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Who Are Active and Inactive Participants in Online Collaborative Writing? Considerations From an EFL Setting

Nakhon Kitjaroonchai
Asia-Pacific International University, Thailand

Daron Benjamin Loo
University of Malaysia Sabah, Malaysia

***Abstract*—This study investigated learners' online collaborative writing (CW) behaviours. The participants were 115 EFL students from different Asian countries at a private international university in Thailand. The quantitative data was collected from students' writing contributions on two collaborative writing tasks: descriptive and argumentative essays. Data was analyzed using one-way analysis of variance (ANOVA) and the Bonferroni Post Hoc Test. The analysis from the one-way ANOVA test revealed a significant difference between groups regarding percentage of text contribution in CW tasks. Qualitative data was also collected from students' reflective journals and observations, where factors that influenced team collaboration were examined. The qualitative findings showed that students with higher language proficiency levels were the prominent authors who contributed more text to their group tasks. Elements affecting learners' active and inactive participations in team collaborations include student language proficiency, individual goal, designated roles, collaboration platforms, learning preference, topic familiarity, and influence of teacher. Some implications of the findings are discussed.**

***Index Terms*—collaborative writing, EFL learners, online collaborative writing, student interaction, writing contributions**

I. Introduction

The advancement of communication technology in the last two decades has revolutionized the teaching and learning practices in classroom settings (Jiang et al., 2017). This phenomenon has led to a growing interest in online collaborative writing (OCW) practice as a means to enhance learners' reflection of language, ability to negotiate linguistic features, and collaborate in solving linguistic problems (Dobao, 2012; Qiu & Lee, 2020; Storch, 2013). Studies have investigated the advantages of OCW by comparing collaborative and individual writing assignments (e.g., Elabdali, 2021; McDonough & De Vleeschauwer, 2019; Teng, 2021). The benefits are peer scaffolding, boosting critical thinking skills, and challenging cognitive function or ability (Liu et al., 2018; Teng, 2021). Furthermore, OCW encourages the sharing of workload and claiming of ownership. Nonetheless, although a collaborative writing (CW) assignment is intended to engage all team members, oftentimes work ends up with a single author, or, individual members inserting texts in a block layer format.

In the past, a CW assignment was visible only when the team members worked on hardcopies. In studies on CW in 1990s, there were methodological attempts to display work history of a written task (e.g., Rada, 1996); fortunately, current writing tools such as Word, Processor and Google Docs (GD) can provide records of changes made by authors (see Jeong, 2016; Wang et al., 2015). Microsoft Word documents use differentiated colors to mark individuals' contributions, with text additions and deletions, and inserted comments in a window column. GD also has a distinctive attribute where text changes are traced and auto-saved within 30 seconds of revisions. With these features, writers have access to a visualization of their collaboration (Krishnan et al., 2019). Another useful tool – DocuViz – was introduced in 2015 by Wang and his research team at the University of California, Irvine. This tool could offer a comprehensive visualization of a revision history of work done on GD (Krishnan et al., 2018; Wang et al., 2015). With such a tool, it is now possible to examine students' CW in a more objective manner. Taking this as the foundation, this study aims to examine the extent of activeness among university students engaged in OCW tasks. This study will also consider students who had learned English as a foreign language, and who come from different cultural backgrounds. This is to address the limited studies on OCW in settings that are heterogenous.

II. Literature Review

A. Online Collaborative Writing

The growth of OCW is driven by the development of modern technologies that assist writers in online writing. With

the rapid growth of web 2.0 technologies and social media platforms, writing has become less self-directed and more collaborative. According to Storch (2013), CW provides learners opportunities missing in personal writing, such as joint responsibility for better work quality and mutual feedback from competent partners, and collective efforts for task completion. On the other hand, OCW assignments were found to further enhance aspects of a piece of writing, such as its content, use of language and rhetorical features, as well as the organization of information (Abe, 2020; Elola & Oskoz, 2010; Kessler & Bikowski, 2010).

Besides examining language use and output in CW, studies have also examined the patterns of dyadic or group interactions (e.g., Li & Kim, 2016; Li & Zhu, 2017; Kitjaroonchai & Suppasetseree, 2021a). These studies have referred to Storch's (2002) dyadic interaction model which categorized peer interactions involving EFL/ESL CW into five categories: collaborative, dominant/dominant, cooperative, dominant/passive, and expert/novice. Although these studies revealed various aspects of patterns of peer interaction while engaging in OCW tasks, they were conducted from etic perspectives (researcher's viewpoint) of how team members perceived other peers' contributions and indexed their own CW behaviours toward group writing. To perceive CW behaviours from emic viewpoints, this study investigates the characteristics of active contributors and factors that shape active participation or non-participation while engaging in OCW tasks.

B. DocuViz

As mentioned, DocuViz is a visualization tool that can display revision history on GD. What this software does is it identifies data that is input into a GD document and subsequently provides usage statistics on co-authors' revisions. The visualization includes metrics such as the extent of peer editing and the individual contribution weight to the final draft by each collaborator (Krishnan et al., 2018; Olson et al., 2017). The visualization also includes color codes that distinguish team members' work (see Wang et al., 2015, for example). To allow observation over time, the color codes are used consistently. Figures 1 and 2 provide an overview of DocuViz, employing analytical data visualization charts devised by Wang et al. (2015).

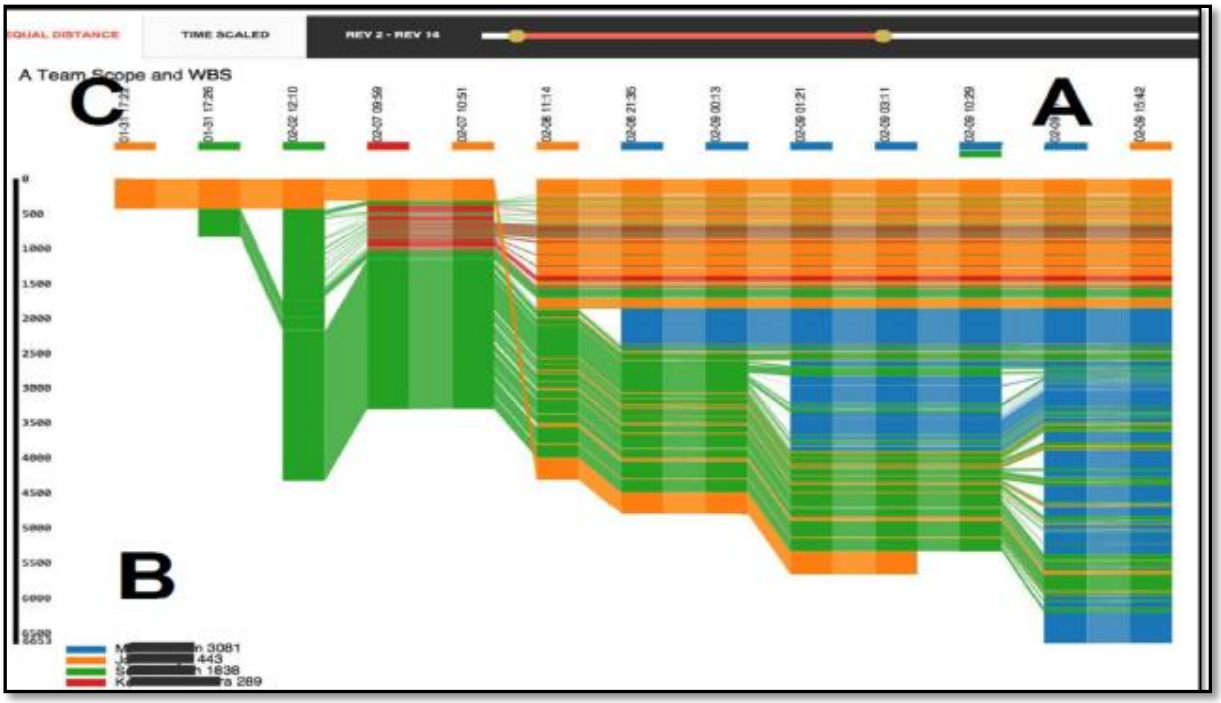

Figure 1. User View of DocuViz (Wang et al., 2015, p. 1867)

Figure 1 shows columns with different colors representing members contributing at a particular time. The vertical bar's height within each column serves as an indicator of the volume of text added during a specific time interval. Each subsequent column denotes when a new revision was introduced. The small rectangular bars, presented in various colors at the upper part of the columns (as illustrated in letter A), represent a timeline. This timeline delineates the individuals present during that specific 'slice' of time and whether any actions were performed during that time slot (Olson et al., 2017). The lower section with colored bars, as indicated in letter B, represents a summary of the character counts in the final version, contributed by each team member (Wang et al., 2015). Towards the far left, as indicated by letter C, character counts are presented vertically, arranged in a descending order from the smallest to the largest numbers. Furthermore, DocuViz's data visualization offers authors initial insights into the extent of their individual contributions (Kitjaroonchai, 2021).

In Figure 2, the DocuViz diagram illustrates the character count divided into four distinct categories: (1) self-

revisions, denoting edits made to one's own writing; (2) revisions made to the writing of other contributors; (3) the total number of edits performed, encompassing both self-revisions and edits to others' content; and (4) the individual contributions of each author to the final version of the task (Krishnan et al., 2018).

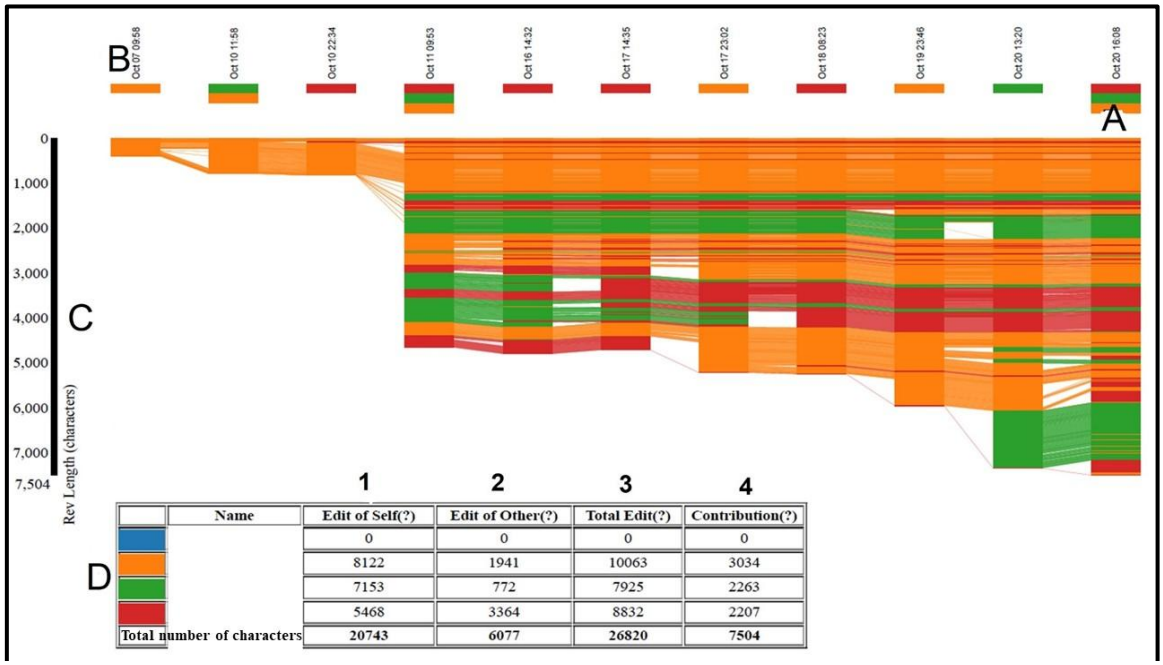

Figure 2. DocuViz: An Information Visualization Chart

C. Elements Shaping Learners' Collaborative Behaviours

To form a more comprehension outlook towards language learners' collaborative actions, it is necessary to account for influential factors that shape how they work together and contribute towards a group task. This study uses Engeström's (1999) activity theory to understand how learners collaborate with the assistance of resources in 'a meaningful context which is called as activity' (Issroff & Scanlon, 2002, p. 78). Activity is a structure that involves analytical and conceptual elements, and it can be restructured by different units' encounters with each other and with unit of other activities in the entire process (Guo et al., 2020). Engeström (1999) presents seven related components in his activity theory, including subjects, tools, objects, rules, community, division of labour, and outcomes. Engeström's conceptual framework of activity theory is illustrated in Figure 3.

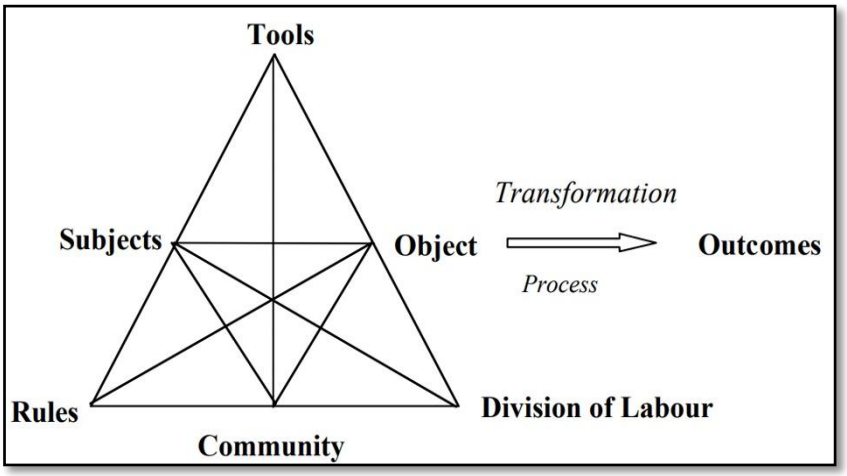

Figure 3. Activity System (Adopted From Issroff & Scanlon, 2002, p. 78)

Besides guiding towards an understanding of the teaching and learning process, the activity theory also seeks to explain and impact qualitative changes in human practices while pertaining to accomplish tasks or fulfill school requirements (Guo et al., 2020). As shown in Figure 3, the relationship between subject (e.g., students, teachers, candidates) and object (e.g., raw materials, intended or unintended learning outcomes, or problems to be resolved) is mediated by tools (e.g., activities, assignments, learning platforms, methods, educational technologies, online collaboration tools), whereas the relationship between subject and community (e.g., students' families, school

administrators, stakeholders) is mediated by rules (school regulations, classroom regulations, grading systems, academic requirements). The relationship between object and community is mediated by the division of labour (e.g., students working in team, collaborative members, cooperating instructors). The tool is utilized to transform the learning process while the rules are implicit and explicit ethos, protocols and social bond within a community (Hancock & Miller, 2018; Issroff & Scanlon, 2002). At last, the division of labour is "the implicit and explicit organization of a community as related to the transformation process of the object into the outcome" (Issroff & Scanlon, 2002, p. 78). Whilst the application of activity theory to the teaching and learning process initiated by Engeström provides us with important insights, there are more elements contained within the theory that needs further investigation, particularly in the area and its role in cross-cultural collaboration and knowledge construction via technological tools for education.

While studies have highlighted the benefits of CW in the EFL classroom setting, there remain some disagreements and drawbacks of this approach. For instance, Savasci and Kaygisiz (2019) identified that their Turkish EFL students, who engaged in CW activities throughout an entire semester, favored individual writing, as it allowed them to closely track their personal progress. Furthermore, Le et al. (2018) observed that the Vietnamese university students who participated in their research showed a deficiency in interpersonal and teamwork skills, attributable to variations in workloads and diverse learning styles. While these findings are helpful in discussing the dynamicity of CW, they are still limited in terms of identifying factors that prompt contributions, especially in a collaborative setting. With this as a research premise, this study aims to address these research questions:

1. Who contributes more texts during the CW processes?
2. What are factors influencing their contributions?

III. Research Method

A. Participants and Selection

The study involved 89 EFL students (50 males and 39 females) from various Asian countries, such as Cambodia, China, India, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam. These students were enrolled in a small private international university situated in central Thailand. With an average age of 19.2, the participants had learned English for roughly 10 years prior to their university education, and at the time of this study. Their English proficiency ranged from pre-intermediate to advanced levels, as determined by their performance in the university placement examination. This proficiency range corresponds to levels on the Common European Framework of Reference for Languages (CEFR) scale, encompassing A2 to C1. Students' proficiency level was determined by an internally administered language test. The participants were all first-year university students: 48 of them were in Applied Grammar and Academic Writing course and the remaining 41 were in a regular English composition course.

B. Research Instruments

(a). CW Tasks

In both of the writing courses, participants were directed to use GD to compose two CW essays over a three-week period for each task, which were descriptive and argumentative essay types. The purpose of this arrangement was to facilitate interaction among group members, involving activities like commenting, proofreading, and revising their written content. For each writing assignment, we provided three predefined topics. The topics for the descriptive essays were as follows:

1. Describing the notable landmarks within the university.
2. Describing a memorable life experience.
3. Depicting vegetarian meal options available in the university cafeteria.

As for the argumentative essays, participants were also presented with three predefined topics:

1. Evaluating the necessity of imposing curfews on campus.
2. Analyzing the proposition of introducing non-vegetarian dishes in the university cafeteria.
3. Assessing the significance of pursuing a college education.

Three alternative topics were provided for each writing genre to offer students a degree of choice and familiarity. They were required to write approximately 550-600 words for each task.

(b). Data Analysis

1. Quantitative Data Analysis

DocuViz was used to generate data entered in GD shared files by calculating the proportion (in percentage) of the number of characters each person contributed. 89 participants engaged in two CW tasks. In light of members' contributions in the two CW tasks (descriptive and argumentative essays), the data analysis is summarized in Table 1.

TABLE 1
INDIVIDUAL MEMBERS' CONTRIBUTIONS TO CW TASKS

ST	LPL	CW1 (%)	CW2 (%)	ST	LPL	CW1 (%)	CW2 (%)	ST	LPL	CW1 (%)	CW2 (%)
1	Intermediate	26.0	29.0	31	Intermediate	61.0	95.0	61	Intermediate	41.0	57.0
2	Upper-intermediate	41.0	40.0	32	Pre-intermediate	5.0	15.0	62	Upper-intermediate	63.0	89.0
3	Intermediate	34.0	30.0	33	Pre-intermediate	46.0	11.0	63	Intermediate	27.0	18.0
4	Upper-intermediate	89.0	58.0	34	Pre-intermediate	30.0	26.0	64	Intermediate	25.0	4.0
5	Pre-intermediate	6.0	10.0	35	Upper-intermediate	75.0	53.0	65	Upper-intermediate	73.0	82.0
6	Pre-intermediate	8.0	32.0	36	Intermediate	25.0	47.0	66	Intermediate	28.0	37.0
7	Intermediate	20.0	26.0	37	Upper-intermediate	78.0	85.0	67	Intermediate	34.0	5.0
8	Intermediate	21.0	12.0	38	Advanced	86.0	88.0	68	Upper-intermediate	82.0	45.0
9	Pre-intermediate	7.0	21.0	39	Pre-intermediate	9.0	7.0	69	Pre-intermediate	28.0	19.0
10	Upper-intermediate	52.0	41.0	40	Upper-intermediate	6.0	4.0	70	Advanced	33.0	46.0
11	Pre-intermediate	7.0	17.0	41	Intermediate	14.0	25.0	71	Intermediate	2.0	12.0
12	Pre-intermediate	78.0	41.0	42	Upper-intermediate	59.0	32.0	72	Upper-intermediate	33.0	44.0
13	Pre-intermediate	14.0	42.0	43	Pre-intermediate	28.0	43.0	73	Upper-intermediate	29.0	21.0
14	Upper-intermediate	93.0	92.0	44	Intermediate	56.0	45.0	74	Advanced	34.0	10.0
15	Intermediate	7.0	8.0	45	Pre-intermediate	4.0	10.0	75	Pre-intermediate	3.0	6.0
16	Intermediate	16.0	2.0	46	Pre-intermediate	40.0	45.0	76	Intermediate	19.0	38.0
17	Upper-intermediate	90.0	75.0	47	Intermediate	50.0	54.0	77	Intermediate	10.0	12.0
18	Pre-intermediate	5.0	41.0	48	Pre-intermediate	30.0	16.0	78	Intermediate	30.0	24.0
19	Intermediate	70.0	74.0	49	Intermediate	20.0	31.0	79	Upper-intermediate	83.0	90.0
20	Intermediate	32.0	23.0	50	Pre-intermediate	15.0	5.0	80	Pre-intermediate	18.0	6.0
21	Upper-intermediate	56.0	54.0	51	Intermediate	42.0	56.0	81	Pre-intermediate	7.0	5.0
22	Intermediate	95.0	59.0	52	Intermediate	34.0	34.0	82	Pre-intermediate	13.0	13.0
23	Upper-intermediate	35.0	18.0	53	Intermediate	9.0	6.0	83	Intermediate	16.0	9.0
24	Pre-intermediate	22.0	15.0	54	Upper-intermediate	95.0	63.0	84	Upper-intermediate	26.0	48.0
25	Pre-intermediate	40.0	27.0	55	Intermediate	5.0	37.0	85	Intermediate	15.0	10.0
26	Pre-intermediate	60.0	73.0	56	Upper-intermediate	82.0	75.0	86	Upper-intermediate	59.0	42.0
27	Pre-intermediate	44.0	72.0	57	Intermediate	14.0	15.0	87	Upper-intermediate	39.0	59.0
28	Pre-intermediate	5.0	10.0	58	Advanced	73.0	73.0	88	Intermediate	31.0	14.0
29	Intermediate	23.0	3.0	59	Intermediate	5.0	49.0	89	Pre-intermediate	30.0	27.0
30	Intermediate	10.0	17.0	60	Intermediate	4.0	10.0				

Note: ST = Students; LPL = Language Proficiency Level; CW1 = Collaborative Writing 1; CW2 = Collaborative Writing 2

2. Qualitative Data Analysis

To have a better gauge of the participants' experience engaged in OCW, this study also collected qualitative data from students' reflective journals. The reflections were written in English, at the end of the semester. The qualitative data from students' reflections was analyzed over four stages: data preparation, open coding, recoding, and meaning categorization to generate themes (Creswell, 2012). In particular:

(1). Phase I. Data Preparation

Before dividing the data into segments, the researchers conducted a comprehensive reading to ensure a sound

understanding of its contents. The primary aim of this data preparation phase was to facilitate the development of an open coding framework by the researchers.

(2). Phase II. Open Coding

At this stage, the researchers reviewed the reflective papers submitted by the students, repeatedly reading them and assigning codes to specific segments. Codes were scrutinized for any duplication, and the open coding process helped in filtering out data unrelated to the research questions under investigation.

(3). Phase III. Recoding

In the recoding phase, the researchers grouped similar codes and reduced redundant codes. The recoding system helped the researchers look for themes related to the underlying assumptions of factors influencing learners' contributions.

(4). Phase IV. Meaning Categorization and Themes

In the final stage of the qualitative content analysis, distinct categories or themes were identified, specifically addressing factors or elements that impact students' involvement in group writing.

After the thematization of the qualitative data, it will then be discussed through the lens of Engeström's (1999) activity theory. This is to help us build a more complete picture about pertinent factors that may have mediated students' experience in OCW tasks.

IV. Results

To respond to the first research question, the researchers conducted a comparison of means regarding the contributions within heterogeneous groups, taking into account the students' perceived levels of English proficiency. The results of the analysis are shown in Table 2.

TABLE 2
MEAN CONTRIBUTIONS OF HETEROGENEOUS GROUPS

Students' perceived level of English proficiency	N	Mean of contribution to CW1 (%)	SD	Mean of contribution to CW2 (%)	SD
Pre-intermediate	27	22.29	19.22	24.26	18.95
Intermediate	36	26.97	19.99	28.52	22.01
Upper-intermediate	22	60.81	25.38	55.00	24.67
Advanced	4	56.50	27.08	54.25	34.23

The researchers also utilized a one-way analysis of variance (ANOVA) to examine the average scores of diverse groups, and the Bonferroni Post Hoc Test to identify any notable variations between groups in terms of their English proficiency levels and their contributions to collaborative writing tasks. The results of the ANOVA test are presented in Table 3.

TABLE 3
ANALYSIS OF VARIENCE FOR DIVERSE GROUPS AND THEIR INVOLVEMENT IN CW TASKS

		Sum of Squares	df	Mean Square	F	Sig.
Percentage of text contribution in CW1*	Between Groups	23185.68	3	7728.56	16.70	.00
	Within Groups	39332.87	85	462.74		
	Total	62518.56	88			
Percentage of text contribution in CW2*	Between Groups	14904.69	3	4968.23	9.91	.00
	Within Groups	42610.91	85	501.30		
	Total	57515.6	88			

Note: * The mean difference is significant at the 0.05

The one-way ANOVA test demonstrated a noteworthy distinction among groups concerning the percentage of text contribution in CW task 1 [$F, (3, 85) = 16.70, p < .01$] and percentage of text contribution in CW task 2 [$F, (3, 85) = 9.91, p < .01$]. Nevertheless, the results do not specify the specific significant distinctions between pairs or groups. To delve deeper into the variations among multiple group means, the researchers conducted the Bonferroni Post Hoc Test. The results are shown in Table 4.

TABLE 4
BONFERRONI POST HOC TESTS: MULTIPLE COMPARISONS BETWEEN GROUPS

Bonferroni Dependent Variable: Percentage of contribution			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Percentage of contributions in CW1	Pre-intermediate	Intermediate	-4.67	5.48	1.00	-19.47	10.12
		Upper-intermediate	-38.52*	6.18	0.00	-55.21	-21.83
		Advanced	-34.20*	11.52	0.02	-65.34	-3.07
	Intermediate	Pre-intermediate	4.67	5.48	1.00	-10.12	19.47
		Upper-intermediate	-33.84*	5.82	0.00	-49.57	-18.12
		Advanced	-29.52	11.34	0.07	-60.15	1.10
	Upper-intermediate	Pre-intermediate	38.52*	6.18	0.00	21.83	55.21
		Intermediate	33.84*	5.82	0.00	18.12	49.57
		Advanced	4.31	11.69	1.00	-27.27	35.9
	Advanced	Pre-intermediate	34.20*	11.52	0.02	3.07	65.34
		Intermediate	29.52	11.34	0.07	-1.10	60.15
		Upper-intermediate	-4.31	11.69	1.00	-35.90	27.27
Percentage of contributions in CW2	Pre-intermediate	Intermediate	-4.26	5.70	1.00	-19.67	11.13
		Upper-intermediate	-30.74*	6.43	0.00	-48.11	-13.37
		Advanced	-29.99	12.00	0.09	-62.40	2.41
	Intermediate	Pre-intermediate	4.26	5.70	1.00	-11.13	19.67
		Upper-intermediate	-26.47*	6.06	0.00	-42.84	-10.10
		Advanced	-25.72	11.80	0.19	-57.60	6.16
	Upper-intermediate	Pre-intermediate	30.74*	6.43	0.00	13.37	48.11
		Intermediate	26.47*	6.06	0.00	10.10	42.84
		Advanced	0.75	12.17	1.00	-32.13	33.63
	Advanced	Pre-intermediate	29.99	12.00	0.09	-2.41	62.40
		Intermediate	25.72	11.80	0.19	-6.16	57.60
		Upper-intermediate	-0.75	12.17	1.00	-33.63	32.13

Note: *The mean difference is significant at the 0.05 level.

The post hoc analyses revealed notable disparities in the average percentage of text contributions across the four groups in the context of CW tasks. For instance, the mean contributions in CW task 1 for upper-intermediate-level students (M = 60.81, SD = 25.38) exhibited significant differences compared to those of pre-intermediate-level students (M = 22.29, SD = 19.22) and intermediate-level students (M = 26.97, SD = 19.99), ($F(3,85) = 16.70$, $p < .01$); similarly, the mean contributions in CW task 2 for upper-intermediate-level students (M = 55.00, SD = 24.67) displayed significant distinctions in comparison to pre-intermediate-level students (M = 24.26, SD = 18.95) and intermediate-level students (M = 28.52, SD = 22.01), ($F(3, 85) = 9.91$, $p < .01$). These findings imply that students with a higher level of language proficiency tend to make more substantial text contributions throughout the CW processes.

To address the first research question, the researchers found that students with advanced language proficiency significantly outperformed their peers with lower language proficiency in terms of their contributions to group essays. This distinction in their contributions to group assignments held statistical significance. This leads us to infer that learners' language proficiency plays a pivotal role in collaborative projects as it shapes the behaviors, contributions, and interactive dynamics among group members. The present findings align with prior research conducted by the principal researcher of this study (see Kitjaroonchai, 2022), which reported that the language proficiency levels of learners assume a central role in collaborative projects. This role is characterized by its influence on the behaviors and contributions of individuals when they participate in group writing activities.

To address the second research question concerning factors influencing students' contributions in CW tasks, the qualitative content analysis was used. Categories or themes emerged from content analysis can be drawn and summarized in Figure 4.

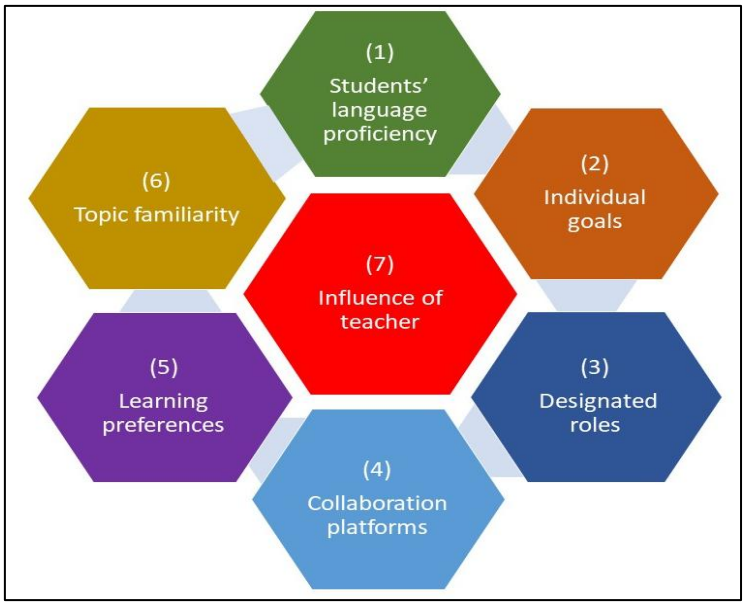

Figure 4. Factors Influencing Students' CW Behaviours

A. Students' Language Proficiency

Students with higher language proficiency levels were found to be more active in group work for they have a distinct advantage over those with lower language proficiency. Students with lower language proficiency showed low engagement that resulted in a low percentage of text contribution. The following excerpt is an example that reflects English language proficiency level on learners' contribution towards CW tasks.

"*I did not write much when I worked in group because my vocabulary is limited and my writing skills is not that good. I often make mistakes in language structure*" (ST16-reflection).

B. Individual Goals

Students working in small groups were found to have distinctive goals. Individual goals emerged from the analysis involve (1), completing tasks on time (2) getting a good grade, (3) improving writing skills, and (4) improving communication skills. Learners who held a fixed goal of getting a good grade were found to establish their position and contribute more writing. The following excerpts were articulated by prominent contributors whose goals were to earn good grades.

"I set a target to write a good essay because writing a good paper will help me to get a good grade at the end" (ST38-reflection).

"*When I worked with my team, I need to ensure the essays have a high quality for us to earn a flying color grade. The paper should be error free"* (ST22-reflection).

C. Designated Roles

Each member played a crucial role to make a successful collaboration. Collaboration became more engaging when the team had an active leader who designated responsibilities and followed up with the work process. The following excerpts reflect this theme.

"*In my group, we have a good leader. He understands our limits but is willing to guide us in the parts we were to contribute"* (ST7-reflection).

"*Although I contributed little and did what I was asked to do, I also served as a proofreader to check spelling mistakes and correct them"* (ST63-reflection).

D. Collaboration Platforms

In this study, GD is the main tool for students to co-construct their CW essays and interact with one another synchronously or asynchronously to accomplish tasks. The tool makes the CW process visible. However, students viewed GD to have both positive and negative impacts. GD is perceived to be a convenient tool for online collaboration and a useful tool for checking members' engagement. Some issues that emerged include the dependency of the tool on internet connectivity, and students' privacy, especially those who were not keen on sharing private information or were nervous about making language mistakes. The excerpts below supported this claim.

"The tool we used here is Google Docs, which is a convenient tool for online collaboration but it works well only when the Wifi is stable or you stay close to the Internet router. What we wrote can disappear if the connection was down" (ST47-reflection).

"*Working in Google Docs may benefit someone with good language demand. As for me, I hesitate to write when*

others might watch me typing with language errors." (ST81-reflection).

E. Learning Preferences

Acquiring knowledge in a friendly atmosphere is more conducive to learners' preferences. Researchers postulate that an individual learner has a learning style, so if classroom instruction is adapted to accommodate that learning preference, it is anticipated that improved learning will be a result (Olson et al., 2017). The following excerpts expressed by the participants in the study.

"Personally, I believe that working in small groups can refine our understanding through discussion and peer feedback. This reason makes me feel comfortable to contribute" (ST69-reflection).

"*Although I prefer individual work, I don't mind giving it a try because working in a team we can pool knowledge and skills together"* (ST24-reflection).

F. Topic Familiarity

The students noted that their familiarity encouraged them to contribute to the task. They reported that having prior knowledge about the topic would empower them to generate ideas, collectively leverage linguistic abilities, initiate negotiations among themselves, and endeavor to collaboratively share their knowledge. On the contrary, a topic that is unfamiliar to students would influence their contributions, in that they could refrain from sharing their parts due to the lack of knowledge and resources. The following excerpts support this theme.

"When we agree with the topic that everyone knows, each of us can write better, so we can support one another" (ST41-reflection).

"I hesitated to write when I was asked to contribute one body paragraph of the argument essay. I couldn't do well in my part because I don't know much about the topic my group had chosen" (ST15-reflection).

G. Teacher's Influence

Teachers have the power to influence or direct students while performing group work. Teachers can play a crucial role in promoting interactions between students working in a team, and engage them in the collaborative learning process (Gillies, 2006). The excerpts below reflect this theme.

"*I don't really enjoy group work because we all have different ideas to argue. To agree on something is not easy sometimes, but I decided to get involved because the teacher encouraged us to help one another"* (ST30-reflection).

"*I remember in the first collaborative essay nobody in my group took initiative to start until the teacher intervened and reminded us of the deadline to submit the essay. Then we started but had not much time to edit"* (ST49-reflection).

The seven factors discussed above were found to influence students' CW behaviours. Students' language proficiency helped them to perform in the target language more spontaneously and comfortably when expressing meaning through writing. There were also students who set writing goals. Individual writer may have distinctive goals while co-constructing an essay. Some may do it just to complete the required assignment, some may want to improve communication skills or writing skills by observing from how more knowledgeable peers construct sentences, while others may aim to get a good score or grade after completing the task. Besides, students' collaborative behaviours were shaped by the designated roles and responsibilities of the team members. Collaboration became more effective when the team experienced emergent leadership (Kukulska-Hulme, 2004). When the position of the members was obscure, it would affect communication skills and lead to conflicts in teamwork, which resulted in member withdrawal.

A collaboration platform, such as GD, provides both synchronous and asynchronous means of communication while students were engaged in an OCW task. In the current study, active contributors were found to be learners with high language proficiency and the ones with computer literacy who could use the tool conveniently. Students who were reluctant to contribute texts in the collaborative platform expressed that they did not want to display their language mistakes for fear of criticism, especially since the shared document can be viewed by their peers. Students' learning preferences also played a role in their collaborative behaviours. Aside from this, topic familiarity and teacher's influence affect students' collaborative processes. Topic familiarity may have a profound effect on students' writing performance. Students with greater knowledge of a topic could generate and synthesize ideas easier. Therefore, background knowledge is perceived to be an element to improve students' contribution to group work. On top of that, teachers can shape students' collaboration by intervening in group work, giving feedback, and encouraging interaction when students face problems working together. Students tended to be more likely to initiate ideas and to take responsibility for group work if teachers provide direct supervision or guide them through tasks or responding to their inquiries while attempting to resolve a problem (Webb, 2009).

V. Discussion

For the first research question, the findings of the study affirmed previous studies that reported students' language proficiency as being an important mediating factor for active participation in small group CW settings, even those online (e.g., Bahar, 2003; Dobao, 2012; Kitjaroonchai & Suppasetseree, 2021a; Storch, 2013). Students with a good command of English may be more proactive in producing texts, for they possess broader linguistic resources. They could articulate ideas and express them well, and these contributions had a higher level of language accuracy.

Furthermore, more capable language learners would direct their group in collaborative efforts and submit tasks on time to meet their goals of obtaining a good grade (Elabdali & Arnold, 2020). They would not wait for peers to inform them what to do, but take the initiative and make plans on how to accomplish their goals (Li & Kim, 2016). On some occasions, their control over group work impedes less capable peers from contributing as they fear that they would hamper the work. This may result in "a pillion rider", where group members get credit without investing any effort. This may subsequently develop negative attitudes towards group work (Kitjaroonchai & Suppasetseree, 2021b). Therefore, an effective CW team necessitates a leader who is both proactive and supportive, demonstrating the ability to communicate proficiently and establish rapport to provide assistance to team members with lesser capabilities (Li & Zhu, 2017).

Similarly, members who were reluctant to contribute perceived writing as a private activity where their thought process should not be judged or interrupted. When they were monitored by peers in GD, they might feel uncomfortable (Wang et al., 2017). This was perhaps common among students whose language proficiency is low or developing, and do not have scaffolding or support from other more capable team members. Li and Zhu (2013) posited that low proficiency learners would not take initiatives when engaging in group tasks unless they are directed by a supportive leader who understand their limitations and appreciate their contributions (e.g., Johnson & Johnson, 2008; Webb, 2009).

Based on the examination of the qualitative data, we found that learners' contributions on their CW tasks were influenced by various factors, including students' language proficiency, individual goals, designated roles, collaboration platforms, learning preferences, topic familiarity, and influence of teacher. This gives an understanding of components that would facilitate collaboration, which can be explained through Engeström's (1999) activity theory. Specifically, GD served as a collaborative space where students were given the opportunity to work together on several tasks. More importantly, the work done was not static; instead, GD provided a dynamic space for students to interact for the purpose of completing the task. Closely related to GD was topic familiarity. While abstract, topic familiarity can be a factor that shapes the extent of active participation of group members. Students who have had experience writing on a topic may initiate the work, and at the same time may play an important role of responding to contributions from their team members (see Chen, 2019; Mahmoudi & Mahmoudi, 2017). At a broader level, both the space for collaboration and the impetus for the collaborative work were managed by the teacher. It is through the teacher's conception of the task, the creation of a space for the task, and the subsequent interventions that spurred the collaborative work to take place. This, however, is not to consider the teacher as being an authority who has absolute control over the collaborative work. This is clearly illustrated in qualitative findings of the study, where students' participation in doing the OCW tasks was mediated also by personal factors. Hence, while the teacher may have played a prominent role in configuring the initial structure for the OCW tasks, it was the students' subsequent collaboration with their peers that led to the restructuring and reconfiguration of the learning experience.

VI. Conclusion

The findings from this study revealed that in an OCW task, students with a higher level of language proficiency contributed more. Moreover, these members directed their teammates due to their language privilege and linguistic resources. This phenomenon is well anchored and substantiated in L2 writing contexts regardless of regional locations or cultural characteristics (see Storch, 2013). While other students whose language proficiency is still developing may benefit from their more able peers, there is a risk of uneven distribution of work, and the possible social friction between team members. Thus, the interaction and relationship between group members need to be monitored for a collaboration that yields an equitable situation where members may draw benefits from their collective effort. While the use of DocuViz may be an effective tool for a teacher, students may also benefit from it. Presenting the visualization data of students' collaboration could be a prompt to encourage students to participate, especially those had contributed minimally. Doing this may instill a sense of accountability among team members. For the teacher, looking at collaboration from an activity theory perspective will also expand the focus; instead of just directly observing the collaborative efforts, an activity theory also considers factors that indirectly shape a collaboration. This perspective is suitable in the setting of this study, and others that may have a more diverse or heterogenous class – whether in terms of nationality or even language proficiency.

Appendix. Guiding Questions for Student Reflection

In approximately 500 words, write to address the following questions in your reflective paper.

a) Describe how you felt about working in small groups to construct online collaborative writing tasks

b) Factors or elements that influence your group collaboration

c) Your overall impression of online collaborative writing tasks

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Nakhon Kitjaroonchai obtained his Ph.D. degree in English Language Studies at Suranaree University of Technology (SUT), Thailand in 2021. He is currently a full-time lecturer and research coordinator of the Faculty of Arts and Humanities at Asia-Pacific International University, Thailand. His research interests include online collaborative writing, L2 writing, translation, and learning motivation. One of his recent articles was published in the Journal of Language Teaching and Research (JLTR).

Daron Benjamin Loo received his Ph.D. degree in Applied Linguistics from King Mongkut's University of Technology Thonburi, Thailand. He is currently senior lecturer at the Centre for the Promotion of Knowledge and Language Learning, *Universiti Malaysia Sabah*. He has published on topics such as academic writing, written corrective feedback, as well as on university language teachers' professional identity and development. One of his recent works was published in the Malaysian Journal of ELT Research.