ONLINE COMMUNICATION AND COLLABORATION VIA DIGITAL DISCUSSION FORUMS: IMPACTS ON 21ST CENTURY SKILLS AND ENGLISH LANGUAGE LEARNING

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ABSTRACT

The use of Digital Discussion Forums (DDFs) has not been researched sufficiently in English for Specific Purposes (ESP) courses to enhance communication and collaboration skills. Therefore, this paper explores the impact of DDFs usage on these skills through digital discussions among undergraduates. DDF was incorporated into an ESP language classroom and involves a group project outside of classroom time, namely, Company Profile (CP). The qualitative study involved 26 students enrolled in English for Business Professional Communication. Data were collected using semi-structured interviews and reflective journals. Thematic analysis was conducted and themes on critical components of 21st Century skills development were analysed. Inter-rater reliability analysis utilising Cohen Kappa analysis showed nearly perfect scores, indicating data reliability. The findings revealed a positive impact of online engagement on students' overall communication and collaboration skills alongside their English language skill. The findings suggest the usefulness of DDF in developing communicative and collaborative skills.

Keywords: online communication and collaboration skills; digital discussion forum (DDF); English for Specific Purposes (ESP); higher education

Introduction

Learning English can be difficult for some learners who study English for Specific Purposes (ESP) (Sadeghi & Richards, 2021). To help learners, one increasingly popular approach involves integrating Digital Discussion Forums (DDFs), also referred to as Online Discussion Forums (ODFs). The use of DDFs as a digital platform can increase students' language learning quality. This platform allows students to engage in discussions, developing communication and collaboration skills.

Moreover, DDF platforms have the potential to improve students' collaboration and communication skills as well as creativity (Mangubat & Ramirez, 2023). The conversational aspect of speaking in the form of writing via online network channels such as DDF influences students in such a way that they begin to construct automatic structures and routinise certain sentences. These developmental and practice processes support the development of communicative skills.

Similarly, Azmuddin et al. (2023) discovered that using DDF accelerates collaborative learning among participants. However, many students of English language tend to lack confidence to engage in group discussions (Jamali & Krish, 2021; Wikle & West, 2019). DDFs enables shy learners to become more engaged. The online component creates a more unrestricted and more comfortable environment in which participants have more equal possibilities to voice their ideas and are less affected or subjugated by others (Glazer, 2023). This encourages timid students to participate more actively (Griffin & Roy, 2022). Therefore, DDF can help learners suffering from language deficiencies.

While the benefits of DDFs in promoting language learning and classroom discourse are well-documented (Azmuddin et al., 2023; Jamali & Krish, 2021; Mtshali et al., 2020), research on how DDFs impact the development of 21st-century skills, particularly communication and collaboration, is limited especially in the context of ESP (Jamali & Krish, 2021). Most present studies concentrate on large-scale quantitative research in general language acquisition environments (Buragohain et al., 2023; Robillos, 2023; Shahid et al., 2024).

Despite the increasing adoption of DDFs in ESP courses, there is a gap in research concerning their impact within smaller ESP classes, particularly those tailored to business communication. As digital platforms continue to proliferate across higher education, the need to better understand how DDFs facilitate communication and collaboration in specialised language learning settings becomes ever more important (Idaryani & Fidyati, 2021). The literature highlights the critical roles of social skills, such as communication and collaboration, in determining online learning success (Angelova & Zhao, 2016; Gasmi, 2022; Ononiwu, 2021). The study examined how a university-developed Learning

Management System (LMS) is used in DDF in ESP courses to develop communication and collaboration skills.

The research questions are as follows:

1. In what ways do DDF assist ESL learners in ESP courses?
2. How does enhancement of communication and collaboration skills impact learning through DDF?

Literature Review

DDF as a Technological Tool

The literature on higher education increasingly recognises DDFs as pivotal tools for cultivating 21st-century skills and enhancing student learning outcomes. Studies indicate students' ability to improve linguistic competency, critical thinking, leadership, and digital skills (Jamali & Krish, 2021). They also foster engagement in a non-threatening environment as it encourages active involvement and builds confidence. The asynchronous nature of DDFs allows participants to engage with academic discourse at their own pace, reading posts, sharing resources, and contributing thoughtfully to collaborative discussions. This structure not only mirrors but often extends classroom learning, as students engage in meaningful exchanges that drive both communication and collaboration (Abdullateef, 2021).

Responding to one another's posts lead to more engagements, group debates, or revisions, which have an impact on the composition of knowledge or ideas collaboratively (Azmuddin et al., 2023; Woo et al., 2013). Individuals can construct knowledge by building on prior knowledge in a virtual environment through social negotiation and collaboration. Aside from the benefit of co-construction of knowledge, Goggins and Xing (2016) found that students' performance improved as the quantity of posts increased, as did students' reading of their peers' contributions. An ESP course can help to foster 21st-century learning since communication skill is an essential language learning element. Such skills can be developed if the contents are also appropriate to cater for those skills. Clearly, new knowledge and educational changes necessitate new educational modifications.

The literature has also shown a strong link between social skills such as communication and collaboration and their roles in online learning success (Gasmi, 2022; Ononiwu, 2021). According to Magfira et al. (2024), DDFs can effectively increase collaboration while also improving interpersonal and group dynamics. Learners also benefit immensely from online learning groups, where they seek guidance from their peers while improving their knowledge through exchanges (Hai-Jew, 2020). Interactions among students in group discussions and case studies can be beneficial for knowledge sharing, collaboration, and language acquisition. It is also a way for students to achieve better learning outcomes through student-content interaction (Wikle & West, 2019). Working in a group through the DDF platform develops a sense of belonging among

students who trust one another, share critical information, construct knowledge by understanding one another to establish mutual learning goals.

DDFs also create an online learning community among students working on similar tasks. Students in DDFs rely on one another to learn through exchanging information, views, and ideas that promotes engagement, social skills, and higher order thinking skills (Gasmi, 2022). Collaboration skills are in high demand in online learning communities. For example, in Massive Open Online Courses (MOOCs), online discussions have emerged as a crucial element of social learning and communication, emphasising participation behaviour and the relationship between forum activity and learning outcomes (Almatrafi & Johri, 2019). The asynchronous structure of online forums enables learners to gather their thoughts and deliberate on their responses in the discussion facilitated metacognitive awareness among them. This also encouraged peer-to-peer interaction, facilitating active collaboration and knowledge dissemination among learners (Ononiwu, 2021). Hence, it can enhance collaborative learning, critical thinking, and simultaneously enable learners to develop communication skills.

Theoretical Foundations

The design and implementation of this study were guided by Vygotsky's (1978) Social Constructivism. Language acquisition, according to social constructivism, is a social process in which language proficiency develops by active participation in social interactions (Aprianto & Zaini, 2019). Social constructivism is a learning theory emphasising communication and collaboration. Recent ESP studies show the value of using technology to encourage communicative relationships in learning environments (Jaleniauskienė et al., 2019; Mulyadi et al., 2019) such as those in ESP courses.

When humans interact with other people and their surroundings, they engage in both individual and social interactions. It focuses on the cognitive growth and interpersonal ties of individuals. It also promotes group learning, meaning formation, and collaboration. Another justification for employing this theory is its acknowledgement of the significance of 21st-century skills, which necessitates the creation of a responsive learning environment that supports the use of methods and techniques that are productive in the students' learning of English (Azman et al., 2013). This could be accomplished by employment of unconventional and progressive DDFs to meet contemporary learner preferences and global demand.

Methodology

This study was based on a group project task that required the students to construct a business document known as a Company Profile (CP). This group project allows students to demonstrate their understanding in an authentic learning environment that reflects the actual world to improve their understanding of business fields. Each group consisting of six members had to create their own companies as part of the course assessment

requirement. They could create a company of their choosing, either a merchandise or service provider. They were guided to construct CP components consisting of items such as name of the company, nature of business (service-oriented or product-oriented), slogan, motto, mission and vision, logo, letterhead, organizational chart and brochure.

The primary goal of this CP task was to raise levels of interaction and to provide students with time to reflect and generate higher-quality work based on collaborative effort among team members. The content created was assessed. Another objective was to foster a collaborative and communicative learning environment in which learners were expected to demonstrate mastery of the fundamental concepts involved in developing a CP, deliver information about their company while pitching, promote their service or product, and build mutual knowledge to achieve a deeper understanding.

Research Design

This study utilised a qualitative method particularly, the techniques of a single case study (Stake, 1995; Yin, 2003). The case study method allows for reporting an authentic online communicative and collaborative usage alongside English language learning experience. Although all students were in a face-to-face ESP class, the CP group project was done digitally utilising DDFs from a university's learning management system, where the DDF sessions occurred within a six-week period.

Participants

A total of 26 homogeneous undergraduate students that were in semester four onwards participated in this study. These students had undergone their compulsory English language courses in their first year and are now enrolled in an ESP course that focuses on the concepts of corporate communication styles in a workplace. The participants were purposively selected from 20 classes of 569 students enrolled in English for Business Communication at the university. Purposive sampling, which is commonly required in case studies (Cohen & Manion, 1989), was used. The researchers employed purposive sampling to "discover, comprehend, and acquire insight from a sample from which the most could be learnt" (Merriam, 2009, p. 79). The students were chosen based on their active participation in DDF sessions with basic knowledge of computer skills and possess intermediate level of English language proficiency. Accounting, Economics, Business Administration, and Management majors were among those enrolled in the class. These criteria were obtained in the demographic profile that the participants had completed at the beginning of the semester.

The data for the study were 26 students' reflective journals, 11 students' interview transcriptions, and 359 entries or posting threads from students in five groups.

Data Collection Procedures

In accordance with the university's data collection policies, participants were briefed on the study's data gathering procedures. Participants also agreed to participate in the data collection. To verify and triangulate data, interviews were conducted, and students were asked to write reflection journals. Creswell (2013) considers obtaining data from numerous sources to be the goal of qualitative approaches. The reflective journals allowed participants to express themselves while also learning more about how the DDF effects students' English language learning, communication, and collaboration skills.

Data Analysis

The data for this investigation were analysed in several stages using Creswell's (2013) systematic approach, ensuring credibility and reliability through a rigorous and transparent process. Data from interviews and reflective journal entries were organised using Microsoft Word processor. The interview audio files were transcribed verbatim. Appendix 1 shows the coding procedures.

Researchers familiarised themselves with the data through meticulous review, identifying preliminary ideas. An inductive coding approach was utilised, involving multiple rounds of analysis by reading several times to identify common themes and recurring ideas to highlight meaningful text elements. Open coding marked relevant phrases, which were subsequently grouped into categories during axial coding to reveal relationships among codes.

In the axial coding phase, related codes were combined into broader categories based on shared meanings. For example, codes linked to knowledge sharing and collaboration were grouped under Communication and Collaboration Development. During selective coding, these categories were refined into principal themes by recognising core patterns and eliminating irrelevant or infrequent codes. Themes were developed based on frequency and relevance, accurately reflecting the dataset's core aspects.

The coding process continued until data saturation was achieved, ensuring no new codes or categories emerged. Triangulation was employed to validate the themes by cross-checking findings from interviews and journals, ensuring coherence and consistency. Researchers iteratively reviewed the themes to confirm alignment with research objectives. Finally, the themes were contextualised through comparisons with prior studies and researchers' observations, grounding the findings both empirically and theoretically.

Findings and Discussion

A thematic analysis of learner's reflective journals and interview excerpts identified three key themes concerning the learners' experiences with DDFs. Under the framework of 21st century skills, the themes were: (1) communication and collaboration, (2) practising the target language, and (3) innovative learning approach.

Communication and Collaboration Development

Sharing and Constructing Knowledge

In this first theme, there were several interesting findings that reflect the ability of learners to develop communication and collaboration. One of the most important ones is the ability of learners to share their ideas and transfer their knowledge with other members of the group. The interview excerpts and journal entries in Table 1 demonstrate this point.

Table 1
Interview Excerpts and Journal Entries Related to Knowledge Sharing

Student	Interview (IV)	Reflective Journal (RJ)
NI		This online learning makes me communicate with others and can **share my ideas** easily
		Online learning can develop my communication skills in terms of **delivering my idea**
NJ	I learnt to act more friendly and accepted…and **gave more ideas**…talk with strangers, because we did not face them. I was **brave enough to start sharing my ideas** with them	

The excerpts in Table 1 are students' claims that the use of DDF enhanced collaboration and knowledge sharing through sharing of ideas. One student felt group interaction via DDF made her become communicative, amicable, and considerate of her team members' views. Apart from that, NJ said that her courage was developed as she led the group to share ideas.

The most prominent outcome that the participants appreciated was the important nature of teamwork when it comes to communication and knowledge sharing. DDF acts as a medium for group discussion to develop collaboration skills through communication skills. Students emphasised the importance of being supportive to

respect others to share information among themselves. Students can connect with other group members when working together, which enhances their skill of collaboration and communication. This can be seen in the excerpts in Table 2.

Table 2

Interview Excerpts and Journal Entries Related to Collaboration

Student	Interview(IV)	Reflective Journal(RJ)
SO		helped me in developing communication skills because as a team, we need to **engage with each other** in order to **work well together**. For instance, one can appear to be rude if certain words used are unsuitable such as not using the word please thank you and others
LC	…help me to increase my **communication skill with group members**. I used words as communication to **exchange and share my ideas** when responding, give explanation and also feedback… **teamwork** in forum among all members is very important	
SN		The online discussion **develops more on teamwork** because we need to understand what each other needs to **express their idea**
SS	Through online discussion, we will feel free to deliver our ideas and **give attention to ideas shared** by understanding the ideas in order to respond. This can help every person to improve their communication skill and **collaboration skill**	
SO		For me, the biggest impact is definitely the **collaboration skill** as we are **working as a team** and it is not a one man's job. So, not a single team

		member should be left out in the discussion
FS		valuable thing that I learned from this learning experience is **teamwork…we can work together in a team** to finish the task

As seen in Table 2, the collaborative nature of DDF has an important function in cultivating collaboration skills among participants. For example, student SO believed that through the DDF, everyone in her group cooperated to finish the task. Similarly, FS said that her spirit of solidarity with her group members developed during the completion of the group project. Thenceforth she elaborated this collaboration aided them in performing more effectively as group members, and she believed that by discussing the issues surrounding idea construction, they would be able to resolve them and produce their group project fruitfully.

DDFs encouraged collaboration and communication skills among students. Most of the students demonstrated their communicative capability via DDFs in writing their posts and reading others' posts. While exchanging their dialogues and commenting on the posts of others, students were competent in planning the execution; searching, sharing, analysing, evaluating, constructing all relevant ideas for contents; as well as negotiating to reach a mutual agreement in decision making for the best ideas to be included in their CP task. The students appeared to be pushing the boundaries of their levels of proficiency to communicate, convey their ideas and messages, and express themselves to one another. This notion was shared by students when they were asked how DDF has affected their communication and collaboration skills (Table 3).

Table 3
Interview Excerpts and Journal Entries Related to Communication

Student	Interview (IV)	Reflective Journal (RJ)
AZ	forum **can affect the development of my… collaboration and communication skills through my involvement...helped me to communicate well, to work as a strong team,** with other members	
NF	online forum helps me **improve myself in the communication skill, and collaboration**. It helps me **accept idea of people, and cooperate with others** in terms of teamwork and also **critical thinking which I force myself to do**… to come up with a good idea	

Clearly, students naturally display communicative and collaborative behaviours that support knowledge co-construction when they participate actively in discussions. This was indeed the case; through content analysis of online postings, few markers of collaborative/dialogue communication were discovered such as asking clarifying questions, adding to peers' comments, and respectfully criticising opinions to increase comprehension.

All in all, the students felt that their communication and collaboration skills improved based on their ability to connect, deliver, and share their knowledge with team members. This concurs with the findings of Kirschner et al. (2018) and Budiyono and Haerullah (2024), that is, in asynchronous threaded discussions, students collaborate to solve problems, thereby distributing cognitive load among group members and developing abilities through the group's distributed expertise. Exchanging knowledge and information is critical while learning in a group setting, as knowledge is socially produced through collaborative efforts toward common goals. Thus, from a socio constructivism view, as learners participate in DDFs activities, they embraced what they had constructed and reconstructed because of their collaboration (Vygotsky, 1978). In this study, the students felt that DDFs have improved their communication and collaboration in executing their English language course group course project.

Practising the Target Language

Through DDFs, they tended to practise the target language more by being actively involved in the discussion using English language only. Student LK shared that group discussion via DDFs allowed them to practise at the optimal level in the target language and the language is improved eventually. Practising, rehearsing, and redoing what they target to accomplish through the process allowed for more opportunities to use the language while perfecting their Company Profile.

On another note, a Chinese student said that using English via DDFs helped him and his group members to ultimately improve and practise their English language competence. Additionally, he stated that their group did not completely utilise the English language during in-class discussions, since it was only used on occasion. Table 4 reflects this notion.

Table 4
Interview Excerpts and Journal Entries Related to Target Language Practice

Student	Interview (IV)	Reflective Journal (RJ)
SO	forum **can affect the development of my… collaboration and communication skills through my involvement...helped me to**	online forum has helped my group members and me in **practising the English** language as what we have discussed are 100 percent in English

	communicate well, to work as a strong team, with other members	
LK		We seldom using English to communicate with friends in class. But we **have to use English to communicate in online discussion forums**. Indirectly, it **helps us to practice and improve our English**
NS	forum made me more **engaged in learning English** because in daily life I use Malay…rarely use English.	

As seen in Table 4, NS asserted that her commitment to learning English has increased because of the online discussion forum. This is because this platform enables her to practise English, a language she utilises sparingly daily. She further admitted to utilising her mother tongue language in regular life and hardly used English.

The data presented demonstrates that DDF is an avenue for learners to practise communication and collaboration. Choi and Nunan (2018) assert that when language learners are compelled to communicate outside of the language classroom in real-life circumstances, their communication resources are activated. Students had to communicate in English outside of the classroom in the DDFs environment as part of this study in the virtual realm with group members from various backgrounds and races, and English was the only language they were allowed to use for discussion. As a result, using DDFs required them to learn and practise not only computer skills, but also electronic literacy, or the capacity to communicate with others using electronic tools (Kadijevich et al., 2023; Melo-Pfeifer, 2021).

Since the students were multiracial and most were Malays, Malay ended up as the main language of communication. Furthermore, when attempting to communicate in English, code-switching between the native language and English is common among speakers in Malaysia (Maros et al., 2016). Malay is widely spoken on university campuses and in classes because of the local environment where Malay is the primary mode of communication, where most Malaysians do not have many opportunities to communicate in English daily. Even though English is Malaysia's official second language, people' native tongues are frequently utilised in daily conversation (Ting et al., 2018). However, using DDF as a pedagogical tool, students were able to practise their English language skills in a group setting where they were extremely active in their discussions. For instance, when students debated the content of the CP via DDFs, they became active users of the English language because of their involvement in knowledge construction via the platform. Social learning occurs when active interactions motivate learners to use and acquire the target language indirectly. In other words, students acquire language considerably more quickly if they are provided with an environment in which they can

speak freely and confidently (Jumaah, 2024). Thus, DDF is capable to increase students' confidence and competency levels by having them practise the language on a regular basis.

Innovative Learning Approach

Several students used DDF to compare their enthusiastic and dynamic learning experience to earlier, which was more conventional learning experiences, as shown in Table 5. They discussed the ability to acquire the modern style of learning to execute and complete the task within the virtual realm compared with the conventional way of performing it.

Table 5
Interview Excerpts and Journal Entries Related to Innovative Language Approach

Student	Interview (IV)	Reflective Journal (RJ)
FS		opportunity **to try something new. I never use online discussion** to discuss our assignment, this is a big opportunity for me to experiencing a new way of learning
MH		I feel so excited because I **rarely discuss any task onlin**e. I also feel that I will **learn something new** which is how to use online discussion and I will make my learning up to date
NQ	The **effect of this new approach** is developing my…communication skill and collaboration skill among my group. In my opinion, sometimes it **makes us more interesting to learn English**	

As seen in Table 5, MH felt he had developed into a progressive and sophisticated learner, and it was for this reason that he was drawn to the revolutionary learning process. This paper asserts that a distinction exists between student interest and active participation. Several students were interested in learning as they were motivated by the unconventional method. As mentioned by NQ, the new method of using DDFs inspired her language learning and had good impact on her skills development. According to MF, DDF also gives space for introverted ones to actively speak up confidently as they are not confronted with each other physically. This is also another factor that influences students to perceive DDF positively.

The findings show that students' language acquisition is maximised, and their confidence level raised through collaborative learning with students from diverse backgrounds. In addition, the strategy precludes participants from using their native language or even code-switching, leaving them with no alternative except to learn to communicate fully in English. This is feasible in an ESP classroom as an option to improve communicative competence, student motivation, and target language producti on (Mulyadi et al., 2020). Students have better opportunities to engage in more online language learning activities to improve their communication and collaboration skills apart from practising their target language for enhancement.

Conclusion

The purpose of this study was to investigate how class dynamicity was produced through DDFs, which has an advantage over conventional instruction in developing students' communication and collaboration skills while improving their English language. Based on the findings, DDFs have the potential to shift a conventional literacy classroom from a teacher-centred to a student-centred approach to establish a good framework and environment conducive to learning; transform learning from a solitary activity to a social one, communicative and collaborative work and demonstrating learning from passive to active practices. The use of DDFs to improve skills increases learner motivation, allowing students to embrace a new 21st-century learning paradigm that fosters active rather than passive learning (Jamali & Krish, 2023). Furthermore, the DDFs interaction's structure contributed to the achievement of favourable learning outcomes. Participants were able to adapt, refine, appropriate, and expand their own and each other's learning, skills, knowledge, and attitudes by utilising technology as a social, dynamic environment. Hence, the findings suggest that DDFs can be an effective technique in language instruction, creating a learner-centred and socially engaging learning environment.

There were several major implications identified for language educators and practitioners, particularly in online learning. Participation within DDFs yet on a voluntary basis enforced the students so that they take ownership of their learning of the English language, making it clear to accomplish the given CP project task successfully and which skills needed reinforcement and review. The DDFs provided a platform to the students letting them get insights into their own developments and progress and learning for better writing and reading. Student active engagement with content construction for their CP project task completion was successful when this learning activity was discussed within the virtual platform collaboratively, communicatively and using critical thoughts represented all of the 21st-century skills (The Partnership for 21st Century Learning, 2011). It can be concluded that DDFs improve students' communication, collaboration, and English language skills, as shown by the examination of participations' individual interviews and reflective journals. In online learning, these elements are essential for student success.

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Appendix 1
Table of Coding Procedure

Steps	Procedure	Example
Raw Data	Transcription of interviews and reflective journals into textual format.	"I learnt to act more friendly and accepted…and gave more ideas…talk with strangers, because we did not face them. I was brave enough to start sharing my ideas with them."
Open Coding	Identification and labelling of meaningful text parts.	Code: "Sharing and Constructing Ideas"
Axial Coding	Classifying related codes into categories according to similar characteristics and identifying relationships.	Category: "Communication and Collaboration features" (codes: feelings confident, producing ideas, sharing opinions).
Selective Coding	Classification of categories into themes through the identification of essential patterns.	Theme: "Role of Digital Discussion Forums in developing Communication Collaboration" (combines three related categories).
Theme Validation	Cross-checking thematic consistency between datasets and ensuring alignment with research objectives and theories.	Reflective journals confirm "Sharing and Constructing Knowledge" in group projects in collaborative settings via DDFs.
Final Themes	Incorporation of validated themes into a cohesive narrative for reporting.	Themes: "Sharing and Constructing Knowledge," "Practicing Target Language," etc.