Complexity and Interaction across Oral, Written and Online Discourse

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ABSTRACT

Most research that observed online discussions compared them to either written (e.g., Hewing& Coffin, 2007) or oral discourse (e.g., Joiner et al., 2008), never compiling the three modalities, and they did not provide comprehensive results regarding both form and Interaction. Academic essays and oral debates have been widely consumed in the EAP classroom. However, the effectiveness of synchronous online forums in the EFL academic classroom and their discourse features need to be compared to oral and written academic tasks simultaneously through a comprehensive analysis of both complexity, accuracy, and Interaction. The present study investigated the use of complex syntax, grammatical accuracy, and Interaction in the argumentative discourse of academic essays, oral debates, and synchronous online forums of EFL undergraduate students (*N*= 54) enrolled in a 12-week module of English for academic purposes. The methodology encompassed qualitative and quantitative methods of analysis. All data were qualitatively transcribed and coded. Then results were quantitatively calculated using ANOVA and post hoc t-tests to find the differences across tasks for each variable. Results revealed a higher impact of academic essays and synchronous online forums on syntactic complexity and grammatical accuracy than oral debates and a greater influence of online forums and oral debates than academic essays on interactional features. Synchronous online forums revealed the highest impact as a task combining both structure and Interaction. Pedagogical implications then highlighted how synchronous online forums could be used in the rhetoric and composition EFL classroom

Keywords:
Interaction, Syntactic Complexity, Academic writing, Oral Debates, Synchronous Online Forums

Introduction

The Online forum has been widely used in distant and blended courses (Bates, 2019; Gamage et al., 2022). The present study aims at exploring the distinguishing discourse features of online forums, face-to-face oral debates, and academic essays in order to set a continuum determining the position of synchronous online forums compared to oral and written modalities in the academic context of English as a foreign language. Moreover, there are still a lot of arguments concerning

its efficiency in the use of English for academic purposes (e.g., Fu et al., 2016). Online discussions were usually compared to only one written or oral modality but never with both oral and written modalities under the same contextual features. Furthermore, most of the investigations focused on Interaction (Shakarami et al., 2016) and knowledge construction (Duvall et al., 2020; Shukor et al., 2014) rather than both Interaction and form focusing on syntactic complexity and grammatical accuracy, which are major factors in the development of the EFL learner (Pienemann, 1998) and hence the influence of a classroom task. Most of the previous research observed online forums as an asynchronous task though synchronicity is one important feature of oral debates or face-to-face discussions (Bates, 2019). Therefore, it is vital to explore the efficiency of synchronous online forums academically compared to other academic oral and written tasks. Complex syntactic structures, grammatical accuracy, and Interaction were analyzed to locate online forums on a continuum between oral and written academic discourse. The form was investigated via a cognitive analysis of complex syntax in the three investigated tasks, whereas Interaction was investigated via the functional approach, metadiscourse strategies, and engagement markers (Hyland, 2005).

Cognitive (e.g., Pienemann, 1998) and functional linguistics (Halliday& Matthiessen, 2004) are two major approaches that have raised a lot of arguments and greatly influenced the analysis of discourse. They are contradictory in their focus of analysis. In cognitive linguistics, form is the main concern and the major indication of language acquisition development, while in functional grammar, the function of form in discourse/ the text is of more concern. Nevertheless, in this study, both approaches are considered complementary for revealing results on both cognitively complex syntactic and interactional features used by EFL learners in discourse across three tasks with three different modalities. English is categorized by Thompson (1978) as a grammatically word order language (GWO) that relies on the grammatical function of word order rather than the pragmatic function. Pienemann (1998) and Clahsen (1984) found that complex syntax and the use of subordinate clauses is the last stage to be cognitively acquired by ESL learners. Accordingly, subordination and complex syntax should be the most significant feature to be highlighted in academic ESL/EFL tasks. Interaction, nevertheless, was of high concern to most research comparing online and face-to-face discussions as well as online and academic writing (Hewing& Coffin, 2007; Joiner et al., 2008). The cognitive approach of analysis influenced the focus of the study on syntactic complexity and grammatical accuracy, while functional analysis influenced the analysis of interactional discourse in the form of engagement markers. Thus, this study used both cognitive and functional approaches of analysis to explore similarities and differences in both form and Interaction via rhetorical discourse across online forums, oral debates, and academic essays of EFL undergraduate students.

Theoretical Background

Cognitive processing approach

Syntactic complexity measured through subordination and density of clauses is a significant indicator of cognitive development among native speakers (Nippold et al., 2020) and higher proficiency levels among second language learners (Tan& Dang, 2022; Zaki, 2011). Moreover, syntactic complexity is also observed as a measurement of language formality in various genres and learning tasks, especially in the academic context (e.g., Nippold et al., 2017; Nippold et al., 2020). Academic writing and critical thinking tasks highly promoted the use of complex syntax

(Jin et al., 2020; Nippold et al., 2020). Being such a measurement of linguistic development relies on major cognitive processing models that determine a hierarchy of developmental features of second language structures (Clahsen, 1984; Pienemann, 1998). Each stage is determined by the first emergence of a new, more complex linguistic structure in the oral performance of the second language speaker disregarding the accuracy of usage. Thus, the first appearance, rather than accuracy of usage, of a linguistic structure in the production of the second language learner determines a new developmental stage on a hierarchy of grammatical structures (Clahsen, 1984; Pienemann, 1998). The oral production of a grammatical feature indicates that the learner is cognitively processed and fully acquired.

Clahsen (1984) proposed the Multidimensional Model, claiming that producing more complex structures is positively correlated with higher cognitive processing. Pienemann (1998) proposed the Processability Theory (PT) with six sequential stages for the second language learner's grammatical development. The highest cognitively processed structure in both was the ability to produce embedded clauses in oral production. These stages are illustrated by Pienemann (as cited in Braidi, 1999) as follows:

1. Word (Words)

2. Category procedure (Lexical morphemes)

3. Phrasal procedure (Phrasal informational exchange)

4. Grammatical function (Inter-phrasal information exchange)

5. Sentence procedure (Inter-phrasal information exchange)

6. Sub-clause procedure (Main and subordinate clauses)

According to processing theories, the production of a subordinate clause is the most advanced acquired grammatical structure in second language learners. A dependent clause is embedded in the main clause to function as an adverbial, adjectival, or a complement such as a noun or a verb complement. It can occur in a finite or a non-finite form. A Finite subordinate clause clearly marks tense and modality, while a non-finite subordinate clause can mark aspect and voice (Biber& Gray, 2016) and is formed of the infinitive, the gerundive, and the participial (Nippold et al., 2017). In the current study, finite and infinite subordinate clauses will be observed in the three academic modality tasks for both quantity and grammatical accuracy in order to evaluate the most cognitively influential task for EFL students and the most promoting task of complex syntactic structures, exploring as well the variation amongst oral, written and multimodal second language discourse in the academic context.

Functional Analysis

According to Halliday (1994) and Halliday and Matthiessen (2004), systematic functional analysis focuses on three integrated metafunctions for the linguistic tokens used in any utterance or text, namely: ideational, interpersonal, and textual functions. An ideational function is relevant to the propositional content or ideas and experiences represented by the language used, whereas the interpersonal function of language shows how it is manipulated to enhance Interaction and engagement among the author, reader, and text. The third function is relevant to how language organizes and unites the text coherently.

Similarly, Metadiscourse is defined by Hyland (2005, p.27) as "the way writers engage their readers and create convincing and coherent text…it is about interaction in text". Lexical variables such as evaluative lexis and stance markers may reveal the writer's attitude, emotions, and reactions towards a proposition. Bagheri& Zenouzagh (2021) observed various engagement discourses highlighting EFL learners' attitudes and engagement in face-to-face and online speaking modalities. Metacognitive verbs were observed as a criterion for higher critical thinking abilities in adolescent students (Nippold et al., 2020). Thus, in the current investigation, Interaction was a construct of significant concern that was observed through engagement markers involving personal expressions of stance, personal pronouns, commands, questions, and concessions in the argumentative discourse of EFL learners.

Literature Review

Syntactic complexity in online forums

The research highlighted a positive correlation between the production of complex syntax and language proficiency scores (Tan& Dang, 2022) in IELTS writing task 2, where scores above band 6 included dependent clauses in 74.2% of the total number of sentences while scores below 6 showed 56.2% of the total number of sentences. Argumentative writing in particular, promoted syntactic complexity in English learners (Nippold et al., 2020; Jin et al., 2020). Adolescent age groups of both 13 and 16 years old writing their opinion agreeing or disagreeing with the moral messages of fables produced high levels of syntactic complexity due to the critical thinking nature of the task (Nippold et al., 2020). Similarly, argumentative essays comprised higher levels of syntactic complexity than face-to-face oral discussions in EFL students who focused on linguistic complexity during the writing process (Jin et al., 2020) and in native speakers' discourse (Biber& Gray, 2016). Moreover, academic writing is usually related to the use of complex syntax and embedded clauses (Biber& Gray, 2016; Fang, 2021). Comparing oral discussions across the face-to-face and online modalities, EFL students, were found to focus more on syntax in the online modality than in face-to-face discussions where they focused on engagement markers (Bagheri& Zenouzagh, 2021). Though relatively plenty of studies have investigated online discussions in education (e.g., Costley& Lange, 2016; Fu et al., 2016), they all focused on their influence on students' knowledge construction and critical thinking more than the impact these discussions have on fluency, proficiency level, and grammatical accuracy. Very few studies examined the relationship between online discussions and syntactic complexity (Montero-Fleta et al., 2009; Pyun, 2003; Sotillo, 2000). In observation of online and face-to-face discussions, Pyun (2003) found that non-native speakers of English produced more error-free utterances in online discussions than in face-to-face discussions signifying a higher grammatical accuracy, without any variance in syntactic complexity, though. A Further investigation highlighted a richer command of error-free utterances in synchronous online forums than asynchronous ones (Sotilla, 2000) and an impact of the topic on syntactic complexity since political forums comprised longer sentences than football forums (Montero-Fleta et al., 2009). In order, hence, to explore the variation amongst online oral, and written academic tasks, both syntactic complexity, and grammatical accuracy should be scrutinized through a variety of topic discussions. Thus, this study will observe finite and non-finite subordinate clauses for syntactic complexity and error-free utterances for grammatical accuracy in the three academic tasks: essays, online forums, and oral debates to compare the effect of each task on EFL learners' language formality and promotion of cognitively higher complex structures.

Engagement in online discussions

Online forums own many of the traits that lead to students' satisfaction, such as the involvement in the university online system, the need for critical thinking and knowledge building skills, and the context of communicating with their class community (Tran et al., 2022). Students' engagement in online forums is further reinforced through knowledge construction tasks and complex argumentation (Duvall et al., 2020; Fu et al., 2016). Duvall et al. (2020) state that designing highly interactive online discussions requires argumentation that stimulates posts of negotiation, criticizing, and reasoning. Online discussions are a flexible context for complex argumentation that urges the participants to reveal a high level of Interaction through negotiations, justification, asking questions, and commenting on remarks, in addition to providing elaboration and evidence for their claims (Fu et al., 2016, Stegmann et al.2012, Shukor et al., 2014) leading to more constructive discussions (Potter, 2008). In an attempt to find a pattern of the structure of interactions used by native and non-native Spanish students of the English translation, Fernandez-Polo& Cal-Varela (2018) found that criticism and suggesting improvement was the major component of 100% of the posts that were introduced by other peripheral interactions such salutation, praise, thanking and followed by farewell and signature for the sake of mitigating criticism. It was also clear that online forums instigated more polite discourse by EFL students than native speakers. Praise was a form of concession as the student expressed agreement on the quality of the work exposed in the main post. Concession as a mitigation strategy in the argument will be one significant variable to be observed in this study. Shukor et al. (2014) examined students' strategies and cognitive level in online discussions through observing three cognitive categories: Asking questions, giving answers, and giving information through either agreement or disagreement. Each cognitive category was graded from high (H) to low (L), from just providing a question, an answer, or information to providing them with elaboration and explanation. Findings showed that the higher cognitive groups (H) and (HL) showed a sequence of giving information with elaboration and commenting on a previous remark, accepting another opinion (concessions), and in disagreement asking questions that require elaboration as a rebuttal. The Lower cognitive group (L) did not use acceptance and non-acceptance of information. They tended to answer without elaboration. In the current study, concessions, personal expressions of stance, and questions in arguments will be observed as interactional features relevant to the task's influence on the use of mitigation strategies, argumentation, critical thinking, and high cognitive skills. Online forums assimilated face-to-face discussions in revealing a turn-taking sequence of question responses in students' discourse (Gibson, 2009). Whereas, similar to multimodal writing, in online forums, learners could easily copy quotes from previous posts and employ multimodal tools such as colors, italics, and bold font to highlight important information (Gibson, 2009), turning multimodality tools, thus, into a means of Interaction in discourse.

These investigations highlight the vitality of employing online forums in academic English and critical thinking education as an effective tool. However, its effectiveness and level of Interaction should be compared to other popular academic oral and written modalities.

Oral versus written discourse

Biber & Gray (2016) explained that academic writing relies on explicitly delivered meaning due to the lack of common context between the author and the reader, as is the case between the speaker and the interlocutor in conversation. The speaker can use pronouns, ellipsis, and expressions that can have no meaning outside of the situation. On the other hand, academic writing relies on the

elaboration of meaning, leading to the addition of further embedded clauses to simple clauses such as finite clauses and non-finite clauses and even phrases, producing, therefore, more grammatically complex structures than that of conversational discourse. Moreover, academic writing is described as objective that lacks reference to first and second personal pronouns with a more focus on abstract vocabulary (Fang, 2021).

In a blended learning course, Jin et al. (2020) observed students' argumentative discourse through face-to-face discussions and collaboratively written essays. Results showed that students focused on content, evidence, reasons, and claim extraction in the face-to-face discussions, which also promoted rebuttals and negotiations aiming at reaching an agreement on a claim; whereas, the essay enhanced the use of formal advanced linguistic features via the use of syntactic complexity and advanced vocabulary. In summary, oral discussions promoted higher Interaction, whereas academic essays enhanced syntactic complexity. The same constructs were observed via syntactic complexity and metacognitive verbs (i.e., think, believe) as a measurement of development in critical thinking writing by two groups of adolescents in Nippold et al. (2020). Findings revealed that critical thinking writing reinforced the production of complex syntax and metacognitive verbs even in the lower age group. In the current study, metacognitive verbs are relevant to Personal Expressions of Stance as a variable of Interaction.

In Kashiha (2021), stance expressions and their communicative functions were also scrutinized in monologic and dialogic forms of oral academic discourse through a comparison of debates and seminars of native speakers' corpus. Results revealed a higher frequency of stance expressions self-mention. The verb 'agree' is as an attitude marker in debates than in seminars due to the dialogic nature of debates where the speaker needed to have clear, frequent justifications and evaluations of their claims and rebuttals. The speaker used 'I' to confirm their voice and identity in the argument, whereas attitude markers were the least used in both tasks with a relatively higher frequency in seminars. Hedges were frequently used in both tasks with a higher percentage in monologic seminars than in debates due to the sensitivity of seminars to the reliability of academic information; the speakers were sensitive to saying information as facts. They used 'I think' for hedges to involve the audience. Boosters were equal in the tasks, and they included adverbs, verbs, modal auxiliaries, and prepositional phrases such as "obviously", "definitely", "should surely" (p. 6). Since the academic debate is a major task in the present study, stance expressions, personal pronouns as self-mention, and concessions are also considered significant engagement markers in the comparison under investigation.

In a sensitive observation of the influence of online modality, oral discussions were compared in both faces to face and online modalities (Bagheri& Zenouzagh, 2021) through categorizing engagement into limited and elaborate where elaborate engagement involved higher fluency, more engagement discourse, involvement in the talk, and rebuttals in contrast to limited engagement which involved silence, uncertainty, use of L1, and asking for help. Results indicated that students paid more attention to complex syntax, engagement discourse, and arguments in online conversations, while face-to-face discussions reinforced elaborate engagement more than online speaking conversations regarding fluency, actual talk, and student satisfaction. Though online conversation is an oral task, the online mode enhanced the use of complexity more than the face-to-face modality, which raises questions about students' performance and engagement in online discussions in their written form compared to oral debates.

The features of oral and written discourse are influenced, hence, by genre (Nippold et al., 2020), formality and monologic versus dialogic nature (Jin et al., 2020; Kashiha; 2021), synchronization, and new means of multimodal communication (Bagheri& Zenouzagh, 2021). Synchronous online forums have a writing mode and have the same pace of writing that leads to integration of ideas in spite of its inclusion of direct contact with the audience, involvement of the student, and some degree of spontaneity like oral discourse. The academic debate is an oral conversation that is influenced by the formal academic context, and the essay is a monologic task. Significant factors will definitely guide students to a rich production of variant interactional and formal discourse features.

Design of online discussions

Online discussions provide students with more think time in addition to the ability to reply without any interruption as face-to-face discussions. There is always a chance to review and analyze other posts before replying, in addition to the stimulation of a bigger amount of discourse than timed face-to-face discussions (Ward et al., 2010; Wilson et al., 2014). Furthermore, many studies argued that online discussions stimulate higher-order thinking than face-to-face discussions (Bates, 2019; Burgess, 2009; Guan et al., 2006). "Electronic discussion(s) provide a natural framework for teaching critical thinking because it captures the best of both traditional writing assignments as well as in-class discussions" (Greenlaw & DeLoach, 2003, p. 36). They are considered a highly convenient context for academic discourse, critical analysis, and reflection (Stansberry, 2006). The design of the discussions highly influences the quality and quantity of students' posts. According to DeLoach and Greenlaw (2007), the prompt of the discussion should direct students' attention to the main points of the task or opinion of the argument, such as asking, "there are three sides to this argument- A,B and C. What would you say about it if you agreed with A? B? C?" (P.424). It should include a strong argument that reinforces negotiation, elaboration, evidence, and criticism (Duvall et al., 2020). According to Jeong (2004), online discussions for students should include a topic that stimulates various points of view and arguments of two opposite sides since conflicting opinions lead to a higher level of critical thinking. The structure of an online discussion in class should include "prompts that involve real-world problems" (Hall, 2015, p.25) rather than closed questions in order to provoke higher critical thinking skills. Moreover, the discussion should be highly structured regarding its setting. Students should be assigned a position in the arguments, and their posts should be evaluated according to clear criteria or rubric (Jeong, 2004). And low participation of the instructor is important to create more space for learner-learner interaction (Duvall et al., 2020). Finally, it is recommended that the class is divided into smaller groups. This study followed such structured discussions as the prompts included real-life arguments, with a clear assignment of each student's position in the argument. The class was divided into smaller groups of four to six members each. And clear criteria were written in the prompt requiring students to write two posts, not less than six lines each, one post to clarify their position and another to reply to one of the group members' posts.

Moodle as a learning management system

Moodle is a "course management system" (Coskun & Arslan, 2014, p. 275) that allows educators to create online platforms that can cater to the needs of teachers and learners regarding the development of assessments, quizzes, interactive activities, forums, chats, writing and listening assignments, databases, and glossaries (Ali & Jaafar, 2010). Moodle mainly stands for "Modular Object-Oriented Dynamic Learning Environment"(Coskun & Arslan, 2014, p. 275). Moodle

provides two modules of written communication, namely chat and forums. They are used for synchronous and asynchronous online discussions. With the remarkable increase in using state-of-the-art technology in foreign language courses, together with the focus on knowledge construction and the link between academic performance and language skills, plenty of educational institutions across the globe have resorted to e-learning methods and solutions. One of these methods is provided by Moodle via forums as they reinforce "text-based collaborative dialogue" and "collaborative construction of knowledge" (Coskun & Arslan, 2014, p. 276). Research, moreover, supported the benefit of Moodle's online fora in teaching English for academic writing as the students thought that the fora were user-friendly, convenient regarding time and place, and enhanced Interaction (Jun & Lee, 2012). It is argued that students who use online environments are more independent and better improve their language, communication, and social skills than students in traditional classes (Coskun& Arslan, 2014).

In summary, the concern of previous research with comparing only two modalities at a time, either written and oral (e.g., Jin et al., 2020), written and multimodal (e.g., Hewing& Coffin, 2007), or oral and multimodal (e.g., Bagheri& Zenouzagh, 2021; Joiner et al., 2008) urged the need to conduct a more comprehensive investigation of all three modalities, written, oral and multimodal via the same context. Moreover, most of the studies focused only on Interaction (e.g., Fernandez-Polo& Cal-Varela, 2018; Kashiha, 2021) and knowledge construction (e.g., Costley& Lange, 2016) rather than observing both syntax and Interaction, very few studies (e.g., Nippold et al., 2020; Montero-Fleta et al., 2009) however, observed both syntactic structure and Interaction in only one or two tasks though.

Constructs and variables

Three major categories were analyzed in the present study in order to reflect differences in sentence structure and Interaction amongst the different examined tasks. They are syntactic complexity, grammatical accuracy, and Interaction.

Syntactic complexity is the ability of human beings to combine already acquired structures in order to form longer and multi-embedded utterances (Nippold et al., 2007, p. 179). Operationally, it is measured via the observation of three variables: subordinate clauses; finite subordinate clauses; non-finite subordinate clauses

Grammatical accuracy is the production of sentences that do not include any violations for the syntactic and morphological rules of the target language. Operationally, it is determined by the percentage of error-free utterances to a total number of utterances per text (Lee, 2004; Zaki, 2011). Three variables were scrutinized: Error-Free Utterances; Error-free utterances with a complex clause; Error-free utterances with a simple clause

Interaction is the means of communication between the author and the audience or the readers for a specific purpose. The author employs linguistic tools in the text based on assumptions of the knowledge of the audience. Operationally, Interaction is determined by the percentage of frequency of occurrence of five engagement markers: Personal pronouns, I, we, you; concessions; questions; commands; personal expressions of stance.

Research Questions

The study attempted to find answers to the following questions:

> What are the linguistic and interactional differences in argumentative EFL discourse amongst the three tasks: Academic essays, synchronous online forums and oral debates?

> #### Sub questions

1. What are the differences in the use of *complex syntax* (embedded clauses) across the three modalities under investigation?

2. What are the differences in *grammatical accuracy* across the three modalities under investigation?

3. What are the differences in the production of *engagement markers* (First and second personal pronouns; concessions; questions; commands; expressions of stance) across the three modalities under investigation?

Methodology

Participants

Undergraduate students enrolled in faculties in the third level of EAP in the British University in Egypt presented the subjects of the study. They studied in various faculties: Engineering, Business, Economics, and Pharmacy. Fifty-four students participated in the study, 33 females and 21 males, all placed in the module after passing the exams of a previous module that included a final 500-word opinion essay and two upper-intermediate academic reading passages in addition to an assimilation of the IELTS speaking and listening tests. Another criterion for the selection of the participants was passing Oxford Placement Test 2 (Allan, 2004) with an equivalent score of 5.5 on the IELTS test.

Task designs

The students were required to write a final argumentative essay of 1000 words structured into five paragraphs, including paragraphs of counterarguments and refutations. The essay encompassed academic sources to support the student's position in the argument. A pre-task aimed at preparing students for the structure of the essay was assigned in the form of a 750-word argumentative essay that was submitted back to students with feedback on errors.

The second important task for this study is a synchronous online forum created in the form of a threaded discussion titled as 'single simple discussion' on the platform Modular Object-Oriented Dynamic Learning Environment 2 (Moodle2) (Büchner, 2011). The online forum was prepared as a collaborative task whereby students formed teams of 4 or 6 students of for and against mini-groups. The task was conducted synchronously in the computer lab during class sessions. The instructions determined 6 lines minimum for each post.

The oral debate required each group of students to be divided into two mini-groups of two or three members, with two opposing positions of an argument. Each mini-group was required to first present their position then make a rebuttal opposing the adverse group. The structure of the debate

flexibly allowed students to exchange turns of rebuttals and concessions. Like the academic essay, academic resources were required for argument support.

Data Analysis Procedures

Fifty-four individual essays and 137 posts of synchronous online forums were randomly selected from a corpus of 165 essays and 301 posts. All the data were then broken into T-units for analysis resulting in 2857 T-units for the academic essays and 691T-units for the synchronous online forums. The data was then coded for the observed variables, 25 percent of which were reviewed by another coder, and full agreement was reached after discussions. Afterward, the coded transcripts were entered into the Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2003) software guide for counting codes. All codes were counted for frequency to be then calculated for percentages over a total number of utterances per text of each student. The percentages then were inserted into a spreadsheet in preparation for inferential statistics of repeated-measures analysis of variance – one-way ANOVA to find differences between the means of frequency for each indicator in the two examined tasks.

Results

The present study has investigated the differences in argumentative discourse amongst synchronous online forums, academic essays and oral debates regarding three constructs: Syntactic complexity, grammatical accuracy, and Interaction. Each construct was observed through more specific measurable variables that were calculated for their percentage of frequency to a total number of utterances. Percentage scores were then analyzed via a one-way analysis of variance (ANOVA) test for finding the differences amongst the three task groups followed by a more detailed analysis via the post hoc Tukey-Kramer test (alpha= 0.05) for differences between pairs of tasks.

Table 1. Differences of percentage scores among tasks *(n= 54 per group)*

	Essay	Online Forum	Oral Debate
Variable			
Subordinate Clauses			
M	135.04	123.23	82.2
SD	37.94	59.05	28.77
Finite Sub Clause			
M	65.76	65.02	47.39
SD	25.1	35.03	20.95
Non-Finite Sub Clause			
M	69.27	58.21	34.82
SD	19.96	37.67	16.56
Error Free T.U.			
M	44.19	42.07	32.81
SD	21.84	20.82	14.12
Error Free T.U. with Complex Cl.			
M	26.7	23.76	10.09
SD	17.32	16.33	8.74
Error Free T.U. with a Simple Cl.			
M	17.52	18.37	22.78
SD	9.53	13.22	10.86
Personal Expression of Stance			
M	0.28	9.74	3.52
SD	0.94	10.14	5.36
Concessions			
M	1.01	4.04	3.19
SD	2.82	6.19	4.17
Commands			
M	5.26	6.85	4.15
SD	4.79	9.36	5.69
Questions			
M	1.69	2.46	4.09
SD	2.4	5.9	5.3
1st & 2nd Personal Pronouns			
M	5.98	24.28	40.78
SD	9.85	21.46	28.28
Statistically significant variation among task groups			

Syntactic complexity

Three variables were calculated for the percentage of their frequency to the total number of utterances per text. Investigated total number of utterances was 2752 for the academic essays, 2225 for the oral debate, and 691 for the synchronous online fora. These three observed variables were subordinate clauses, finite subordinate clauses, non-finite subordinate clauses.

Analyzing differences via ANOVA, results recorded statistically significant variation amongst groups for all the three syntactic variables: Subordinate Clauses $F(2, 159)= 21.66, P= 0.00$; Finite Subordinate Clauses (FSC), $F(2, 159)= 7.64, P= 0.00$; Non-Finite Subordinate Clauses, $F(2, 159)= 23.97, P = 0.00$. The post hoc Tukey-Kramer test for differences between means with *alpha*= 0.05 showed that the differences for all the three variables lied between the essay and the debate, and the forum and the debate; while no statistically significant differences occurred between the essay and the forum showing closer percentages of frequency in students' performance and similar relationships with the third task, the oral debate which revealed the least frequencies for all syntactic variables (see table1). These results indicated a similarity between the effect of the online forum and the effect of the academic essay task on the intensive production of subordination by EFL students in contrast to the low effect of the oral debate (see figure1 for means).

Grammatical accuracy

Grammatical accuracy was considered for the percentage of frequencies of three variables: Error Free Utterances; Error Free Utterances with Complex Sentences; Error Free Utterances with Simple Sentences. The higher the percentage and the mean of error-free utterances in the task, the more grammatically accurate the students' text is; consequently, the task can be categorized as academically influential.
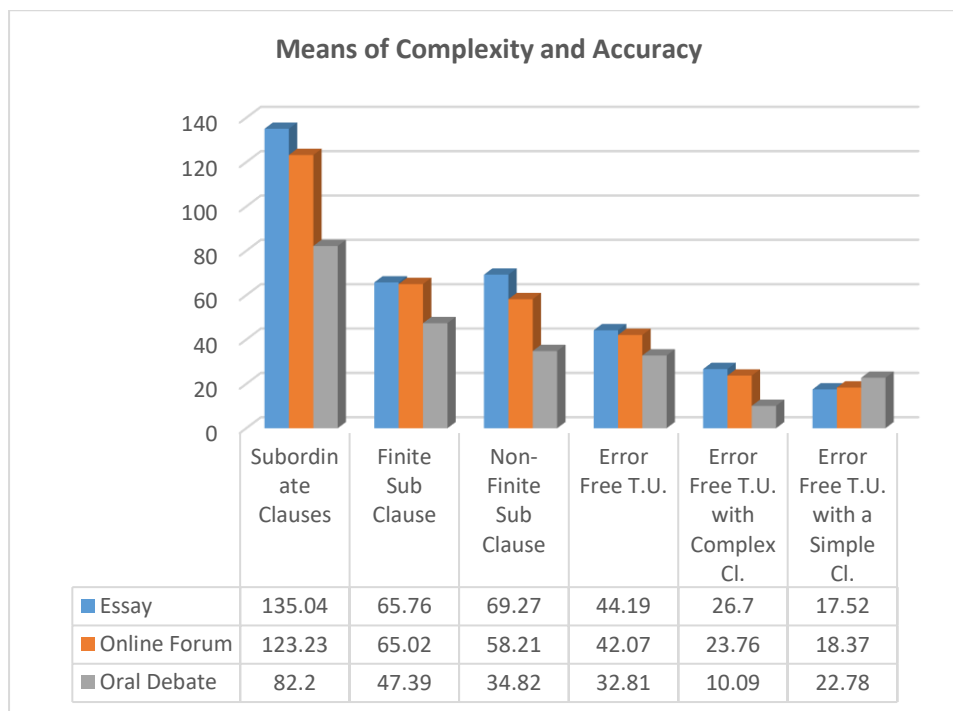

Means of Complexity and Accuracy

	Subordinate Clauses	Finite Sub Clause	Non-Finite Sub Clause	Error Free T.U.	Error Free T.U. with Complex Cl.	Error Free T.U. with a Simple Cl.
■ Essay	135.04	65.76	69.27	44.19	26.7	17.52
■ Online Forum	123.23	65.02	58.21	42.07	23.76	18.37
■ Oral Debate	82.2	47.39	34.82	32.81	10.09	22.78

Figure1. Mean scores for syntactic complexity and grammatical accuracy

ANOVA analysis demonstrated statistically significant differences amongst the three task groups for the three variables of grammatical accuracy: Error Free Utterances, $F(2, 159)= 5.34$, $p= 0.01$; Error Free Utterances with Complex Clauses, $F(2, 159)= 19.79$, $P= 0.00$; Error-free utterance with a simple clause, $F(2, 159)= 3.37$, $P= 0.04$. A more detailed analysis into the differences between pairs of groups via the post hoc Tukey-Kramer test (alpha= 0.05) did not record any statistically significant difference between the academic essay and the online forum for all variables: error-free utterances ($P= 0.83$); error-free utterances with complex clauses ($P= 0.55$); error-free utterances with a simple clause ($P= 0.91$). Similarly, they all revealed statistically significant results for the difference between the academic essay and the oral debate. AS of the variation between the online forum and the oral debate, both Error Free Utterances and Error Free Utterances with complex clauses were statistically significant, and Error Free Utterances with a simple clause were statistically insignificant ($P= 0.11$). Means of frequency for Error Free Utterances and Error Free Utterances with complex clauses had the highest frequency in the academic essay followed by very close digits for the mean of the online forum and finally the lowest frequency for the oral debate (see Table1) (see Figure 1), while recording a different hierarchy for Error Free Utterances with a simple clause with the highest mean in the oral debate followed by the online forum and then the academic essay (See Table 1) (See Figure 1).

Interaction

Interaction between the writer/ speaker and the recipient, represented in the reader in the academic essay and the interlocutor in the oral debate and the online forum, was observed through variables that indicated the writer's or speaker's involvement and the extent of mitigation or directness of their expression of opinion in arguments. Therefore, Interaction was observed through the following five variables: Personal expressions of stance, concessions, commands, questions, first and second personal pronouns.
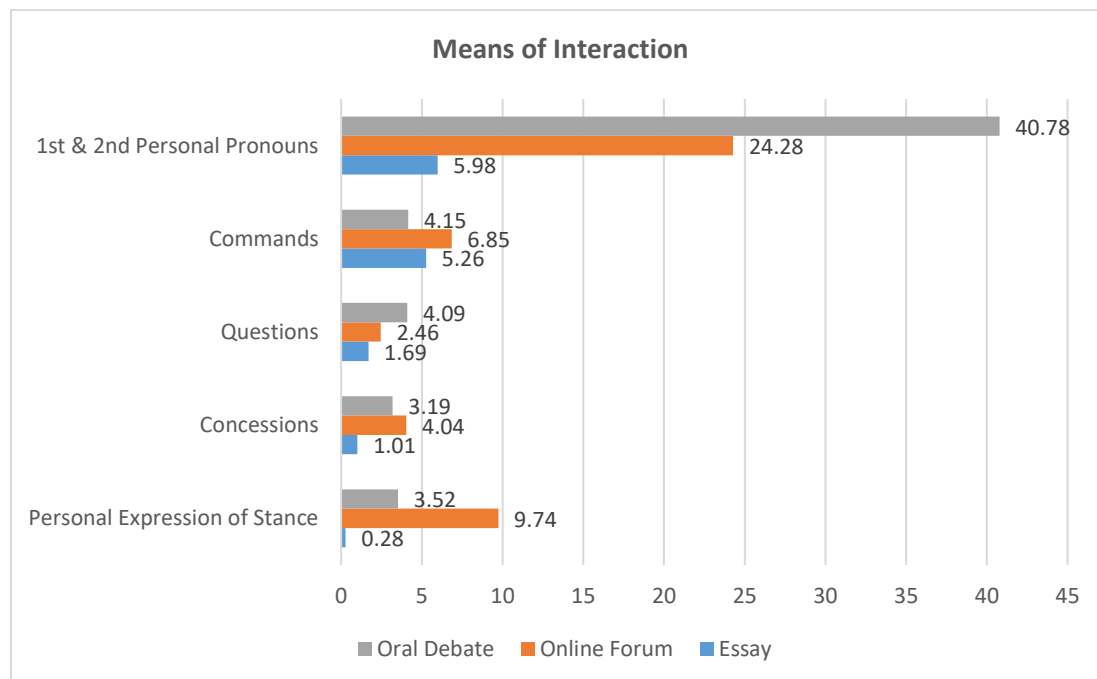

Figure2. Means of Interaction

Analyzing the differences across task groups, ANOVA showed statistically significant findings for Personal Expressions of Stance, $F(2, 159)= 28.29$, $p=0.00$; concessions, $F(2, 159)= 6.24$, $p= 0.00$; Questions, $F(2, 159)= 3.56$, $p= 0.03$; First and Second Personal Pronouns, $F(2, 159)= 36.16$, $p= 0.00$; whereas, non-statistically significant differences were recorded for Commands, $F(2, 159)= 2.09$, $p= 0.13$. For spotting the variation between pairs of tasks, The Tukey-Kramer test (alpha= 0.05) highlighted statistically significant differences between all the three pairs of task groups for Personal Expression of Stance and First and Second Personal pronouns. Concessions had statistically significant results between pairs except for the online forum and oral debate due to their very close means of frequency (see Table 1). Questions, nonetheless, showed statistically significant results on the Tukey Kramer test (alpha=0.05) only between the academic essay and the oral debate, since non-statistically significant differences appeared between the academic essay and the online forum, $p= 0.676$, and between the online forum and the academic debate, $p= 0.184$. The order of means of frequency showed the highest scores for the oral debate followed by the online forum in the First and Second Personal Pronouns and in Questions; while the highest scores for the online forum appeared in Personal Expressions of Stance and Commands (See Table 1) (See Figure 2). The academic essay recorded the least means of frequency for three of the interactional variables, namely Personal Expressions of Stance, Questions, and First and Second Personal Pronouns.

Discussion

The variant influence of task modality on students' discourse was clearly highlighted in the results of the investigated constructs in the present study. Results revealed significant effectiveness of synchronous online forums on syntactic complexity, grammatical accuracy, and Interaction and therefore highlighted the role these online forums can play compared to academic essays and oral debates in the academic EFL context. This discussion encompasses an interpretation of the quantitative results with a narrative analysis of students' transcripts.

Complexity and accuracy in written modalities

Academic essays followed by online forums recorded the highest performance for all the syntactic complexity and grammatical accuracy variables except for one variable (Error Free Utterances with a simple clause), which revealed the highest occurrence in oral debates. Although the academic essay showed the highest means of frequency for all variables of syntactic complexity, differences with the synchronous online forum were not statistically significant since the means of frequency of all variables of syntactic complexity and grammatical accuracy (Error Free Utterances and Error Free Utterances with complex clause/s) were very close to the extent of reaching almost the same means of frequency for the production of finite subordinate clauses, the academic essay ($M= 65.76$, $SD= 25.10$) and the online forum ($M= 65.02$, $SD= 35.03$). The online forum had many features and procedures that were similar to the academic essay and hence similarly as effective in promoting the highest cognitively processed grammatical structure for EFL learners (Clahsen, 1984; Pienemann, 1998).

The students' tendency to use simple sentences in the oral debate and subordinate clauses [SC] in the online forum is clearly illustrated in the following samples from transcripts of the online forum and the oral debate of one of the students on the topic of legalization of selling organs. Whereas

the student produces two subordinate clauses [SC] in one online post, he produces two simple sentences [SS] in one turn in the oral debate.

Online forum post by Nour
First of all, the checkups are never accurate, even if it is made by the top doctors around the globe or the world [SC]. For example, the hidden diseases inside the organs will not occur or show on the check-up unless it activates [sic] by the operation [SC].

Oral debate, a turn by Nour
First of all, one hundred percent is an overrated percentage [SS]. And you don't have a piece of evidence to prove your theory. *It's just a theory [SS].*

Nippold et al. (2020) observed that a short argumentative writing task promoted complex syntactic structures even in the lower age levels of adolescents. Shakarami et al. (2016), similarly, found the same use of discourse markers in synchronous online forums and academic writing due to students' pass through the same stages of writing, pre-planning, writing, and revision, and their equal concern about coherence and cohesion in their online posts. In accordance, Jin et al. (2020) found that students focused on syntactic complexity and accuracy in argumentative essays more than oral discussions. And Tan& Dang (2022) found that essay writing on the IELTS Exam promoted the use of high percentages of subordinate clauses as essays with band scores below 6 comprised 56.2% and essays above band 6 even reached 74.2% of the total utterances. Observing finite and non-finite dependent clauses in conversation from the Longman Spoken and Written Corpus and academic research writing (the 20th Century Research Article Corpus), academic writing was dominated by non-finite dependent clauses while conversation recorded higher dependent clauses (Biber& Gray, 2016; Biber and Gray, 2010; Biber et al., 2011). The results of conversation are based on a corpus of native speakers, which is variant from the EFL learners in the current study who resorted to simple clauses more in their oral debates while using both finite dependent and non-finite subordinate clauses more in writing tasks. In the synchronous online forum, the student can read and reread the interlocutor's argument as well as review their own posts. The pace of typing, as well as the same since academic essays, are also typed, which is much slower than the pace of speaking in the oral debate. Consequently, EFL students had a longer time and better chance in the online forum, synchronous in mode, though, than oral debates to format more complex structures. In contrast to results of the present study regarding the difference in syntactic complexity between online and face to face discussions, Pyun (2003) found no statistically significant results in the complexity of T-units, and shorter length of T-units in online discussions, which was interpreted as a lower level of syntactic complexity. In summary, the formality of the synchronous online forum in the present study led to high production of syntactic complexity in students' online posts in a manner that resembled the academic essay, which is much higher than the oral debate.

Grammatical Accuracy

The mean of frequency in the synchronous online forum (*M*= 23.76, *SD*= 16.33) was very close to the mean of frequency in the academic essay (*M*= 26.70, *SD*=17.32) for error-free utterances with complex clauses and for error-free utterances with a mean of *M*= 42.07 (*SD*= 20.82) for the online forum and a mean of *M*= 44.19 (*SD*= 21.84) for the academic essay. These findings contrasted those of Shakarami (2016), which revealed students' less concern with grammatical rules and punctuation in online discussions. However, online forums in the present study showed higher

grammatical accuracy than oral debate. A result also highlighted in Pyun (2003) comparing grammatical accuracy in face-to-face and online discussions where non-native speakers mentioned in interviews that they were keener to preserve accuracy in the writing mode of online discussions than in the oral mode of face-to-face discussions. Thus, online forums can be equally important to academic essays in the English academic classroom regarding the high stimulation of accurate complex syntactic structures in students' texts.

In contrast to all structural variables in the current study, Error Free Utterances with a simple clause was the only variable that recorded the highest frequency in the oral debate followed by online forums and the last occurrence in the academic essay due to students production of more simple clauses in oral debates as shown in the results of subordinate clauses.

Finally, the synchronous online forum was equally effective to the academic essay regarding the high production of grammatically accurate complex clauses and the oral debate for the high production of grammatically accurate simple clauses. Accordingly, synchronous online forums should be well employed in the academic classroom due to their high stimulation of grammatically accurate complex structures in students' texts.

Interaction in dialogic tasks

Interaction in the three tasks under investigation showed the highest frequency in the two dialogic tasks, the synchronous online forum and the oral debate, rather than the academic essay. Five main variables were observed to measure the degree of the speaker's/ writer's involvement in arguments and explicitness of expressing stance. Such involvement and explicitness showed at its highest in the two tasks where the speaker in the debate and the writer in the online forum directly addressed the interlocutor, in contrast to the academic essay where the writer had to imagine and write a hypothetical opposing opinion to argue against. Hence, these findings suggest that synchronous communication shares common features of talk due to interactive exchange between interlocutors (Mick& Middlebrook, 2015). Personal expressions of stance (PES), Concessions, and Commands [COM] were two variables that recorded a peak in synchronous online forums, whereas Questions and First and Second Personal Pronouns were the other two interaction variables that reached the highest frequencies in the oral debate.

Synchronous online forums

Personal expression of stance (PES)

Personal expression of stance in an argument dominated the synchronous online forum more than the oral debate and the academic essay with statistically significant differences. The academic essays infrequent to initiate an opinion with personal expressions of stance as students completely detached their voice from the argument. In the following two examples, the same student expressed the same opinion in an argument on feminism using the two different techniques in the online forum and the academic essay, respectively.

An online post by Maria

 [In my opinion][PES] [I don't believe][PES] that men should be tried as women because women have a high level of emotion.

Academic essay by Maria

But that doesn't deprive them of the fact that they are women and their nature is not like men. So there is no way they should be treated as men even if traditions and cultures are so free and open to this idea.

Whilst in the online post, the student used two personal expressions of stance, in the academic essay, the student's opinion was directly expressed without any introductory clauses. In the online posts, students generally started with expressions of stance as an initiation to their post or to begin a disagreement. They used the following expressions "*I agree with", "I agree that" "I think", "In my opinion", "I see that", "my position is", "my point of view", "I believe", "I disagree with", "I am extremely against this point", "I don't believe", "I have a different opinion", "I will argue".* Nippold et al. (2020) found that critical thinking tasks instigated the use of metacognitive verbs in adolescents. Similar to the present findings, in a comparison of dialogic and monologic academic tasks (Kashiha, 2021), the debate as the representative of the dialogic task exceeded seminars, a monologic task, in the frequency of expressions of stance as speakers needed to justify their claims and rebuttals before the interlocutor, one frequent example in the debates was 'I agree'. However, 'I think' was used for hedging before introducing information more frequently in seminars than debates so that they are not considered academic facts. Myers (2010), likewise, highlighted the fact that bloggers used introductory clauses such as "I think, I truly believe" (p. 102) to introduce their opinion in online blogs in order to save face and for mitigation against counterarguments. In addition, the fact that online forums in the present study recorded a higher frequency of personal expressions of stance (PES) not only than academic essays but also than oral debates due to students' concern with mitigating their stance in the arguments went in congruence with Wang & Woo's (2007) findings where online discussions included less aggressive arguments than face to face discussions in class. The context of online forums in the present study allowed students to directly communicate with their interlocutors lacking, nevertheless, the influence of tone, body language, and facial expressions available in the oral face to face debates, a matter which urged students to use more introductory clauses to initiate stance in the arguments and to express their opinion for mitigation indirectly.

Concessions

A concession is a statement of agreement or submission to the opposing claim in an argument. No other task could win over the synchronous online task in the frequency of concessions which mostly functioned as an initiation for the following rebuttal. This is illustrated in the following example from the online forum on child labor.

An online post by Mirna

Yes, they should be out playing and enjoying their life [CON]. However, we do not live in a perfect world [RB].

In this study, students used an expression of agreement before a rebuttal to save face in a post of rebuttal or refutation, a mitigation strategy that is also used by students in online forums in a translation classroom in Fernandez-Polo& Cal-Varela (2018), where they started their posts by praising the points they agree with before they start their criticism on a piece of work. Duvall et al. (2020) argued that online forums of high knowledge construction design should include forms of negotiation. In Myers (2010) and Potter (2008), participants also used concessions before

adversative conjunctions like 'but'. Likewise, Costley & Lange (2016) investigated the highest factors representing social presence in online forums found agreement in 42% of students' posts to become the highest percentage compared to affective and cohesive indicators. And Fu et al. (2016) recorded a relatively high occurrence of agreement in the online discussions for grade 10 students.

The second most frequent task was the face-to-face oral debate, which also included some concessions, sometimes having the same function as the online forum and sometimes displaying the function of a short answer to a challenging question raised by the opposing participant. Nevertheless, the academic essay rarely encompassed concessions due to the absence of the dialogic style. Similarly, Jin et al. (2020) observed negotiation strategies by students in dialogic oral discussions rather than monologic essays. The writer in the academic essay did not have the same need to use face-saving strategies with the absence of the opponent in the argument.

Commands

Commands were clear in statements of obligation using 'must' or necessity using 'should'. They were used mainly for suggesting a solution for the argument, similarly employed in all three tasks as the following example is from the argument on the validity of the death penalty.

Online forum sample

"If a society has high interests to prevent murdering, it should use [COM] the most painful punishment that exists".

The use of commands in general rarely occurred in all three tasks. Such rare occurrence of commands also showed in Kuteeva (2011) in collaborative and individual argumentative essays. Nevertheless, the highest mean of frequency showed in the synchronous online forum followed by the oral debate in spite of the fact that the differences were statistically not significant.

Oral debate

Questions

The highest mean of frequency for questions appeared in the oral debate to be followed by the synchronous online forum, and the least occurrence showed in the academic essay. The difference between the oral debate and the online forum was statistically non-significant, making it as effective as the oral debate in stimulating the production of questions in EFL students in the academic context. The absence of statistically significant difference was also found by Wang & Woo (2007) and Pyun (2003) between the frequency of questions in face-to-face and online discussions of students and non-native speakers of English, respectively. Online discussions of argumentative discourse showed a high frequency of questions as well in Fu et al. (2016). This is due to the use of questions more frequently in dialogic arguments, not for the purpose of requesting but rather to challenge the interlocutor and hence function as a rebuttal most of the time. This purpose is clearly shown in the following example.

 Online forum post by Radwa:

Why does she carry a baby without her disagreement [Question]? This is so obvious that abortion can change one's life.

The student did not wait for an answer; however, the question was used for a rebuttal performing the same function of questions in the oral debate. The same function of questions was also revealed

in Shukor et al. (2014) in an investigation of levels of knowledge construction in online discussions formed by undergraduate students. Findings showed that groups with a high level of knowledge construction used questions asking the opponent for elaboration as a strategy of rebuttal in order to show their disagreement. Myers (2010), analyzing online blogs, highlighted the same strategy of using rhetorical questions to express their position.

Regarding academic essays, questions were rarely used, with only a mean frequency of 1.69. The lack of direct Interaction with the recipient did not urge students to use questions, even if as a form of hypothetical challenge or a strategy of rebuttal for the reader.

First and second personal pronouns

Personal pronouns in this study referred to self-mention via the use of first personal pronouns 'I' and 'we', and addressing the recipient via the second personal pronoun 'you'. Results revealed a high mean of frequency (M= 40.78) in the oral debate that was followed by the synchronous online forum (M= 24.28). These results were due to the fact that students needed personal pronouns indirectly expressing their positions in arguments as in "I think", "I believe" in the online forum, and the second personal pronoun 'you' for directly addressing the interlocutor. Moreover, conversations aiming at the implied meaning and shared contexts between interlocutors are usually more dominated by pronouns than academic writing, which requires meaning to be more explicitly written to the reader, leading to more dependent clauses for elaboration (Biber & Gray, 2016). Likewise, comparing debates (dialogic) to seminars (monologic), Kashiha (2021) found that self-mention through the use of 'I' and 'we' recorded the higher frequency in debates by native speakers of English as the speaker used 'I' to confirm their voice and identity in the argument. In O'halloran (2011), oral debates of book discussions (O'halloran, 2011) were dominated by the use of the personal pronoun 'I' and direct expressions of personal opinion as 'I thought'. The academic essay, nonetheless, showed a very low frequency of self-mention and addressing the reader pronouns (M= 5.98), representing, therefore, the least effective task in the stimulation of Interaction between the writer and the recipient and leading the online forum to have a higher influence on Interaction between the writer and the recipient due to its dialogic nature. In consistence with these findings, Hewing and Coffin (2007) found a higher frequency of the personal pronoun 'I' in online discussions than in academic essays for being less face-threatening since the personal pronoun 'I' was used to express feelings and thought as an introductory phrase before an opinion such as in 'I feel'.

In conclusion, Interaction is better enhanced in dialogic argumentation synchronous online forums and oral debates. Synchronous online forums further stimulate some interactional features due to the need for mitigation, initiation of argumentation, and self-mention in the online context.

Pedagogical implications

The results of this study have clearly illustrated the value of synchronous online forums in the English academic classroom regarding the stimulation of complex and grammatical accurate sentence structures assimilating the impact of the academic essay. Simultaneously, they enhance the employment of interactional discourse due to their dialogic structure exactly like the oral debates and due to students' preference of many of the task features such as enhancing knowledge construction, the community of practice, and consumption of the online system (Tran et al., 2022). Online forums can hence be well employed if the teacher's instructions should be formal regarding the number of words and posts required in the discussion. And students should be required to read

on the discussed topics. Rubrics should be designed to evaluate the online posts, their arguments, use of evidence and shared with the students. Online forums can be a regular weekly or biweekly task that demands effort. Regarding the design of academic writing tasks such as the argumentative essay, teachers should allow voice through the use of first personal pronouns for the writer to directly express their stance to assemble some of the influential features of dialogic argumentative tasks. The current results illustrate the high impact short online production can have on students' discourse and Interaction since they allow more mitigation strategies than oral debates.

Limitations

This study focused on the difference between online forums, academic essays, and oral debates through argumentative discourse and did not widen the scope to other discourse genres. In addition, the study is limited to the results of students in the EFL context of Arabic as their L1. The results are also limited to threaded discussions. Therefore, other platforms with different designs of discussions, such as mind mapping, need to be examined for their influence on students' academic discussions and argumentative discourse.

Recommendations for further research

The positive influence of synchronous online forums on students' formal writing and Interaction urges the need for further investigation of the different strategies of using collaborative online forms of discussions in the academic context. Other forms of online collaborative discussions of argumentation are labeled mind maps which have a different structure than the threaded forms of discussions. Further research is required regarding the influence of these platforms on critical thinking, knowledge construction, and undergraduate students' discourse. The variables in the current studies could also contribute to further computational studies of argumentation mining for testing the reliability of computational feedback on Interaction and knowledge construction in students' writing tasks.

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Biodata

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Egypt including the British University in Egypt. Her research focused on syntactic complexity in EFL learners, discourse analysis, online discourse, and development of language proficiency levels. And her conference presentations addressed formative and performance assessments, flipped classrooms strategies, Interaction and identity in online courses, argumentation in EAP, and local versus global literacies.