Comparative Analysis of Online Student Engagement across Gender

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Abstract
Student engagement is an important component to learning. It has shown a connection to higher academic achievements among students who are more engaged. Student engagement in collaborative writing is required to ensure the success of the group in achieving the goal. However, due to Covid-19 circumstances, collaborative writing projects among the academic writing students had to be carried out online. The objectives of this study are to assess the overall student engagement in online collaborative writing projects, and investigate the differences in their responses based on gender. Male and female student engagement was found to be more influenced by participation attribute, followed by performance, emotions and skills. Female students' way to participate was by engaging in online conversation, while male students prefer to get to know their team members. Both groups, however, did not prefer to make regular post on online forums. Future research is suggested to include peer evaluation as a method to verify online student engagement in collaborative writing projects.
Keywords: Online Student Engagement, Online Learning

Introduction
    The emergence of Covid-19 has ramified the whole world with changes in many facets including a country's economy and the operations of educational institutions. While most of the economic activities were put on hold to control the spread of Covid-19 in Malaysia, the higher education institutions (HEIs) experienced sudden closures resulting in the largest online movement in the history of education (El Said, 2021). Thus, a shift in the teaching and learning process has taken place paving the way for the new education system i.e., online and distance learning (ODL). Students and instructors who are out of their physical classrooms need to adapt to an entirely different experience of the system. As ODL demands the use of apposite and relevant pedagogies, they ought to equip themselves with ample knowledge and skills on the information and communication technology (ICT) (Pokhrel & Chhetri, 2021).

Students and instructors' readiness has been an issue of great concern due to the abrupt transition from face-to-face classes to online teaching and learning system. One instance highlighted in Chung et al.'s (2020) study was that more than half of the students were reluctant to continue with online learning in the future if they were given a choice. Coping with hard times in facing difficult circumstances particularly internet connectivity and difficulty in understanding the content of the subjects were the main reasons reported by degree and diploma students of one public university in Malaysia. The instructors, on the other hand, expressed their inability to integrate online learning in the present responsibilities, and they claimed that the time to focus on that matter was scarce (Nwagwu, 2020).

Collaborative learning is one of the alternatives to consider in addressing the issue of limited social interactions between peers in online instruction (Sankaranarayanan et al., 2020). On one hand, collaborative work and assignment provides time and tools which accommodate the individuals' cognitive styles and learning preferences; thus, enabling each member in the group to work collaboratively. However, lack of experience in online collaborative assignment or activity has led these students to experience challenges and obstacles in dealing with the tasks (Demosthenous, 2020).

While previous studies have begun to research ways to enhance student engagement in online learning, researchers have gone beyond comparing the traditional mode of education and online learning environment. In particular, the current study aimed to:
1. Assess overall student engagement in online collaborative writing projects;
2. Investigate gender differences in online student engagement of academic writing.

Significance of the Study
The findings of this current study would be useful for ESL instructors to obtain feedback on the level of student engagement with the course content, instructors and other students. The instructors; for example, would know their students' attitudes, thoughts, behaviour and the way they communicate with other peers (Dixson, 2015) while engaging in collaborative learning projects; therefore, evaluation on the course designs i.e., the course assessments could be conducted. It is worth to note that instructors' roles as facilitators are deemed significant to ensure effective and meaningful student engagement in the online learning settings.

Additionally, teaching effectiveness demonstrated by the instructors could be measured. By evaluating the teaching and learning aspects, it offers rooms for improvement pertaining to course level, types of content, student preparedness and so on. Hence, this aids information into training design for the instructors themselves and simultaneously increases student engagement in the online learning environment.

Literature Review
The importance of social interaction during teaching and learning process has been substantially considered since it has provided benefits to the individual when interacting with other people. A review on studies of social interaction in collaborative learning has found that communication is a key element for successful learning experience either in a traditional classroom setting or online learning environment (Hussin et al., 2019). Active interaction

involves the activities of sharing ideas, discussing, negotiating, exchanging opinion and making decisions which promote the learners' knowledge and thinking skills. Effective interaction between the learners and instructors or peers also enables them to acquire knowledge better and encounter productive learning environment. With the advance of technology and the occurrence of pandemic Covid-19 in recent years, online learning environment has been practiced throughout the world in which the interaction between learners and technology has also been the focus of studies.

Collaborative Writing

Collaboration is defined as an action where two or more learners pool knowledge, resources and expertise from different sources in order to reach a common goal (Scoular et al., 2020). It requires the learners to work together on the same task through the division of labour which may involve interdependent tasks. In collaborative classrooms, the teaching activity takes place with other processes that are based on learners' active work of the course material. By using the information or ideas, the learners experience social stimulation of mutual exploration, meaning-making, and feedback which leads to better understanding of the problem and the creation of new understandings (Smith & MacGregor, 1992).

In the sense of collaborative writing, it refers to the co-authoring of a text by two or more writers which involves a commonly negotiated and shared decision making process that can possibly create the sense of shared ownership to the text produced in groups (Storch, 2013). Collaborative writing involves the learners to participate in small groups and be equally responsible to accomplish the writing task together by exchanging ideas and solving the problems that arise during writing. The outcome of collaborative writing is a collective cognition that includes new vocabulary, enhanced expression of ideas and knowledge of grammar which are developed through the learners' insights that cannot be traced back to one individual's contribution (Anshu & Yesuf, 2022).

A study by Malette and Ackler (2018) investigated the impacts of interventions on engineering students' collaborative writing by focusing on their experiences through a series of interviews which concluded that women writers often do more writing during the collaborative projects. Since the study also found that the women's writing labour is unrecognized or undervalued, the authors suggested that writing task in the collaborative project is made more visible by insisting each student to contribute to the writing (Malette & Ackler, 2018). This leads to the notion that the evaluation for collaborative writing task is assigned individually to each group member rather than assessing the writing product as a whole fulfilment of task. In addition, Almahasneh and Abdul-Hamid (2019) asserted that peer assessment is suitable for students as it increases their performance in writing due to the exchange of comments during collaborative writing task.

On top of that, Deveci (2018) investigated the views of 64 university students towards collaborative writing project satisfaction using a survey and a discourse completion task. The study's analysis found that female students were overall more content with their experience in collaborative writing since the task particularly contributed positive effects on their English language and teamwork skills. These reviews, however, require further empirical investigations especially in the setting of online collaborative writing which promises a new domain of research.

Online Collaborative Writing

The practice of online collaborative writing has raised the interest of researchers in investigating its implementation and effectiveness in teaching and learning process. A study by Limbu and Markauskaite (2015) presented a phenomenographic study that explored university students' perceptions by using interview method on the effects of online collaborative writing. The study concluded that online collaborative writing allows the division of work between the students, provides a combination of expertise, enables deeper understanding of content through the fusion of ideas and insights, and offers a means to develop new skills and attitudes for collaborative work and interaction (Limbu & Markauskaite, 2015).

In another study, Nykopp et al (2019) investigated the ways learners coordinate their collaborative online writing which are derived into text-related activities, task-related activities and social activities. When learners perform task-related activities, they acquire the relevant information by sharing resources and exchanging ideas while social activities allow them to maintain positive group atmosphere by discussing the strategies, monitoring the activities and reflecting the process. The study also found that the learners applied four distinct coordination profiles when completing online collaborative writing task which are classified into text-focused task coordinators, text-focused text coordinators, task and text coordinators, and social coordinators facing technical problems (Nykopp et al., 2019). This shows that learners utilize and experience different collaborative styles and approaches when fulfilling the given online writing task.

Bikowski and Vithanage (2016) explored the effectiveness of technology-enabled collaborative writing in improving the learners' writing skills and their attitudes towards collaborative writing. Findings revealed that 67 percent of the respondents believed web-based collaborative writing improved their writing experience while two thirds of them were in favour of online collaborative writing activities as Google Docs assisted them to plan and organize the writing activities and check for grammar points (Bikowski & Vithanage, 2016). Another collaborative writing study examined the usage of Wiki as a platform for composing English language essays by conducting pre-test and post-test written assessments which concluded that learners positively showed encouraging improvement in their writing skills (Ithnin et al., 2018). These studies justify the notion that online collaborative writing activity is worthy in practice as it promotes the students' ability to write and develops their collaborative and social skills.

Learner Engagement

Collaborative writing activities require learners to be engaged in the task given and at the same time maintain continuous communication among the individuals involved in the group. Learner's success to fulfilling task has been linked to learners' engagement; thus, leading to the improvement of learning outcomes. As defined by Bond and Bedenlier (2019), engagement is the energy and effort that learners apply during learning activities that can be discerned through the indicators of behavioural, cognitive or affective. Behavioural indicators are shown by being involved, dedicated and optimistic in activities; cognitive indicators denotes being understanding, having self-control and practicing deep learning strategies; while affective indicators are displayed by being interested, displaying positive responses to the learning environment and having a sense of belonging (Bond & Bedenlier, 2019).

Studies have examined the impact of student engagement when conducting writing task in online class setting (Fredrickson, 2015; Dixson, 2015). Fredrickson (2015) made a comparison measure of learner engagement, learning and satisfaction of an online course which concluded that collaborative writing task has a positive impact on learner engagement. However, the study found that collaborative writing task and learner satisfaction have negative relationships with learner interaction (Fredrickson, 2015) which requires further investigation on the impact of collaborative writing task especially in the setting of online learning. Another study by Dixson (2015) measured learners' engagement in online writing task by using Online Student Engagement scale (OSE) which focused on learners' active behaviour, thinking process, feelings about learning and learners' connection with the content, lecturer and other learners in relation to performance, skills, participation and emotion. Even though learner engagement on OSE has been linked to observational learning behaviour and application learning behaviour, the study found that OSE has significant relationship only with application learning behaviour like writing e-mail or answering quiz. As such, this study seeks to further investigate the application of OSE measures towards collaborative writing task in online learning environment.

Research Methodology

The focus of this study was to understand academic writing students' engagement in online classes during the open and distance learning (ODL) semester. A total of 161 students enrolled in an ODL writing report course in the respective higher learning institution. Based on Krejcie and Morgan's (1970) table, the appropriate sample size was between 113 and 114. Therefore, using the simple random sampling, a total of 130 responses were gathered. Following to this, the Mahalanobis distance was used to find outliers where six cases were found to have $p<.001$ and therefore were deleted. Another five cases were deleted due to straight-lining issue, leaving a total 119 cases for further analysis.

The information required for the main study was gathered using questionnaire survey. A set of Online Student Engagement Scale items were adapted from Dixson's (2015) research titled "Measuring Student Engagement in the Online Course: The Online Student Engagement Scale (OSE)". All items were measured on a 5-point Likert scale. Therefore, a mean value above 3 indicates a positive perception of the items measuring OSE between male and female respondents. A mean value below 3 implies a negative perception towards the corresponding items. A standard deviation equals to or greater than 1 shows a relatively high variation. In contrast, a value below 1 is believed to have low variation. As this study aimed to report the different gender responses on the items measuring OSE, it began with the descriptive analysis of gender and the overall means of OSE responses by gender. OSE responses were then analysed by different attributes; skills, emotions, participation, and performance, which were then distinguished into different gender group. The items for each attribute are shown in Table 1.

Table 1
Items Measuring OSE Attributes

Skills	Participation
S1- study regularly	Part1- have fun in online chats
S2- stay up on reading	Part2- participate actively in forums
S3- look over class notes	Part3- help fellow students
S4- be organized	Part4- engage in online conversations
S5- listen/read carefully	Part5- post regularly in forum
S6- take good notes over readings, PPT, video lectures	Part6- get to know other students
Emotions	**Performance**
E1- Put forth effort	Perf1- get good grades
E2- find ways to make materials relevant to studies	Perf2- do well on tests/quizzes
E3- apply course materials to studies	
E4- find ways to make material interesting	
E5- really desire to learn	

Demographic Analysis

In order to make a comparison between male and female academic writing students in the particular semester, a demographic analysis was presided and the findings are tabulated in Table 2.

Table 2
Gender Analysis of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	96	80.7	80.7	80.7
	Male	23	19.3	19.3	100.0
	Total	119	100.0	100.0	

Based on Table 2, 19.3 percent or 23 respondents were male and 80.7 percent or 96 of them were female. The respondent distribution was in proportionate to the size in the population where 20 percent students were male and 80 percent female.

Data Analysis

The analysis of data was conducted in phases to address each objective. The first objective was to assess the overall student engagement in online collaborative writing projects, followed by the investigation of the gender differences in online student engagement of academic writing. In the analysis of the overall OSE, the data distributions were tabulated into different engagement attributes namely skills, emotions, participation, and performance. Following to that is the analysis of each attribute by gender.

Overall OSE Attribute Responses

In general, students' responses on OSE attributes are expected to be different between the two genders. However, despite the lower mean values of each attribute between male and female respondents, the orders of the four attributes were the same. Table 3 shows the overall comparison of OSE attribute responses by gender.

Table 3
Overall OSE Responses in Collaborative Writing

Gender		SKILLS	EMOTION	PARTICIPATION	PERFORMANCE
Female	Mean	3.99	4.03	4.12	4.07
	N	96	96	96	96
	Std. Deviation	.50335	.52445	.51212	.73133
Male	Mean	3.64	3.88	3.99	3.91
	N	23	23	23	23
	Std. Deviation	.42434	.48520	.50230	.68510
Total	Mean	3.92	4.00	4.15	4.04
	N	119	119	119	119
	Std. Deviation	.50600	.51847	.51418	.72240

From the analysis, the highest mean value of OSE attributes was recorded from participation (4.15) followed by performance (4.04), emotion (4.00), and skills (3.92). Based on the overall mean values, the attribute responses by gender recorded similar sequence. By gender, participation attribute was placed first in the sequence based on the mean values of 4.18 (female) and 3.91 (male). The second attribute in the sequence is performance by both genders with mean value 4.07 (female) and 3.91 (male). The lowest mean values were recorded from skills attribute with 3.99 (female) and 3.64 (male). Emotion, on the other hand, was recorded with higher mean values than skills with 3.88 (male) and 4.08 (female).

Gender Comparison of OSE Responses by Items in Different Attributes

The subsequent analysis was on the items for each attribute. As depicted in Table 4, the six items measuring skills attribute were analysed and presented in different groups based on gender.

Table 4
Gender Comparison of OSE: Skills Attribute

Gender		S1	S2	S3	S4	S5	S6
Female	Mean	3.89	3.78	4.00	4.01	4.07	4.18
	N	96	96	96	96	96	96
	Std. Deviation	.709	.728	.821	.827	.757	.598
Male	Mean	3.70	3.35	3.74	3.52	3.70	3.87
	N	23	23	23	23	23	23
	Std. Deviation	.635	.647	.864	.665	.559	.626
Total	N	119	119	119	119	119	119

Table 4 shows the gender comparison of the OSE based on the skills attribute. The highest and lowest means were consistently recorded from male and female respondents. The highest means by both groups were from item S6 (taking good notes over readings, PPT, video lectures) with mean values 4.18 (female) and 3.87 (male), while the lowest means by male (M=3.35) and female respondents (M=3.78) were recorded from item S2 (staying up on reading). Meanwhile, S5 (listening/reading carefully) was recorded as the second highest mean by female respondents (M=4.07), and this item was placed the third by male respondents together with item S1 (study regularly) with mean value of 3.70 respectively. This makes S3 (looking over class notes) as the second preferred activity among male respondents

with mean value of 3.74. On the contrary, the third level item recorded from female respondents was S4 (being organized) with mean value of 4.01.

Table 5
Gender Comparison of OSE: Emotions Attribute

Gender		E1	E2	E3	E4	E5
Female	Mean	4.08	4.10	4.06	3.98	3.91
	N	96	96	96	96	96
	Std. Deviation	.643	.703	.751	.665	.741
Male	Mean	3.78	4.04	3.83	4.04	3.70
	N	23	23	23	23	23
	Std. Deviation	.600	.706	.717	.706	.635

The second attribute to measure students' OSE is emotions and the analysis results are shown in Table 5. Between the two genders, female respondents scored the highest mean value on E2, which is related to the act of finding ways to make materials relevant, with the value of 4.10. Male respondents, on the other hand, recorded the highest value from two items, E2 and E4 (M=4.04) which are related to the act of finding ways to make materials relevant to the studies and to make materials interesting. Both genders, however, shared the same lowest mean from item E5 which is on the desire to learn with 3.91 (female) and 3.70 (male). Compared to the male respondents who rated E4 as one of the highest items, female respondents rated E4 as the second lowest with mean value of 3.98.

Table 6
Gender Comparison of OSE: Participation Attribute

Gender		Part1	Part2	Part3	Part4	Part5	Part6
Female	Mean	4.10	4.26	4.35	4.37	3.89	4.13
	N	96	96	96	96	96	96
	Std. Deviation	.774	.757	.665	.603	.806	.824
Male	Mean	3.91	4.09	4.09	3.96	3.74	4.13
	N	23	23	23	23	23	23
	Std. Deviation	.733	.668	.668	.767	.810	.626

The next attribute in OSE is participation which is represented by six items. The highest mean value recorded by female respondents was from Part4 (engage in online conversation, M=4.37) while male respondents recorded the highest value of 4.13 from Part6 (get to know other students). Despite the difference in the top ranked item in participation attribute, both female and male respondents ranked Part5 (post regularly in forum) as the lowest with mean value of 3.89 and 3.74, respectively. Part3, helping fellow students, was ranked second in the list by both genders (female=4.35; male=4.09) while Part2 (participate actively in forums) received an equal mean value of 4.09 by male respondents.

Table 7

Gender Comparison of OSE: Performance Attribute

Gender		Perf1	Perf2
Female	Mean	4.03	4.10
	N	96	96
	Std. Deviation	.839	.774
Male	Mean	3.96	3.87
	N	23	23
	Std. Deviation	.706	.869

Finally, the last attribute in OSE is performance as represented by two items, Perf1 and Perf2. While the higher mean value was recorded from Perf2 (do well on tests/quizzes; M=4.10) and lower mean value of 4.03 from Perf1, male respondents recorded the higher mean value from Perf1 (get good results; M=3.96) and lower mean value from Perf2.

Conclusion

The analysis of data from the survey provided the findings for the proposed objectives; (i) to assess overall student engagement in online collaborative writing projects, (ii) to investigate gender differences in online student engagement of academic writing. Firstly, the online student engagement in the academic collaborative writing project demonstrated by the students from the current semester shows similar indications. The biggest attribute influencing the OSE among the target group is participation, followed by performance and emotion. In contrast, the least influencing attribute on the OSE in general is skill. The same order of attributes is found to be similar for both genders.

The findings suggest that students' participation during online collaborative writing projects significantly contribute towards students' engagement. Despite the same attitude of both genders on participation, female students have a preference on the engagement in online conversations, compared to male students who prefer to build rapport with other students in order to grow engagement in online collaborative writing. In contrast, making regular post in online forum is the least preferred activity for both male and female students. These findings are consistent with the discovery by Hussin et al (2019) which emphasizes on the importance of social interaction during teaching and learning process, particularly active interactions. Active interactions, according to these researchers, include the activities of sharing ideas, discussing, negotiating, exchanging opinions, and making decisions.

Besides participation, the emotion attribute shows a rather significant influence in online engagement based on the previous studies. Mallette and Ackler (2018) previously revealed that women often do more writing during collaborative writing projects compared to men. This supports the current finding that female respondents prefer putting forth effort as a way to engage in online projects. Additionally, female students have been found to feel more satisfied with their experience in collaborative writing since it mainly contributed to their English and teamwork skills (Deveci, 2018).

For future research, it is encouraged for the researchers to include peer evaluation as a method to verify online student engagement in collaborative writing projects. Getting peer evaluation will provide more insights into team members' engagement especially in terms of their participation, emotion, skills and performance attributes.

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