suggest that DMs should be taught explicitly in order to be incorporated sustainably into ESP students' writing. Similarly, Kapranov (2018) posits that explicit instruction is critical in the acquisition of DMs by those ESP students whose first language (L1) is Ukrainian. Particularly, by means of contrasting two groups of Ukrainian L1 ESP students in the implicit vs. explicit teaching and learning conditions, Kapranov (2018) demonstrates that the participants' implicit learning of DMs results in a substantial decrease in the frequency of occurrence of the DMs in

their writing. Just like Hyland (1996), and Aidinlou and Mehr (2012), Kapranov (2018) suggests that DMs should be taught explicitly in order to yield sustainable learning outcomes associated with the use of DMs in ESP-related settings. Also anchored in Hyland's (1996) view on metadiscourse, the study by Pavlović and Đorđević (2020) reveals that such DMs as *well, but, moreover, and so that* are rather frequent in the corpus of persuasive texts written by ESP undergraduates whose L1 is Serbian. The authors interpret their findings as an indication that the most frequently used DMs are involved in the pragmatic function of capturing the reader's attention and maintaining their interest in the topic. Notably, it is deduced from their study that the explicit mode of instruction in ESP writing exerts positive effects on the ESP students' ability to use DMs that are relevant and appropriate in the genre of persuasive writing. The findings by Pavlović and Đorđević (2020) are further corroborated by Andayani (2024), who examines how DMs as connectors are used in ESP students' essay writing. By means of a quantitative analysis of the corpus of ESP students' essays, Andayani (2024) has found that Indonesian L1 ESP students seem to overuse such DMs as *and, or, because of, and so that*.

While the theme of DMs in ESP-related reading is not as amply represented as the topic of DMs in ESP writing (see above), there seems to be a line of research into this issue that is central to scholarly publications by Martinez (1996, 2006), Fatalaki, Amini, and Mirzaee (2014), as well as Ciocoi-Pop (2020). In particular, Martinez (1996, 2006) examines the use of DMs in ESP students' reading comprehension and contends that the explicit approach to the teaching and learning of DMs plays a facilitative role in improving ESP students' reading comprehension. The researcher emphasises that a critical feature of the teaching and learning consists in the recognition and use of DMs, which, arguably, exerts positive effects on the reading comprehension by ESP students. A similar contention is present in the study by Ciocoi-Pop (2020), who suggests that attention to DMs and other metadiscursive means positively influences ESP students' reading comprehension. Analogously, a quantitative research investigation conducted by Fatalaki, Amini, and Mirzaee (2014) shows that the explicit mode of instruction of DMs is associated with beneficial effects on ESP undergraduates' reading comprehension.

The research theme of DMs in ESP course books is explored by Mohseni and Golestani (2015) who argue that an ESP learner may capitalise on the genre-appropriate DMs that are found in ESP course books. To support their argument, they examine the way DMs are employed in ESP books for the cohorts of ESP students majoring in computer science. Furthermore, the researchers seek to contrast ESP course books written by a number of non-native and native authors. Mohseni and Golestani (2015) have established that contrastive DMs are not significantly different in the non-native and native ESP course books. In particular, they show that the contrastive DMs *but* and *however* are the most frequently occurring DMs both in native and non-native authored ESP course books. Conceivably, their study demonstrates that ESP students should be provided with a clear writing sample in the form of a course book that contains and illustrates a range of genre-appropriate uses of DMs, in particular, contrastive DMs.

Finally, let us briefly discuss the research theme of DMs in ESP lectures. Miciano, Gocheco, Bensal, and Abatayo (2011) discuss the use of DMs in ESP lectures. To be precise, they explore the effect of DMs on academic listening comprehension by ESP undergraduates. These researchers assert that the presence of DMs in ESP lectures does not seem to correlate positively with the overall score of lecture comprehension by the students. In contrast to Miciano, Gocheco, Bensal, and Abatayo (2011), Deroey and Taverniers (2012) suggest that the use of DMs in ESP and EAP lectures is related to an effective way of communication in the process of lecture delivery. This argument is indirectly supported by del Pozo (2016), who discusses how DMs are employed in the structure of academic lectures. Del Pozo's (2016) research reveals that DMs play a facilitative role in lecture comprehension by means of providing pointers associated with the structure of an ESP lecture.

As outlined above, the literature on DMs in ESP contexts is explored in accordance with several research directions. Currently, however, there seems to be no published research that examines DMs in ESP writing by undergraduate students through the lens of sustainability. Further in the article, we present a quantitative study that endeavours to shed light onto this under-researched topic of scientific investigation.

The Present Study: Rationale, Research Tasks, Participants, Corpus, and Methodology

As we have seen in the introductory part of the article as well as in the literature review section, the teaching and learning of DMs, especially in the explicit mode of instruction, forms part of an ESP learner's skills that are applicable, first of all, to ESP writing. In this regard, it should be mentioned that writing by ESP students, especially undergraduates, has been a fruitful ground for a multitude of quantitative and qualitative studies (Hyland & Jiang, 2021; Hyland, 2022), which, as shown above, explore the use of DMs by different cohorts of ESP students. In the wake of prior research (Hyland, 1996, 2019, 2022, 2025), the present quantitative study aims at discovering new knowledge associated with the frequency of the occurrence of DMs in a corpus of descriptive essays written by the participants, who are Ukrainian L1 ESP undergraduates majoring in agricultural engineering. Further, we (i) provide the rationale of the study and research tasks, (ii) describe the group of participants, (iii) outline the corpus of the study, and (iii) specify the methodological foundations of the study.

Rationale and Research Tasks of the Study

The rationale of the study is to juxtapose the participants' acquisition of DMs in ESP writing in two experimental conditions, (i) the explicit mode of instruction and (ii) the implicit mode of instruction, respectively. This is done in order to unpack the RQ of the study, which is formulated in the introduction. Also, we should, perhaps, specify why the study is centred on the participants' DMs in the genre of descriptive writing. The reason behind the focus on DMs in a series of descriptive essays is motivated by the nature of the participants' ESP course, which in the autumn semester involves (i) an explicit mode of the teaching and learning of DMs and (ii) attention to the descriptive genre of essay writing. Furthermore, within one semester the participants are expected to master the intricacies of descriptive essay writing both in their major (e.g., agricultural engineering) and their ESP course. Given that the participants'

major requires them to provide short descriptive reports on a regular basis, we capitalise on this course requirement in the present study. The study is contextualised within a genre-based approach to the teaching and learning in ESP settings that is guided by genre-based ESP pedagogy (Bhatia, 1991; Cheng, 2006; Hyland, 2007). In line with the tenets of genre-based ESP pedagogy, the task of descriptive essay writing can be considered relevant in providing ESP undergraduates with targeted and course-appropriate instruction (Hyland, 2003, 2024).

On this note, we should, perhaps, mention that genre can be defined as “structured communicative events engaged in by specific discourse communities whose members share broad communicative purposes” (Swales, 1990, pp. 45–47). In the context of ESP genre-based writing instruction, genre can be operationalised as the use of language which is (i) goal-oriented, (ii) staged, (iii) socially recognised, (iv) context-sensitive, and (v) socially and communicative interactive (Cheng, 2006; Gardner & Nesi, 2013; Nesi & Gardner, 2018). In unity with the literature (Hyland, 1990; Swales, 1990), we regard the genre of a descriptive essay as a piece of writing that is organised around a depiction of a certain topic, theme, and/or event (Gardner & Nesi, 2013; Nesi & Gardner, 2018) whose main purpose is to provide “a clearly describable function” (Hyland, 1990, p.68), which is manifested linguistically by means of lexica associated with “characteristics, parts, aspects, layers, formats, habits, behaviors, and facets” (Pourdana & Asgari, 2021, p. 5).

Accordingly, we employ a series of descriptive essay tasks (total number = 3) in the study design to uncover whether the participants’ descriptive essay writing would be (i) reflective of the explicit mode of instruction associated with the teaching and learning of DMs and (ii) indicative of the participants’ sustainable learning practices related to the use of DMs. The latter point should be explained in more detail. In the study design, we specifically aim to explore whether the participants, having enjoyed the explicit teaching and learning practices associated with DMs in ESP writing, would sustain their use of DMs in the conditions that are characterised by the absence of explicit attention to DMs in their essay writing.

Guided by this rationale, the RQ of the study is formulated (see introduction). As mentioned above, the study design involves a series of three

descriptive essay writing tasks, which are executed within one semester. The first task is the so-called pre-test, given at the very beginning of the autumn semester. The pre-test task consists of one descriptive essay per participant. The purpose of the pre-test task is to shed light onto the participants' use of DMs prior to the explicit teaching and learning practices associated with the use of DMs in ESP writing. Upon the completion of the pre-test task, the first round (hereafter, Round 1) of descriptive essay writing follows. It takes place after the participants' explicit exposure to the peculiarities and use of DMs in ESP writing. Round 1 takes place in the middle of the autumn semester. Thereafter, Round 2 of descriptive essay writing occurs at the end of the autumn semester in the context of the implicit teaching and learning mode.

In other words, the study is set as a "before-and-after" intraparticipant research experiment, which involves three experimental tasks, namely (i) the diagnostic pre-test, (ii) Round 1 of descriptive essay writing, and (iii) Round 2 of descriptive essay writing. It is important to note that all three tasks in the study involve descriptive essay writing. The tasks, their descriptions and the timeline of their execution are summarised in Table 1 below.

Table 1

A Summary of the Tasks and Their Timeline

#	A Summary of the Task	Timeline
1	Pre-test. Task description: The pre-test consisted in a descriptive essay of approximately 300 words on the topic "A Description of My Favourite Meal". The participants were not cued as far as the use of DMs was concerned.	The task was executed by the participants one week after the start of the autumn semester in August 2024. The task was written by the participants at home. The participants were given five working days to complete the task and send it electronically to the authors of the article. The participants were instructed to avoid using course books, lecture notes, online aids and other teaching and learning aids in their essay writing.
2	Round 1. Task description: Round 1 involved a descriptive essay of approximately 300 words titled "A Description of My Usual Day". At the time of Round 1 of essay writing,	The task was executed by the participants in the middle of the autumn semester in October 2024, after they had spent a month and a half of explicit instruction related to DMs. The task was written by the participants at home. The participants were given five working days to complete the task and send it electronically to

#	A Summary of the Task	Timeline
	the participants were cognisant with the use of DMs in ESP writing.	the authors of the article. The participants were instructed to avoid using course books, lecture notes, online aids and other teaching and learning aids in their essay writing.
3	Round 2. Task description: Round 2 consisted in a descriptive essay of circa 300 words on the topic "My Usual Day at Field/Work Practice". At the time of Round 2 of essay writing, the participants had spent approximately 1.5 months without explicit input related to DMs in ESP contexts.	The task was executed by the participants at the end of the autumn semester in December 2024 after a month and half of the absence of explicit instruction associated with DMs in ESP essay writing. The task was written by the participants at home. The participants were given five working days to complete the task and send it electronically to the authors of the article. The participants were instructed to avoid using course books, lecture notes, online aids and other teaching and learning aids in their essay writing.

It should be noted that prior to Round 1, the participants were continuously exposed to the explicit mode of instruction related to DMs that involved a range of both in-class and out-of-class activities, such as (i) raising the participants' awareness of DMs in English, (ii) translating English DMs into Ukrainian, (iii) finding parallels between the use of DMs in English and Ukrainian, (iv) providing the participants with a list of DMs that would be typically associated with the neutral register in English, (v) giving the participants a list of DMs that would be typically used in the academic register of English, (vi) doing exercises, such as finding and circling a DM in the text, matching a DM with its meaning, writing up sentences with a DM or DMs in them, making up an oral dialogue with a partner and trying to use DMs associated with the neutral register of English, writing down the dialogue with DMs in it, etc. In contrast to Round 1, descriptive essay writing in Round 2 was conducted without explicit interventions related to the teaching and learning of DMs, as shown in Table 1.

Participants

In total, 25 participants (13 males and 12 females, mean age = 17.3 years, $SD = 0.4$) took part in the study. All of them were undergraduate first year students of agricultural engineering at a university in Central Ukraine. The participants' L1 was Ukrainian, whereas English was

a foreign language (FL). Additionally, the participants reported that Russian was a foreign language for all of them, which they could understand, read, and, to some extent, speak, but not write. Hence, the participants could be described as a multilingual cohort of undergraduates with Ukrainian as L1 and English and Russian as FLs.

It should be observed that the participants' English proficiency was rather low. At the start of the autumn semester 2024, the participants' English proficiency was evaluated at A2 level according to the Common European Framework of Reference for Language (CEFR). The low level of the participants' proficiency in English could be accounted by two variables. Firstly, the participants represented the so-called "digital generation" of Ukrainian L1 EFL learners, who, prior to the start of their university studies, had had approximately two years of the digital teaching and learning of English, as well as other secondary school subjects, due to the COVID-19 pandemics in 2020–2022. Secondly, the participants had had two more years of digital teaching and learning experiences due to the Russo-Ukrainian war from February 2022 onwards (Kapranov & Voloshyna, 2023; Mizin & Slavova, 2025).

The participants were provided with the information sheet that described the range of activities in the experimental tasks. The participants were requested to sign consent forms that gave permission to the authors of the article to analyse their essays for research and publication purposes. In order to ensure confidentiality, the participants' real names were coded by means of applying codes P (participant) plus number, for instance, P1, P2, ... P25. Other identifying information, apart from the participants' age and gender, was coded and classified.

Corpus and Methods

The corpus of the study was characterised by the following descriptive statistics: (i) pre-test consisted of 6 669 words in total ($M = 266.8$, $SD = 48.7$), (ii) Round 1 included 8 295 words ($M = 331.8$, $SD = 92.4$), and (iii) Round 2 involved 8 238 words ($M = 329.5$, $SD = 113.2$). The corpus was searched for the DMs in unity with the definition of DMs proposed by Fraser (1999, p. 931), who considered DMs to be a class of lexical expressions that could signal

a relationship between two sentences and/or clauses S1 and S1 by means of either relating the explicit interpretation conveyed by S2 with some aspect associated with S1 or by relating the topic of S2 to that of S1.

Guided by Fraser's (1999) definition of DMs, the corpus was processed in the computer program AntConc (Anthony, 2022) in order to calculate the total number of DMs per essay per participant. To that end, the participants' essays in pre-test were merged into one file and processed in AntConc (Anthony, 2022). Identically, the participants' essays in Round 1 and Round 2, respectively, were merged and examined in AntConc. Thereafter, the corpus data were checked manually for possible omissions and misclassifications of DMs. Finally, the Statistical Package for Social Sciences (SPSS), version 20.0 (IBM 2011) was employed in order to compute means (M) and standard deviations (SD) of the DMs per each task.

Results and Discussion

The results of the quantitative analysis show that the participants' essays are (i) characterised by rather low frequencies of the occurrence of DMs in the pre-test task, (ii) defined by an increase in the frequency of the occurrence of DMs in Round 1, and (iii) marked by a substantial decrease in the use of DMs in Round 2, as evident from Table 2 below.

Table 2

The Frequency of the Occurrence of DMs in the Corpus

#	DMs	Pre-Test	Round 1	Round 2
1	Actually	0	1 (M 0, SD 0)	0
2	After all	0	4 (M 1.3, SD 0.5)	0
3	Afterwards	0	2 (M 1.0, SD 0)	0
4	Also	2 (M 1.0, SD 0)	8 (M 1.1, SD 0.3)	3 (M 1.0, SD)
5	Although	0	1 (M 0, SD 0)	0
6	And	18 (M 1.2, SD 0.4)	53 (M 2.2, SD 0.9)	22 (M 1.6, SD 0.7)
7	As	6 (M 1.0, SD 0)	24 (M 1.5, SD 0.7)	9 (M 1.1, SD)

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#	DMs	Pre-Test	Round 1	Round 2
8	Basically	0	1 (M 0, SD 0)	0
9	Because	4 (M 1.0, SD 0)	6 (M 1.0, SD 0)	1 (M 0, SD 0)
10	But	12 (1.3, SD 0.5)	23 (M 1.4, SD 0.6)	11 (M 1.2, SD 0.4)
11	Especially	0	0	1 (M 0, SD 0)
12	Even though	0	4 (M 1.0, SD 0)	1 (M 0, SD 0)
13	Finally	0	1 (M 0, SD 0)	1 (M 0, SD 0)
14	First of all	1 (M 0, SD 0)	1 (M 0, SD 0)	0
15	Hopefully	0	1 (M 0, SD 0)	0
16	However	0	0	4 (M 0, SD 0)
17	If	7 (M 1.4, SD 0.4)	15 (M 1.4, SD 0.8)	11 (M 2.2, SD 0.9)
18	In general	0	3 (M 1.0, SD 0)	3 (M 1.0, SD 0)
19	Just	0	4 (M 1.0, SD 0)	0
20	Like	0	1 (M 0, SD 0)	0
21	Moreover	0	0	1 (M 0, SD 0)
22	Next	0	0	1 (M 0, SD 0)
23	Normally	0	0	1 (M 0, SD 0)
24	Of course	7 (M 1.8, SD 0.8)	2 (M 1.0, SD 0)	0
25	Often	0	2 (M 1.0, SD 0)	0
26	Once	0	0	1 (M 0, SD 0)
27	Or	5 (M 1.0, SD 0)	14 (M 0, SD 0)	8 (M 1.2, SD 0.3)
28	Since	0	2 (M 1.0, SD 0)	2 (M 1.1, SD 0)
29	So	9 (M 1.3, SD 0.5)	14 (M 1.3, SD 0.6)	1 (M 0, SD 0)
30	Sometimes	11 (M 1.2, SD 0.6)	30 (M 2.1, SD 1.2)	1 (M 0, SD 0)
31	Then	1 (M 0, SD 0)	22 (M 2.0, SD 0.9)	3 (M 1.0, SD 0)
32	Therefore	0	0	1 (M 0, SD 0)
33	Thus	0	0	1 (M 0, SD 0)
34	Typically	0	0	2 (M 1.0, SD 0)
35	Unlike	0	0	1 (M 1.0, SD 0)
36	Usually	5 (M 1.6, SD 0.4)	17 (M 1.3, SD 0.5)	2 (M 1.0, SD 0)

#	DMs	Pre-Test	Round 1	Round 2
37	Well	4 (M 1, SD 0)	0	0
38	While	0	0	1 (M 0, SD 0)
39	Yet	0	1 (M 0, SD 0)	0

As far as the RQ of the study is concerned, it is evident from the frequency data of DMs (see Table 2) that the participants' learning curve peaks in Round 1 and declines rather abruptly in Round 2. Moreover, the frequency data show that the occurrence of DMs in Round 2 seems to converge on the values that are observed in the pre-test task. Judging from the data, we consider that the participants' acquisition of DMs in the course of one semester is unsustainable. Further in the discussion, we will unpack these findings by focusing on the pre-test task and, thereafter, proceed to the DMs that occur in Round 1 and Round 2, respectively. As illustrated in Table 2, the participants' repertoire of DMs in the pre-test task is rather limited (the total number of DMs is 92, $M = 6.6$, $SD = 4.5$). It is manifested by the DMs *also*, *and*, *as*, *because*, *but*, *first of all*, *if*, *of course*, *or*, *so*, *sometimes*, *then*, *usually*, and *well*. It follows from the data summarised in Table 2 that the most frequent DMs in the pre-test task are represented by *and*, *but*, *sometimes*, *so*, *if*, and *of course*. These findings support the literature (Aidinlou & Mehr, 2012; Andayani, 2024; Kapranov, 2018) which demonstrates that ESP undergraduate students tend to rely substantially on a very limited range of DMs, such as *and*, *but*, *so*, etc. In unity with prior research (Kapranov, 2018; Pavlović & Đorđević, 2020), it can be argued that the frequency of the occurrence of DMs in ESP students' writing depends, to some extent, on the level of EFL exposure as well as the EFL teaching and learning practices that ESP students experienced in their secondary school settings (Kapranov & Voloshyna, 2023).

Indeed, during informal conversations with the participants at their lectures and seminars, they indicated that no special attention had been paid to metadiscursive means in EFL writing in the participants' secondary school settings. This is, perhaps, not at all surprising, given that they had to study online for two years due to COVID-19 pandemics, and then they had to proceed with the online EFL teaching and learning at secondary school due to the full-

scale Russo-Ukrainian war. Obviously, the limitations of the online EFL instruction, which are further exacerbated by such war-related factors as anxiety, stress, and difficulties to concentrate (Kapranov & Voloshyna, 2023) have resulted in a rather modest number of DMs in the pre-test task.

Although the participants' repertoire of DMs is limited in the pre-test task, they, nevertheless, appear to be responsive to the pedagogical intervention and explicit mode of instruction related to the teaching and learning of DMs from the start of the semester and up until the middle of the autumn semester. This finding is evident from the increase in the frequency of the DMs in Round 1 (the total number of DMs in Round 1 is 257 ($M = 9.5$, $SD = 12.1$). Concurrently, Round 1 is characterised by broadening the range of DMs, as shown in Table 2. Specifically, in Round 1 the participants employ a number of DMs that are not found in the pre-test task, such as *actually*, *after all*, *afterwards*, *although*, *basically*, *even though*, *finally*, *hopefully*, *in general*, *just*, *like*, *often*, *since*, and *yet*. An evident increase in both the qualitative and quantitative characteristics of the DMs in Round 1 is consistent with the literature (Aidinlou & Mehr, 2012; Ciocoi-Pop, 2020; Fatalaki, Amini, & Mirzaee, 2014; Kapranov, 2018; Martinez, 1996, 2006; Pavlović & Đorđević, 2020), which demonstrates that the explicit mode of teaching and learning of DMs typically results in positive gains in ESP students' proficiency associated with the increase in the frequency of DMs. In terms of the positive gains associated with DMs, we contend that the explicit mode of instruction, lasting one month and a half is sufficient to account for the rapid increase in their use. This contention takes into account both the quantitative and qualitative gains in Round 1 of essay writing (see Table 2).

At the same time, however, the period of one month and a half is insufficient to provide a solid and, importantly, sustainable foundation for the participants' use of DMs in their ESP writing in the absence of pedagogical intervention. This argument is supported by the findings (see Table 2), which show that the absence of the explicit teaching and learning of DMs over a period of one month and a half has resulted in a substantial decrease in the frequency in Round 2 (total number of DMs = 94 ($M = 3.6$, $SD = 4.8$). In contrast to Round 1, Round 2 does not contain such DMs, as *actually*, *after all*, *afterwards*,

although, basically, first of all, hopefully, just, like, of course, often, and yet (see Table 2).

Notably, a small group of DMs appeared in Round 2 but were absent in Round 1. These DMs are *especially, however, moreover, next, normally, therefore, thus, typically, unlike, and while*. It follows from these findings that in Round 2 the participants seem to relinquish some of the neutrally and colloquially connoted DMs that they employ in the pre-test task and in Round 1 (for instance, *actually, basically, hopefully, like, etc.*). Concurrently with the decrease in the use of neutrally and colloquially connoted DMs in Round 2, the participants utilise some of the DMs that are typically associated with the academic register of English, such as *however, moreover, therefore, and thus*. However, their frequency of occurrence in Round 2 is low. Whereas this finding may appear marginal, we, nevertheless, treat it as an interesting discovery on the grounds that Round 2 is characterised by the absence of explicit instruction related to DMs in essay writing. Yet, the participants manage to introduce a range of formally-connoted DMs into their essay writing in Round 2. The presence of the DMs that are specific to Round 2 is suggestive of the non-linearity of the learning processes that eventuate in the conditions that are characterised by the absence of pedagogical interventions as far as the use of DMs in essay writing is concerned. It should be noted that the literature (Aidinlou & Mehr, 2012; Andayani, 2024; Hyland, 1996; Kapranov, 2018; Pavlović & Đorđević, 2020) does not report similar findings.

The increase in the frequency of DMs as evidenced by Round 1 and their subsequent decrease in Round 2 could be, as mentioned above, accounted by the non-linearity of the learning process. In this regard, Larsen-Freeman (1997, p. 151) indicates that from the vantage point of the Dynamic Systems Theory (DST) in EFL and, more broadly, FL acquisition, the process of acquisition of linguistic items by an FL learner is not linear, since it is subject to the learning curve that is influenced by a multitude of factors that involve aptitude, cognition, cognitive load, context, motivation, and other phenomena, such as the type of instruction. Indeed, only one variable out of the plethora of other reasons (for instance, implicit instruction) could shift the entire learning curve in the process of FL acquisition in an unpredictable direction (Kirsner et al.; 2007; Speelman & Kirsner, 2006). Accordingly, as rightfully formulated by

Mallows (2002, p. 4), “despite our linear syllabuses, and clearly defined lesson aims, progress and backsliding in equal and unpredictable measures are the norm”. One of the manifestations of the combination of the FL learner’s progress and the ensuing backsliding in the sense postulated by Mallows (2002) is illustrated by the present findings. For instance, the observed increase in the frequency of DMs in Round 1 can be explained by the participants’ sensitivity and responsiveness to the explicit mode of instruction, whilst an abrupt and almost catastrophic decrease in Round 2 could be justified by the absence of explicit input that nourishes and sustains the participants’ learning curve associated with the acquisition and maintenance of DMs. Again, such a disturbance in the participants’ acquisition of DMs should form part of another study that should focus exclusively on the elucidation of the acquisition of DMs within the domain of DST.

Let us proceed, however, to the discussion of the DMs that are used by the participants in all three tasks (i.e., pre-test, Round 1, and Round 2), namely *and, as, because, but, if, or, so, sometimes, then, and usually*. The normalised frequencies of these DMs are given in Table 3 below.

Table 3

The Normalised Frequency per 1000 Words of the DMs That Are Found in All Three Tasks

#	DMs	Pre-Test	Round 1	Round 2
1	And	2.7	6.4	2.7
2	As	0.9	2.9	1.1
3	Because	0.6	0.7	0.1
4	But	1.8	2.8	1.3
5	If	1.0	1.8	1.3
6	Or	0.7	1.7	1.0
7	So	1.3	1.7	0.1
8	Sometimes	1.6	3.6	0.1
9	Then	0.1	2.7	0.4
10	Usually	0.7	2.0	0.2

We tend to interpret the use of *and, as, because, but, if, or, so, sometimes, then, and usually* in the pre-test and their subsequent occurrence

in Round 1 and Round 2, respectively, as an indication of the participants' sustainable linguistic practices. In particular, this finding suggests that the participants tend to rely on the repertoire of the DMs that they acquired in secondary school, which they consistently repeated in both Round 1 and Round 2. The consistent nature of the use, or rather, reuse of these DMs is evident from the comparisons of the DMs *and*, *as*, *but*, *if*, and *or* in the pre-test task and Round 2. Judging from the normalised data, the frequencies of *and*, *as*, *but*, *if*, and *or* are strikingly similar across the experimental tasks without explicit input associated with the acquisition and use of DMs. These findings allow us to suggest some of the pedagogical implications concerning the participants' sustainable learning practices related to DMs.

Amongst the broader implications for ESP syllabus design and instruction strategies, we should mention the following rather practical implications. Given that the explicit mode of the teaching and learning in Round 1 is associated with 14 contact hours allocated for lectures and seminars and 56 hours of individual work for the duration of one and a half months, it seems logical to suggest that, ideally, an ESP syllabus design should be comprised of at least 28 contact hours and 112 hours of individual work for the duration of semester, which could allow sufficient time for ESP instructors and their students to create a sustainable learning environment as far as metadiscursive means in writing are concerned. In addition to the quite obvious need to increase the number of contact hours in order to teach DMs and other metadiscursive means sustainably, we would like to propose one more suggestion. It involves taking into account ESP undergraduates' prior knowledge of DMs acquired through their exposure to EFL in secondary school. In this regard, it would be advantageous to test ESP undergraduates on a possible range of DMs that they learnt at school in order to assess their repertoire of DMs prior they commence their undergraduate course in ESP.

Limitations of the Study

We should note several limitations of the study. The first limitation involves a relatively small number of participants ($N = 25$). Hopefully, this limitation will be remedied in our future studies on DMs in undergraduate

writing. Another limitation consists in the overlap of the assigned topics (e.g., “My Favourite Meal”, “My Usual Day”) in the set of research tasks that, arguably, are aligned not only with the occupational ESP writing genres, but also with those of EFL by resembling, partially, EFL-level personal essays. Whilst the overlap is accounted for by the low level of the participants’ English proficiency, a more ESP-oriented type of essay writing would be desirable in future studies. Yet, one more limitation of the study is that whereas the participants were instructed to write their essays without aids at home, there could be concerns whether all the participants did so. At the same time, to account for this shortcoming, we should reiterate that the study took place in the context of the ongoing full-scale war, with the shortage of electricity, the disruption of the Internet, and the problem with mobile networks. An alternative would be to execute all the tasks intramurally on campus, but again, during the war, there are daily situations when face-to-face instruction as well as any scientific/experimental work must be interrupted by the sounds of air raid sirens that mandate the students and the teaching staff to leave their usual classroom environment and relocate to the bomb shelters. In this light, offering the participants to complete the tasks at home would be a viable, yet not the best alternative to the execution of the research tasks on campus. We acknowledge the aforementioned limitation, which, hopefully, will be rectified in the normal environment on campus after the end of the war.

Conclusions

This study seeks to unpack sustainable practices in the acquisition of DMs in ESP undergraduate writing under two experimental conditions that are associated with the explicit and implicit modes of instruction. Furthermore, the study is set amid the ongoing Russo-Ukrainian war, which is characterised by systematic and purposeful targeting of universities and other educational establishments. Despite these grave circumstances, the participants in the study, who are first year ESP undergraduates, exhibit remarkable gains in the acquisition of DMs in ESP writing in the explicit conditions of instruction. However, the participants’ gains are found to be unsustainable in the context of the implicit mode. These findings reveal that the participants’ learning curve

can be considered as a typical, even prototypical (Kirsner et al., 2007; Larsen-Freeman, 1997) phenomenon that is in alignment with the acquisition of DMs in ESP writing in the normal war-free conditions. This finding is novel and has not been described in the prior studies. Broadly, its implications may contribute to ESP studies in conflict- and war-related educational settings.

The findings of the present study reveal that the participants' repertoire of DMs in the pre-test task is reflective of their knowledge about DMs that hails from secondary school. The analysis of the pre-test task indicates that the repertoire is limited and concomitant with a low frequency of the occurrence of DMs. These findings are in complete alignment with the literature (Aidinlou & Mehr, 2012; Andayani, 2024; Kapranov, 2018), which reports a limited use of DMs by undergraduate ESP students. The findings associated with Round 1, however, show that the participants exhibit positive gains in terms of both an increase in the frequency of the occurrence of DMs as well as broadening the repertoire of DMs. This discovery is suggestive of the benevolent effect of the explicit mode of instruction on the participants' use of DMs in their descriptive essay writing. Additionally, we may argue that a positive effect of the explicit mode of instruction could be achieved after a period of one month and a half. Importantly, however, we can posit that the positive gains in terms of the use and the frequency of the occurrence of DMs are short lived and not sustainable from the perspective of the entire semester. This finding follows from the decrease in the frequency of the occurrence of DMs as well as from the narrowing of their repertoire in Round 2, which, as mentioned, eventuated without any explicit teaching and learning of the DMs for half a semester (i.e., a quad).

From the vantage point of sustainable language learning practices, we can formulate the following linguo-didactic implications: (i) when teaching DMs to ESP undergraduates, an ESP course should capitalise on the undergraduates' knowledge of DMs that they gained in secondary school; (ii) the teaching and learning of DMs in an ESP course should be one semester in duration in order to be, at least minimally, sustainable; (iii) ESP course instructors should be aware of the fact that possible gains in the use and frequency of DMs by ESP undergraduates may within a short period of time be followed by a rather rapid decline in metadiscursive practices associated with DMs in ESP writing.

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DISKURSO ŽYMEKLIŲ ĮSISAVINIMAS: TVARIŲ MOKYMO
PRAKTIKŲ ATRADIMAS APRAŠOMOJO ESE RAŠYMO METODU**

Anotacija. Diskurso žymeklių įsisavinimo mokant dalykinės anglų kalbos problema nebuvo išsamiai ištirta iš tvaraus mokymo, susijusio su tiesioginio (angl. *explicit*) ir netiesioginio (angl. *implicit*) mokymo būdais, perspektyvos. Straipsnyje pateikto kiekybinio tyrimo tikslas – atskleisti, ar diskurso žymeklių įsisavinimas išlieka tvarus vieną semestrą. Šiam tikslui pasiekti pasirinktas dalykinės anglų kalbos besimokančių bakalauro studijų studentų, kurių gimtoji kalba yra ukrainiečių, o kita užsienio kalba – rusų, aprašomųjų esė tekstynas. Viena tekstyno dalis buvo parašyta mokant studentus tiesioginio, kita dalis – netiesioginio mokymo metodais. Tekstynai analizuoti kompiuterine programa *AntConc* (Anthony, 2022), siekiant ištirti ilgainiui atsiradusius galimus diskurso žymeklių dažnio pokyčius. Kiekybinis dalyvių esė tyrimas atskleidė šiuos pagrindinius rezultatus: tiesioginio mokymo metodo dalyvių aprašomosiose esė diskurso žymekliai vartojami žymiai dažniau, o netiesioginio mokymo metodu parengtose esė diskurso žymeklių vartota gerokai mažiau ir rečiau. Rezultatai, tyrimo naujumas ir pedagoginės implikacijos, kurias suponuoja tyrimo rezultatai, aptarti straipsnyje.

Pagrindinės sąvokos: aprašomosios esė; dalykinė anglų kalba; diskurso žymekliai; tvaraus mokymo praktika.