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Students' Argumentation Performance in Online Learning Environments: Bridging Culture and Gender

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Abstract

Performing complex tasks such as writing an argumentative essay and providing high-quality argumentative peer feedback are challenging for higher education students. This study aims to explore whether and how students' argumentation performance during peer feedback activities and essay writing is related to their culture and gender. In this exploratory study, 240 students participated from a Dutch university. Since this study was conducted in a Dutch context, students' culture was categorized as either Dutch or non-Dutch. Both Dutch and non-Dutch students followed an online module for three consecutive weeks and completed three tasks each week. In week one, students wrote an argumentative essay. In week two, students were invited to provide two sets of feedback on two peers' essays. In week three, students were requested to revise their essays based on the received feedback from peers. Finally, students' culture and gender were collected. The results showed that non-Dutch students provide higher-quality feedback than Dutch students in terms of justifying the identified problem in the essays. Similarly, non-Dutch students outperformed Dutch students regarding their essay writing performance by providing deeper arguments against the position, justifications for arguments against the position, and responses to counter-arguments. Although the overall differences between Dutch and non-Dutch students in peer feedback and argumentative essays were not significant between males and females, non-Dutch male students provided more affective feedback than Dutch male students. The results of this study provide insights for teachers regarding how to support international students in performing complex skills such as peer feedback and argumentative essay writing.

Introduction

Argumentation is a fundamental educational practice for higher education students (Banihashem et al., 2023; Noroozi, 2022). Higher education students are expected to be able to provide a solid argumentation on controversial scientific issues where not only do them provide valid and justified arguments in favor of the taken position, but are also aware of possible counterarguments and responses to those rebuttals (Noroozi et al., 2012, 2018, 2021; Liunokas, 2020). Even in social life, argumentation is a crucial skill as students are going to face real-

world controversial dilemmas and challenges (Bayat et al., 2022; Noroozi et al., 2012). Higher education students usually practice their argumentation skills by writing argumentative essays (Liunokas, 2020). Writing high-quality argumentative essays is a challenging task for higher education students as it requires high-cognitive processing skills (Taghizadeh Kerman et al., 2022a) and teachers generally face obstacles when it comes to enhancing the argumentation quality of students' essays (Graham & Perin, 2007; Noroozi et al., 2016; Pessoa et al., 2017). Furthermore, performing high-quality performance during argumentation tasks is challenging for students. First, students fail to provide a solid and deep argumentation due to a lack of argumentation knowledge (Bacha, 2010; Latifi et al., 2021). This means that students are not aware of the elements of high-quality argumentation. Second, even with a good level of argumentation knowledge, students may fail to transform this knowledge into an application as it requires complex cognitive skills (Noroozi et al., 2016; Taghizadeh Kerman et al., 2022b). Third, students' arguments often lack strong validation and justification because they might not have sufficient domain-specific knowledge (Valero Haro et al., 2020).

To overcome these challenges, a variety of instructional strategies such as worked examples (e.g., Latifi et al., 2023; Valero Haro et al., 2019a), training and instruction (Bayat et al., 2022; Van Steendam et al., 2010), scripting (Latifi & Noroozi, 2021), prompts have been proposed to enhance students' argumentation performance. One of the most important instructional activities to enhance students' quality of argumentative essays is the use of supported argumentative peer feedback (Nelson & Schunn, 2009; Valero Haro et al., 2019b; Van Rompay-Bartels & Geessink, 2023; Taghizadeh Kerman et al., 2022c). In argumentative peer feedback, students are expected to provide feedback with solid argumentation so that the feedback receiver can be convinced about the usefulness of the feedback to uptake it (Noroozi et al., 2020). Argumentative peer feedback refers to a learning activity in which students critically review their peers' work and provide critical reflections with evidence and justification to support their critical comments, and also points for improvement (Topping, 2009; Latifi et al., 2021). Outcomes of argumentative peer feedback are beneficial for improving students' learning processes such as improving their reflection (Akhteh et al., 2022; Falchikov, 1995), critical thinking (Ekahitanond, 2013), learning autonomy (Shen et al., 2020), and self-regulation (Nicol & Macfarlane-Dick, 2006). In addition, argumentative peer feedback practices improve students' cognitive elaborations on the learning materials and foster their higher-order thinking skills (Berndt et al., 2018, 2022; Van Popta et al., 2017). Literature suggests that such deep cognitive elaboration on the materials during argumentative peer feedback practices results in high-quality argumentative essays (Noroozi et al., 2016, 2020, 2022).

Despite these positive outcomes, scientific literature suggests that students' argumentation performance varies depending on their background characteristics such as gender (Banihashem et al., 2023; Noroozi et al., 2022), level of education (Noroozi et al., 2023), epistemic beliefs (Noroozi, 2022), willingness to argue (Noroozi, 2018), domain-specific knowledge on the topic (Valero Haro et al., 2022; 2023). The role of such background characteristics in students' argumentation performance has been explored extensively in the literature. However, the literature lacks evidence when it comes to the role of culture in students' argumentation performance when dealing with controversial issues. The picture is even more incomplete when we combine the role of culture with gender characteristics of students for performing argumentation tasks. This is striking since both culture (more specifically culture) and gender of the participants could play a significant role in the ways in which students

shape and organize their thoughts and embrace or avoid argumentation tasks (see Banihashem et al., 2023; Noroozi et al., 2020; 2022; Tsemach & Zohar, 2021). The role of culture and gender in performing argumentation tasks can be seen in both peer feedback and essay writing (e.g., Noroozi et al., 2022; Wu & Rubin, 2000).

Argumentative peer feedback is associated with challenges in collaborating with international students from diverse cultural backgrounds, with various needs and priorities (e.g., Bradley, 2014; Hu & Lam, 2010). Popov et al. (2022) showed that Dutch, other European, and Asian students differ in terms of their peer interaction and communication styles as a result of their various cultures of learning. They found that Asian students reported challenges related to feedback to be significantly higher compared to Dutch and other European students. In a study by Allaei and Conner (1990), it was observed (mostly among East Asian students) that peer feedback, as a pedagogical activity, depended on a certain type of politeness strategy, and asking students with different cultural backgrounds to take part in peer feedback would be more or less asking them to engage in learning styles they might be unfamiliar or uncomfortable with. In a similar study by Hyland (2000), it was found that many Asian students felt uncomfortable with giving peer feedback because they were not culturally used to criticizing their peer's work, and hence completed written peer feedback tasks superficially. On the other hand, some students (mostly Middle Eastern) were reluctant to share their writing when it was expressive and contained personal views. Further, in a comparison of Swedish and American students, it was observed that Swedish students were aware of the cultural differences of feedback provided and considered these differences as resources, hence developing their intercultural competence (Bradley, 2014). Carson and Nelson (1996) reported the social dimensions of peer feedback with Chinese students, who would provide feedback only to please their peers rather than what might help them improve their writing.

In a recent study by Tavoletti et al. (2022), culture biases were evaluated in peer evaluations by testing the country-of-origin effect in peer evaluations. Their findings indicated that the culture of a team member is related to his/her peer evaluation, whereas prestige and level of economic development of the country are better predictors of their performance compared to students' skills and competencies. Furthermore, Rompay-Bartels and Geessink (2021) found that cultural background is a critical factor in how students provide and perceive argumentative peer feedback, whereas students from high-context cultures struggled with providing direct feedback compared with low-context cultures. Students within low-individualism and high-power distance societies may be reluctant to rely on peer feedback for improving their performance. Cross-cultural research on argumentative essay writing indicates differences between essays written by Japanese and English students (Hinds, 1987). This difference indicates that students' cultural backgrounds including their culture are related to their tendencies in providing feedback and essay writing styles.

Previous research also shows inconsistency in terms of gender effects on students' argumentation performance in peer review and essay writing (Asterhan, 2018; Cao et al., 2019; Noroozi et al., 2020; Tsemach & Zohar, 2021; Noroozi et al., 2022). Results from Noroozi et al.'s (2020) study revealed that in online learning settings, female students provide more in-depth argumentative feedback compared to male counterparts, while no significant gender differences were found in argumentative essay writing. On the contrary, Hamer et al. (2015) observed male students give more specific and thorough feedback compared to female students. In another study on peer

review, it was found that female students are more willing to implement argumentative feedback than male students in an online peer review process (Wu & Schunn, 2020). On a similar stance, while Asterhan (2018) found no consistent gender differences with respect to peer argumentation, Noroozi et al. (2022) found that gender does play a significant role in argumentative essay writing, uptake, and peer review performance.

The above findings indicate a gap in the literature regarding the combined role of culture and gender in students' argumentation performance in online settings. So, further research deems necessary to discover to what extent and how culture and gender and their combination play a role in students' argumentation tasks such as argumentative peer feedback and argumentative essay writing tasks. Therefore, the following research questions are formulated to fill this gap:

- RQ1. To what extent, do students' argumentative peer feedback performance differ depending on their culture?
- RQ2. To what extent, do students' argumentative essay writing performance differ depending on their culture?
- RQ3. To what extent, do students' argumentative peer feedback performance differ depending on the interaction of their culture and gender?
- RQ4. To what extent, do students' argumentative essay writing performance differ depending on the interaction of their culture and gender?

Methods

Context and Participants

This experimental study was conducted at a Dutch university with 240 higher education students in five different courses with a focus on life sciences in the academic year 2021-2022. Overall, total of 172 higher education students [110 Dutch (46%) and 62 non-Dutch students (26%)] participated in this study. Also, 68 of the students (28%) did not mention their culture.

For this study, we selected five courses, four of which were compulsory and core courses related to students' professional backgrounds (courses B, C, D, and E), while one course (course A) was an elective course that students from different study programs could choose from several optional subjects. We conducted a series of analyses to examine potential differences at baseline between groups of students, courses, or cultures that could have affected the study results. Specifically, we examined differences in demographic variables such as age, gender, and educational background, as well as differences in pretest scores on the argumentative essay. We found no significant differences between groups on any of these variables, suggesting that there were no major baseline differences that could have introduced bias into the study results.

Students in each course were from the same level of education, however, we did not have the information to specify whether students were juniors or seniors. The selected courses were from different course domains including Course A [Social Sciences – N=91 (38%), Female=49 (54%), Male=34 (37%), NT=8 (9%)], Course B [Plant Sciences – N=30 (12%), Female=17 (57%), Male=12 (40%), NT=1 (3%)], Course C [Health & Social

Sciences - N=22 (9%), Female=14 (64%), Male=8 (36%)], Course D [Environmental Sciences – N=45 (19%), Female=36 (80%), Male=9 (20%)], and Course E [Food Sciences – N=52 (22%), Female=34 (65%), Male=18 (35%)]. All participants were informed that their data will be used anonymously. To respect students' privacy and in line with ethical considerations, we informed students regarding the research setup of this study and received their consent regarding the collection of data. Furthermore, the Social Sciences Ethics Committee of the host university has confirmed the ethical approval for this study.

Study Design and Procedure

This is an exploratory study where students followed an online module called "Argumentative Essay Writing" for three consecutive weeks within the Brigthspace platform. Brightspace is a cloud-based learning platform that is known for its user-friendly interface, and the students in our study were already familiar with how to navigate it. As a result, we did not provide any instructions to students on how to use Brightspace or complete the module tasks. The "Argumentative Essay Writing" was designed to last for three consecutive weeks, during which students completed one task each week. The purpose of this module was to improve students' argumentative essay writing performance through peer feedback. At the beginning of this module, students received information and instruction on how to follow this module. In addition, students were provided with learning material on how to write an argumentative essay. This module consisted of three weeks and each week students followed one specific task.In the first week, students wrote an essay on the given three controversial topics and submit the essay in Brightspace. *The three given controversial topics are directly related to the course content and the domains of the students. Also, these topics aligned with the domain-specific knowledge of the students. The topics for each course were as follows: Course A (children and video games, Genetically Modified Organisms, and climate change), Course B (the use of RNAi-based biopesticide, ban of glyphosates, and use of gene drives for agricultural pest control), Course C (sugar tax, COVID-19 vaccines, and brain drain), Course D (the long-term impacts of Covid-19 on the environment, the role of private actors in funding local and global biodiversity, and bans on the use of single-use plastics), and Course E (scientists with links to food industry should not be involved in risk assessment, powdered infant formula should be sterile, and preparation is the responsibility of the caregiver).* The first essay was considered as the pre-test.

In the second week, students were invited to give written/asynchronous feedback individually and provide comments on two argumentative essays of their peers based on the given criteria embedded in the FeedbackFruits (see appendix I). This means that students were allowed to complete the peer feedback task at the time and pace of their choosing within a week. The word number of comments for each element of argumentative essay writing was between 30 and 50 words. No specific recruitment strategy was used to pair students. Using the FeedbackFruits tool, two argumentative essays were randomly assigned to each student for them to provide feedback. The FeedbackFruits tool is a foreign add-on tool that has been integrated into Brightspace to guide student interactions through various collaboration strategies. This tool has many features, including peer review, task evaluation, and more (Noroozi et al., 2022). And, in the third week, students revised their first essays based on the received feedback and then they submitted a second version of their essays in Brightspace. The second essay was considered as the post-test.

Measurements

Students' Argumentative Essay Writing

To measure the quality of students' argumentative essay performance, a coding scheme adjusted based on Noroozi et al.'s (2016) instrument was used. This coding scheme was developed based on a high-quality argumentative essay structure with eight elements including (1) an introduction on the topic, (2) taking a position on the topic, (3) arguments for the position, (4) justifications for arguments for the position, (5) arguments against the position, (6) justifications for arguments against the position, (7) response to counter-arguments, and (8) conclusion and implications. Each element was scored from 0 points (not mentioned at all) to 3 points (mentioned with the highest quality). All given points for these elements were summed up together and indicated the student's total score for the quality of the written argumentative essay. This coding scheme was used in two phases. In the first phase, it was used to assess students' first draft of the essay and in the second phase, it was used to assess students' revised version of the essay. *The quality of students' argumentative essay was assessed based on their performances in the revised draft of the essay.* Six coders with educational backgrounds contributed to the coding of the quality of written argumentative essays. The Fleiss' Kappa coefficient analysis was used to measure the inter-rater reliability among coders and the results showed a reliable agreement among the coders *(Kappa=0.70, p<0.01).*

Students' Argumentative Peer Feedback

To measure the quality of students' online peer feedback, a coding scheme was designed by the authors based on the review of related previous studies mainly Nelson and Schunn (2009), Patchan et al. (2016), and Wu and Schunn (2020). This coding scheme entails three main categories including affective, cognitive (description, identification, and justification), and constructive. The coding scheme was scored from 0 points (poor) to 2 points (good) for all the categories. All points were summed up and determined the quality of online peer feedback. Since each student provided two sets of peer feedback, the mean score of both peer feedback was identified as the quality of online peer feedback for each student. Similar to the argumentative essay analysis, the same six coders participated in the coding process for peer feedback analysis and the Fleiss' Kappa coefficient results among coders were found to be satisfactory *(Kappa=0.60, p<0.01).*

Analysis

MANOVA tests were conducted to compare differences between argumentative peer feedback and essay writing performance of Dutch and non-Dutch students. The two-way MANOVA tests were used to explore the interaction of students' culture and gender in terms of argumentative peer feedback and essay writing performance.

Results

RQ1. To what extent, do students' argumentative peer feedback performance differ depending on their culture?

The results showed that Dutch and non-Dutch students significantly differ in terms of mean quality scores of their

provided argumentative peer feedback performance (Pillai's Trace = 0.10, $F(5, 102) = 3.07$, $p < 0.05$, $\eta 2 = 0.10$). Non-Dutch students provided better justification for the identified problem than Dutch students (see Table 1).

Table 1. Differences in argumentative peer feedback performance among Dutch and non-Dutch students

Variables		Culture	Peer feedback performance		Difference between non-Dutch and Dutch Statistics
			Mean	SD	
Affective		Dutch	1.49	0.24	$F (1, 106) = 0.00$, $p = 0.94$
		Non-Dutch	1.49	0.24	
		Total	1.49	0.24	
Cognitive	Description	Dutch	1.31	0.27	$F (1, 106) = 1.67$, $p = 0.19$
		Non-Dutch	1.24	0.25	
		Total	1.29	0.27	
	Identification	Dutch	0.74	0.38	$F (1, 106) = 0.25$, $p = 0.61$
		Non-Dutch	0.78	0.33	
		Total	0.75	0.37	
	Justification	Dutch	0.11	0.13	$F (1, 106) = 8.39$, $p <0.05$, $\eta 2 = 0.07$*
		Non-Dutch	0.20	0.18	
		Total	0.13	0.15	
Constructive		Dutch	0.83	0.37	$F (1, 106) = 0.59$, $p = 0.44$
		Non-Dutch	0.77	0.32	
		Total	0.81	0.36	

$(P < 0.01)$**, $(P < 0.05)$*

RQ2. To what extent, do students' argumentative essay writing performance differ depending on their culture?

The results showed that Dutch and non-Dutch students significantly differ in terms of mean quality scores of their argumentative essay writing performance in the post-test (Wilks' $\lambda = 0.80$, $F(8, 102) = 3.19$, $p < 0.01$, $\eta 2 = 0.20$). This difference was mainly due to the quality scores of arguments against the position, justifications for arguments against the position, and responses to counter-arguments in which non-Dutch students performed better than Dutch students (see Table 2).

Table 2. Differences in argumentative essay writing performance among Dutch and non-Dutch students

Variables	Culture				Difference between essay performance of non-Dutch and Dutch in the post-test
	Non-Dutch		Dutch		
	Mean	SD	Mean	SD	
Introduction to the topic	2.71	0.63	2.82	0.47	$F (1, 103) = 0.89$, $p = 0.34$
Taking a position on the topic	1.81	0.82	1.46	0.93	$F (1, 103) = 3.32$, $p = 0.07$

Variables	Culture				Difference between essay performance of non-Dutch and Dutch in the post-test
	Non-Dutch		Dutch		
	Mean	SD	Mean	SD	
Arguments for the position	2.53	0.56	2.54	0.52	$F (1, 109) = 0.01, p = 0.90$
Justifications for arguments for the position	2.34	0.70	2.22	0.83	$F (1, 109) = 0.48, p = 0.48$
Arguments against the position	2.34	0.54	1.73	0.85	$F (1, 109) = 13.84, p < 0.01, \eta 2 = 0.11$**
Justifications for arguments against the position	1.87	0.87	1.25	0.95	$F (1, 109) = 10.16, p < 0.01, \eta 2 = 0.08$**
Responses to counter-arguments	1.87	0.97	1.12	0.88	$F (1, 109) = 15.41, p < 0.01, \eta 2 = 0.12$**
Final conclusion and implications	2.25	0.43	2.20	0.40	$F (1, 109) = 0.29, p = 0.58$
Overall argumentative essay writing	2.21	0.34	1.92	0.36	$F (8, 102) = 3.19, p < 0.01, \eta 2 = 0.20$**

(P <0.01)**, (P < 0.05)*

RQ3. To what extent, do students' argumentative peer feedback performance differ depending on the interaction of their culture and gender?

The results showed no interaction effect between culture and gender in terms of mean quality scores of their provided argumentative peer feedback performance (Wilks' $\lambda = 0.10$, $F(5, 100) = 2.12$, $p = 0.06$). But, the results showed that non-Dutch male students provided better affective feedback than Dutch male students. Also, Dutch female students provided better affective feedback than Dutch male students (see Table 3).

Table 3. Interaction effect between culture and gender in terms of argumentative peer feedback performance

Variables	Culture	Gender	Peer feedback performance		Interaction between essay performance of culture and gender in the post-test
			Mean	SD	
Affective	Dutch	Female	1.54	0.23	$F (1, 104) = 9.08, p <$
		Male	1.35	0.23	$0.05, \eta 2 = 0.08$**
		Total	1.49	0.24	
	Non-Dutch	Female	1.44	0.26	
		Male	1.58	0.18	
		Total	1.49	0.24	
	Total	Female	1.51	0.24	
		Male	1.43	0.23	
		Total	1.49	0.24	

Variables		Culture	Gender	Peer feedback performance		Interaction between essay performance of culture and gender in the post-test
				Mean	SD	
Cognitive	Description	Dutch	Female	1.31	0.24	F (1, 104) = 0.55, p = 0.45
			Male	1.31	0.34	
			Total	1.31	0.27	
		Non-Dutch	Female	1.21	0.24	
			Male	1.30	0.27	
			Total	1.24	0.25	
		Total	Female	1.28	0.25	
			Male	1.31	0.31	
			Total	1.29	0.27	
	Identification	Dutch	Female	0.77	0.40	F (1, 104) = 0.65, p = 0.42
			Male	0.64	0.32	
			Total	0.74	0.38	
		Non-Dutch	Female	0.86	0.34	
			Male	0.60	0.24	
			Total	0.78	0.33	
		Total	Female	0.80	0.38	
			Male	0.63	0.29	
			Total	0.75	0.37	
	Justification	Dutch	Female	0.11	0.13	F (1, 104) = 1.97, p = 0.16
			Male	0.11	0.13	
			Total	0.11	0.13	
		Non-Dutch	Female	0.23	0.19	
			Male	0.13	0.15	
			Total	0.20	0.18	
		Total	Female	0.14	0.16	
			Male	0.12	0.14	
			Total	0.13	0.15	
Constructive		Dutch	Female	0.84	0.35	F (1, 104) = 0.01, p = 0.91
			Male	0.81	0.45	
			Total	0.83	0.37	
		Non-Dutch	Female	0.78	0.35	
			Male	0.74	0.26	
			Total	0.77	0.32	
		Total	Female	0.82	0.35	
			Male	0.79	0.40	
			Total	0.81	0.36	

(P < 0.01)**, (P < 0.05)*

RQ4. To what extent, do students' argumentative essay writing performance differ depending on the interaction of their culture and gender?

The results showed no interaction effect between culture and gender in terms of mean quality scores of their argumentative essay writing performance in the post-test (Wilks' $\lambda = 0.91$, $F(8, 100) = 1.18$, $p = 0.31$) (see Table 4).

Table 4. Interaction effect between culture and gender in terms of argumentative essay writing performance

Variables	Gender	Culture				Interaction between essay performance of culture and gender in the post-test
		Non-Dutch		Dutch		
		Mean	SD	Mean	SD	
Introduction on the topic	Female	2.72	0.45	2.85	0.47	F (1, 107) = 0.19, p = 0.66
	Male	2.70	0.94	2.72	0.45	
	Total	2.71	0.63	2.82	0.47	
Taking a position on the topic	Female	1.77	0.81	1.63	0.89	F (1, 107) = 3.14, p = 0.07
	Male	1.90	0.87	1.04	0.89	
	Total	1.81	0.82	1.46	0.93	
Arguments for the position	Female	2.50	0.59	2.59	0.49	F (1, 107) = 1.37, p = 0.24
	Male	2.60	0.51	2.40	0.59	
	Total	2.53	0.56	2.54	0.52	
Justifications for arguments for the position	Female	2.27	0.76	2.29	0.82	F (1, 107) = 1.74, p = 0.18
	Male	2.50	0.52	2.04	0.84	
	Total	2.34	0.70	2.22	0.83	
Arguments against the position	Female	2.31	0.56	1.75	0.80	F (1, 107) = 0.18, p = 0.66
	Male	2.40	0.51	1.68	0.99	
	Total	2.34	0.54	1.73	0.85	
Justifications for arguments against the position	Female	1.68	0.89	1.28	0.94	F (1, 107) = 2.88, p = 0.09
	Male	2.30	0.67	1.18	1.00	
	Total	1.87	0.87	1.25	0.95	
Response to counter-arguments	Female	1.90	1.01	1.17	0.82	F (1, 107) = 0.02, p = 0.87
	Male	1.80	0.91	1.00	1.02	
	Total	1.87	0.97	1.12	0.88	
Final conclusion and implications	Female	2.27	0.45	2.19	0.39	F (1, 107) = 0.31, p = 0.57
	Male	2.20	0.42	2.22	0.42	
	Total	2.25	0.43	2.20	0.40	
Overall argumentative essay writing	Female	2.18	0.36	1.97	0.35	F (8, 100) = 1.18, p = 0.31
	Male	2.30	0.28	1.78	0.36	
	Total	2.21	0.34	1.92	0.36	

(P <0.01)**, (P < 0.05)*

Discussion

This study explored the role of culture and its interacting role with gender for students' argumentation performance in online peer feedback and essay writing with a specific focus on the online learning environment. Below, we discuss the results for each research question.

Our findings showed that culture plays an effective role in students' argumentative peer feedback performance. Non-Dutch students presented better justification for the identified problem than Dutch students. This means that non-Dutch students used more justification in their peer feedback to explain why they believe that the recognized problem in the reviewed essay should be fixed. This is in line with Van Rompay-Bartelsand Geessink's (2023) study where they found that students' cultural background is related to how they provide individual peer feedback. Also, this finding is supported by prior studies that reported the effects of students' culture on their their online peer feedback performance (Pham et al, 2020; Zhang et al, 2020). Also, we found that non-Dutch students provided higher quality constructive feedback and feedback-feedforward than Dutch students in an online setting. This finding implies that non-Dutch students compared to Dutch students suggested more points for improvements and they provided a clear justification and good structure on how to implement the suggested recommendations. In addition, the quality of the type of review provided by non-Dutch students was better than Dutch students. This shows that in online learning environment non-Dutch students not only gave more feedback but also provided more feedforward than Dutch students. These findings are supported by prior studies that has been done in online settings (Bailey & Chen, 1997; Zhang et al, 2020) and add more insights to the literature about the unique behaviors of Dutch and non-Dutch participants when engaging in argumentative peer feedback in online settings. A reason why non-Dutch students showed better argumentative peer feedback performance in justification of the identified problem elements might be due to their understanding of peer feedback between Dutch and non-Dutch students. Understanding peer feedback is significant because students translated the meaning of this phrase into their mother tongue while working in groups. The majority of students were able to provide an equivalent in their mother tongue. However, Dutch students had difficulty providing a Dutch equivalent. Peer feedback in different cultures has various meanings (Van Rompay-Bartels & Geessink, 2023). Then, it might be related to understanding peer feedback to present a well-structured view of their peer review.

The results indicated that non-Dutch students produced higher-quality online argumentative essays than Dutch essays. This difference was largely due to their stronger arguments against the position, justifications of counter-arguments, and responses to the counter-arguments. This suggests that non-Dutch students were more thoughtful and demonstrated a more advanced level of argumentation in their essays, as they put more effort into explaining opposing viewpoints and addressing counter-arguments in a clear and comprehensive manner to their essay readers.

In general regardless of educational environments, these findings align with the existing literature that suggests students' cultural background, first language, and educational experiences may likely have an effect on how they formulate and organize ideas in argumentative essays (e.g., Chen et al., 2022; Tsemach & Zohar, 2021; Uysal, 2012; Zhang, 2011; Wu & Rubin, 2000). Specifically, this supports van Weijen et al. (2019) findings that explain

when Dutch students write in their first language, they are more likely to switch between both viewpoints of a specific issue and consider counterarguments as well as arguments, compared to their second language. It is possible that the absence of potential opposing viewpoints in the writing of Dutch students is linked to their consistent use of familiar reasoning patterns of the native language when writing in the second language (Zeidler et al., 2013). Another possible explanation for this variation could be the shorter sentences constructed by Dutch scholars when writing in English, as noted by Burrough-Boenisch (2002), which may result in implicit explanations of counter-arguments in the text. Including counter-arguments can still be a challenging and demanding task for students, regardless of their culture or whether English is their second language (McCarthy et al., 2021). It has been noted by Abdollahzadeh et al. (2017), Kamel (2000), Liu et al. (2019), and Qin and Karabacak (2010) that Iranian, Arabic, and Chinese students tend to have fewer or no counter-arguments in their English argumentative essays. This absence of counter-arguments seems to be a common issue among students, regardless of their native language (Kamimura, 1996; Wolfersberger, 2003) and educational settings. The findings of Rusfandi (2015) indicated that a significant number of essays written in both Indonesian and English lacked counter-arguments and tended to be one-sided. This absence of counter-arguments in writings may be due to several factors. One of the reasons for this may be the linguistic limitations of the student. If a writer lacks proficiency in the language in which they are writing, they may not be able to effectively express opposing viewpoints or construct coherent counter-arguments (Eckes, 2008; Rusfandi, 2015; Zhao, 2017). Another reason for the absence of counterarguments in essays could be limited to their domain-specific knowledge (Valero et at., 2022). The student may not have enough information to present counter-arguments in a meaningful way. Additionally, a lack of clear assignment instructions can also contribute to the absence of counter-arguments in writing. If the assignment does not explicitly require the writer to present opposing viewpoints, they may overlook the importance of doing so. This can result in a one-sided piece of writing that does not fully explore the topic (McCarthy et al., 2021) especially in an online setting, where there is no physical presence or non-verbal cues.

The results showed that there is no overall significant interaction effect between culture and gender for students' online argumentation performance. This means that there are no differences in the mean quality scores of online peer feedback and argumentative essay writing performance between Dutch/non-Dutch and female/male students in an online setting. However, the results indicated that non-Dutch male students provided better affective feedback than Dutch male students, and Dutch female students provided better affective feedback than Dutch male students. This is consistent with Hofstede's (2001) research, which suggests that in individualistic cultures, individuals learn to accept direct feedback constructively. Students from Asia and the Middle East complain that argumentative peer feedback might not be appreciated very well in their home countries due to various cultural factors. For example, offering subjective evaluations of someone's behavior can be seen as a personal attack and lead to negative effects on relationships and decision-making (Van Rompay-Bartels & Geessink, 2023). Our study also highlights how cultural background is related to students' personalized peer feedback in an online setting. This finding is consistent with Hall's high-low context concept (1976). According to Hall (1976), there are two types of cultures: those that communicate using high-context (HC) or implicit messages and those that communicate using low-context (LC) or explicit signals. So, various people may have different interpretations of the signals. In HC cultures, nonverbal information is obtained through a variety of routes and sources to facilitate indirect communication (e.g., silence, status, body language). In comparison, people in LC cultures use clearer

language to speak more directly. The international classroom in The Netherlands, which is regarded as an LC culture by Hall's definition, serves as the study's context.

Additionally, our results indicate that Dutch female students outperformed Dutch male students in terms of providing affective online peer feedback. This finding aligns with Lakoff's (1975) theory about men's and women's language, where men's language tends to be direct and assertive, and women's language tends to be more polite and formal. However, in terms of explicit correction, all male students preferred to receive clear, direct, and explicit feedback. Finally, gender differences in character might explain why female students performed better in providing affective peer feedback in online learning environments. This is evidenced by Banihashem et al.'s (2021) study, which found that female students received higher engagement scores compared to male students in engagement and its subscales including agentic, behavioral, emotional, and cognitive engagement.

Conclusion, Limitations, and Future Research

This study highlights the role of culture and gender in students' argumentation performance in online learning environments. The results of this study expand our understanding of how students from different cultures use different approaches to provide peer feedback and to form argumentative essays in the context of online learning. The findings support the growing body of evidence indicating that both culture and gender play a significant role in students' argumentative peer review and argumentative essay writing performance. Furthermore, this study contributes to the field of education by highlighting the significance of considering the role of culture and gender in instructional approaches for teaching controversial courses and topics in online learning environments.

This study has a few limitations that need acknowledgment. First, although this study was carried out in a highly regarded international university, we did not take into account the macro and micro levels of students' cultural backgrounds in our research. For example, the original language and the level of students' English can be related to the quality of students' argumentative essay writing. Future studies should investigate how these two crucial aspects of culture is related to the quality of students' argumentative peer feedback and their argumentative essay writing. To achieve the goal of understanding cultural correlations with individual learners, researchers should combine qualitative study methods with experimental methods. Recent case studies on culture-oriented peer feedback research, such as those conducted by Bradley (2014), Fithriani (2018), and Van Rompay-Bartels and Geessink (2023), are equipped to collect rich data from multiple sources and uncover both macro- and micro-cultural influences on small groups of learners. Moreover, the decision to consolidate students with various non-Dutch nationalities into a single non-Dutch group in this study had effects on both the external validity of the group and the generalizability of the findings to the non-Dutch population. Failing to account for these differences undermines the study's ability to provide comprehensive insights into the non-Dutch group as a whole. To address these limitations, future studies should adopt a more targeted approach. Researchers need to focus specifically on certain cultures or nationalities within the non-Dutch group. By doing so, they can capture the unique aspects and contextual nuances of each cultural subgroup, enabling a more accurate understanding of how cultural factors influence educational outcomes. In addition, this study was conducted before the emergence of ChatGPT which has shown significant potential to influence feedback and learning complex skills such as argumentation

(Farrokhnia et al., 2023). For future studies, we recommend considering how the implementation of ChatGPT and other emerging fields such as learning analytics (Banihashem et al., 2022a, 2022b; Banihashem & Macfadyen, 2021) can influence students' performance in peer feedback and argumentation.

Since students' cultural learning experiences can be related to their experience with peer feedback, pedagogical practices must consider cultural sensitivity that acknowledges macro and micro cultural effects. To help students understand the advantages of online peer feedback as a learning activity and how to utilize them, various awareness-raising activities, like those conducted by Hu (2005) can be integrated into classroom work. In various ways, this study is heterogeneous. It would be interesting to explore the role of gender and culture in heterogeneous and homogeneous online groups working for argumentative essay writing and peer review in future studies. Mentionable examples of heterogeneity include the unequal representation of men and women in the study, the students' levels of domain specific and general knowledge, and their perception of the feedback nature. Also, the culture of the male and female students performing in the course, the difficulty of the tasks, the variety of subjects offered in each course, and prior knowledge of the students related to the subjects can have different effects on their argumentation performance. Therefore, our findings should be interpreted cautiously. We acknowledge that in this study, we did not assess the prior knowledge and experience of students in writing argumentative essays and providing peer feedback. As a result, it is unclear how these factors may have influenced the results of the study. Future research should focus on assessing students' prior knowledge and experiences about argumentative peer feedback and essay and explore the extent to which such knowledge and experiences could impact their performance in peer feedback and essay writing.

To improve the argumentative writing skills of students from various cultural backgrounds, the implementation of appropriate instructional approaches is crucial. These approaches should take into consideration the unique linguistic and cultural differences that may correlate with student's writing. Additionally, incorporating counterarguments should be a key aspect of these instructional approaches, as this can help students develop their critical thinking skills and improve the overall quality of their writing. The results of this study can be helpful for educators and instructional designers who are developing and delivering online writing courses and programs. By understanding the cultural and gender differences in peer feedback and argumentative essay writing, educators can tailor their teaching strategies to support students from diverse backgrounds and help them improve their argumentative writing skills. For example, instructors can highlight the similarities and differences in argumentative online peer review styles among students from different cultures (Hu, 2019), and promote intercultural communication and collaboration among them. This approach can help students to better understand how students from different cultures approach argumentation, and how they can develop their own skills to write well-rounded and structured peer feedback and argumentative essays.

References

Abdollahzadeh, E., Amini Farsani, M., & Beikmohammadi, M. (2017). Argumentative writing behavior of graduate EFL learners. *Argumentation, 31,* 641-661. https://doi.org/10.1007/s10503-016-9415-5

Akhteh, M. P., Farrokhnia, M., Banihashem, S., & Noroozi, O. (2022). The Relationship between Students'

Satisfaction and Motivation and their Perceived Learning Outcome in an Online Peer Feedback Module. In *Studies on Education, Science, and Technology* (pp. 297-310), Antalya, Turkey. https://research.ou.nl/files/54269479/21a9eab1fcf62a84962844dbe1990a4c.pdf

Allaei, S. K., & Connor, U. M. (1990). Exploring the dynamics of cross-cultural collaboration in writing classrooms. *The Writing Instructor*, 10, 19–28. https://hdl.handle.net/1805/2659

Asterhan, C. S. (2018). Exploring enablers and inhibitors of productive peer argumentation: The role of individual achievement goals and of gender. *Contemporary Educational Psychology*, 54, 66-78.

Bacha, N. N. (2010). Teaching the academic argument in a university EFL environment. *Journal of English for Academic Purposes*, 9(3), 229–241. https://doi.org/10.1016/j.jeap.2010.05.001

Bailey, J. R., Chen, C. C., & Dou, S.-G. (1997). Conceptions of self and performance-related feedback in the US, Japan and China. *Journal of International Business Studies*, *28*, 605-625.

Banihashem, S. K., Farrokhnia, M., Badali, M., & Noroozi, O. (2022a). The impacts of constructivist learning design and learning analytics on students' engagement and self-regulation. *Innovations in Education and Teaching International*, *59*(4), 442-452. https://doi.org/10.1080/14703297.2021.1890634

Banihashem, K., & Macfadyen, L. P. (2021). Pedagogical design: Bridging learning theory and learning analytics. *Canadian Journal of Learning and Technology*, *47*(1), 1-22.

Banihashem, S. K., Noroozi, O., Biemans, H. J., & Tassone, V. C. (2023). The intersection of epistemic beliefs and gender in argumentation performance. *Innovations in Education and Teaching International*, 1-19. https://doi.org/10.1080/14703297.2023.2198995

Banihashem, S. K., Noroozi, O., & Khaneh, M. P. A. (2021). Gender Differences in Engagement and Self-regulation in an Online Constructivist Learning Design and Learning Analytics Environment. In S. Jackowicz & O. T. Ozturk (Eds.), *Proceedings of ICSES. International Conference on Studies in Education and Social Sciences* (pp. 171-176), Antalya, TURKEY. ISTES Organization.

Banihashem, S. K., Noroozi, O., van Ginkel, S., Macfadyen, L. P., & Biemans, H. J. (2022b). A systematic review of the role of learning analytics in enhancing feedback practices in higher education. *Educational Research Review*, 100489. https://doi.org/10.1016/j.edurev.2022.100489

Bayat, M., Banihashem, S. K., & Noroozi, O. (2022). The effects of collaborative reasoning strategies on improving primary school students' argumentative decision-making skills. *The Journal of Educational Research*, 1-10. https://doi.org/10.1080/00220671.2022.2155602

Berndt, M., Strijbos, J. W., & Fischer, F. (2018). Effects of written peer-feedback content and sender's competence on perceptions, performance, and mindful cognitive processing. *European Journal of Psychology of Education*, *33*, 31-49. https://doi.org/10.1007/s10212-017-0343-z

Berndt, M., Strijbos, J. W., & Fischer, F. (2022). Impact of sender and peer-feedback characteristics on performance, cognitive load, and mindful cognitive processing. *Studies in Educational Evaluation*, *75*, 101197. https://doi.org/10.1016/j.stueduc.2022.101197

Bradley, L. (2014). Peer-reviewing in an intercultural wiki environment – Student interaction and reflections. *Computers and Composition*, *34*, 80–95. https://doi.org/10.1016/j.compcom.2014.09.008

Burrough-Boenisch, J. (2002). *Culture and conventions: writing and reading Dutch scientific English*. Netherlands Graduate School of Linguistics.

Cao, Z., Yu, S., & Huang, J. (2019). A qualitative inquiry into undergraduates' learning from giving and receiving

peer feedback in L2 writing: Insights from a case study. *Studies in Educational Evaluation, 63*, 102-112.

Carson, J. G., & Nelson, G. L. (1996). Chinese students' perceptions of ESL peer response group interaction. *Journal of second language writing*, *5*(1), 1-19.

Chen, W.-F., Chen, M.-h., Mudgal, G., & Wachsmuth, H. (2022). Analyzing Culture-Specific Argument Structures in Learner Essays. *Proceedings of the 9th Workshop on Argument Mining*.

Eckes, T. (2008). The impact of proficiency on academic writing tasks: An investigation of university-level L2 learners of German. *Journal of Second Language Writing*, 17(2), 119-135. https://doi.org/10.1016/j.jslw.2008.01.002

Ekahitanond, V. (2013). Promoting university students' critical thinking skills through peer feedback activity in an online discussion forum. *Alberta Journal of Educational Research*, 59(2), 247-265.

Falchikov, N. (1995). Peer feedback marketing: Developing peer assessment. *Innovations in Education and Training International*, 32:2, 175-187. https://doi.org/10.1080/1355800950320212

Farrokhnia, M., Banihashem, S. K., Noroozi, O., & Wals, A. (2023). A SWOT analysis of ChatGPT: Implications for educational practice and research. *Innovations in Education and Teaching International*, 1-15. https://doi.org/10.1080/14703297.2023.2195846

Fithriani, R. (2018). Cultural influences on students' perceptions of written feedback in L2 writing. *Journal of Foreign Language Teaching and Learning*, *3*(1), 1-13. https://doi.org/10.18196/ftl.3124

Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of educational psychology*, 99(3), 445. https://doi.org/10.1037/0022-0663.99.3.445

Hamer, J., Purchase, H., Luxton-Reilly, A., & Denny, P. (2015). A comparison of peer and tutor feedback. *Assessment & Evaluation in Higher Education*, *40*(1), 151–164.

Hinds, J., Connor, U., & Kaplan, R. (1987). Reader versus writer responsibility: A new typology. *Landmark essays on ESL writing*, 63-74.

Hofstede, G. H., & Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage.

Hu, G. & Lam, S. T. E. (2010). Issues of cultural appropriateness and pedagogical efficacy: Exploring peer review in a second language writing class. *Instructional Science, 38,* 371–94.

Hu, G. (2019). *Culture and peer feedback in second language writing*. Paper presented at The 1st Suzhou Colloquium on Language Research (SCOLAR), Suzhou, China.

Hyland, F. (2000). ESL writers and feedback: Giving more autonomy to students. *Language teaching research*, *4*(1), 33-54. https://doi.org/10.1177/136216880000400103

Kamimura, A. (1996). ESL readers' perceptions of argumentative text structure: A gap in instructional materials. *TESOL Quarterly*, 30(1), 143-156. https://doi.org/10.2307/3587588

Kamel, S. A. (2000). Categories of comprehension in argumentative discourse: A crosslinguistic study. *Diversity in language: Contrastive studies in Arabic and English theoretical and applied linguistics*, 193-235.

Lakoff, R. (1975). *Language and Woman's Place.* (New York, Harper. In: Row Publishers, Inc.

Latifi, S., Noroozi, O., & Talaee, E. (2023). Worked example or scripting? Fostering students' online argumentative peer feedback, essay writing and learning. *Interactive Learning Environments, 31*(2), 655-669. https://doi.org/10.1080/10494820.2020.1799032

Latifi, S., & Noroozi, O. (2021). Supporting argumentative essay writing through an online supported peer-review

script. *Innovations in Education and Teaching International*, *58*(5), 501-511. https://doi.org/10.1080/14703297.2021.1961097

Latifi, S., Noroozi, O., & Talaee, E. (2021). Peer feedback or peer feedforward? Enhancing students' argumentative peer learning processes and outcomes. *British Journal of Educational Technology*, *52*(2), 768-784. https://doi.org/10.1111/bjet.13054

Latifi, S., Noroozi, O., Hatami, J., & Biemans, H. J. (2021). How does online peer feedback improve argumentative essay writing and learning? *Innovations in Education and Teaching International*, 58(2), 195–206. https://doi.org/10.1080/14703297.2019.1687005

Liu, Y., Ott, M., Goyal, N., Du, J., Joshi, M., Chen, D., Levy, O., Lewis, M., Zettlemoyer, L., & Stoyanov, V. (2019). Roberta: A robustly optimized bert pretraining approach. *arXiv preprint arXiv:1907.11692*.

Liunokas, Y. (2020). Assessing students' ability in writing argumentative essay at an Indonesian senior high school. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, 8(1), 184-196. http://dx.doi.org/10.24256/ideas.v8i1.1344

McCarthy, P. M., Kaddoura, N. W., Ahmed, K., Buck, R. H., Thomas, A. M., Al-harthy, A., & Duran, N. D. (2021). Metadiscourse and counterargument integration in student argumentative papers. *English Language Teaching, 14*(6), 96-113. http://dx.doi.org/10.5539/elt.v14n6p96

Nelson, M. M., & Schunn, C. D. (2009). The nature of feedback: How different types of peer feedback affect writing performance. *Instructional science*, *37*, 375-401. https://doi.org/10.1007/s11251-008-9053-x

Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in higher education*, *31*(2), 199-218.

Noroozi, O. (2022). The role of students' epistemic beliefs for their argumentation performance in higher education. *Innovations in Education and Teaching International*, 1-12. https://doi.org/10.1080/14703297.2022.2092188

Noroozi, O., & Hatami, J. (2019). The effects of online peer feedback and epistemic beliefs on students' argumentation-based learning. *Innovations in Education and Teaching International*. 56(5), 548-557. https://doi.org/10.1080/14703297.2018.1431143

Noroozi, O., Banihashem, S. K., & Biemans, H. J. (2021). The role of education level in online peer feedback performance for argumentative essay writing. *International Society for Technology, Education, and Science*. (pp. 135-140), Antalya, Turkey. https://eric.ed.gov/?id=ED625345

Noroozi, O., Banihashem, S. K., & Biemans, H. J. (2022). Online supported peer feedback tool for argumentative essay writing: does course domain knowledge matter?. *In 15th International Conference on Computer-Supported Collaborative Learning.* (pp. 356-358). International Society of the Learning Sciences. https://edepot.wur.nl/586970

Noroozi, O., Banihashem, S. K., Biemans, H. J., Smits, M., Vervoort, M. T., & Verbaan, C. L. (2023). Design, implementation, and evaluation of an online supported peer feedback module to enhance students' argumentative essay quality. *Education and Information Technologies*, 1-28. https://doi.org/10.1007/s10639-023-11683-y

Noroozi, O., Banihashem, S. K., Taghizadeh Kerman, N., Parvaneh Akhteh Khaneh, M., Babayi, M., Ashrafi, H., & Biemans, H. J. (2022). Gender differences in students' argumentative essay writing, peer review performance and uptake in online learning environments. *Interactive Learning Environments*, 1-

15.https://doi.org/10.1080/10494820.2022.2034887

Noroozi, O., Biemans, H., & Mulder, M. (2016). Relations between scripted online peer feedback processes and quality of written argumentative essay. *The Internet and Higher Education, 31,* 20-31. https://doi.org/10.1016/j.iheduc.2016.05.002

Noroozi, O., Hatami, J., Bayat, A., van Ginkel, S., Biemans, H. J., & Mulder, M. (2020). Students' online argumentative peer feedback, essay writing, and content learning: Does gender matter?. *Interactive Learning Environments, 28*(6), 698-712. https://doi.org/10.1080/10494820.2018.1543200

Noroozi, O., Kirschner, P. A., Biemans, H. J., & Mulder, M. (2018). Promoting argumentation competence: Extending from first-to second-order scaffolding through adaptive fading. *Educational Psychology Review, 30*, 153-176. https://doi.org/10.1007/s10648-017-9400-z

Noroozi, O., Weinberger, A., Biemans, H. J., Mulder, M., & Chizari, M. (2012). Argumentation-based computer supported collaborative learning (ABCSCL): A synthesis of 15 years of research. *Educational Research Review, 7*(2), 79-106. https://doi.org/10.1016/j.edurev.2011.11.006

Patchan, M. M., Schunn, C. D., & Correnti, R. J. (2016). The nature of feedback: How peer feedback features affect students' implementation rate and quality of revisions. *Journal of Educational Psychology*, 108(8), 1098–1120. https:// doi.org/10.1037/edu0000103

Pessoa, S., Mitchell, T. D., & Miller, R. T. (2017). Emergent arguments: A functional approach to analyzing student challenges with the argument genre. *Journal of Second Language Writing*, *38*, 42-55.

Pham, T. N., Lin, M., Trinh, V. Q., & Bui, L. T. P. (2020). Electronic peer feedback, EFL academic writing and reflective thinking: Evidence from a Confucian context. *Sage Open*, *10*(1), 2158244020914554.

Popov, V., Brinkman, D., Fortuin, K. P., Lie, R., & Li, Y. (2022). Challenges home and international students face in group work at a Dutch university. *European Journal of Engineering Education*, 47(4), 664-678.

Qin, J., & Karabacak, E. (2010). The analysis of Toulmin elements in Chinese EFL university argumentative writing. *System, 38*(3), 444-456. https://doi.org/10.1016/j.system.2010.06.012

Rusfandi. (2015). Argument-counterargument structure in Indonesian EFL learners' English argumentative essays: A dialogic concept of writing. *RELC Journal*, *46*(2), 181-197.

Shen, B., Bai, B., & Xue, W. (2020). The effects of peer assessment on learner autonomy: An empirical study in a Chinese college English writing class. *Studies in Educational Evaluation, 64*, 100821.

Taghizadeh Kerman, N., Noroozi, O., Banihashem, S. K., & Biemans, H. J. A. (2022a). The effects of students' perceived usefulness and trustworthiness of peer feedback on learning satisfaction in online learning environments. *In 8th International Conference on Higher Education Advances (HEAd'22)*, Universitat Politecnica de Valencia. http://dx.doi.org/10.4995/HEAd22.2022.14445

Taghizadeh Kerman, N., Banihashem, S. K., & Noroozi, O. (2022b). The Role of students' attitude towards online peer feedback in successful uptake of feedback in argumentative essay writing. *In Studies on Social and Education Sciences* (pp. 264-274). International Society for Technology, Education, and Science (ISTES).

Taghizadeh Kerman, N., Noroozi, O., Banihashem, S. K., Karami, M., & Biemans, H. J. (2022c). Online peer feedback patterns of success and failure in argumentative essay writing. *Interactive Learning Environments*, 1-13.. https://doi.org/10.1080/10494820.2022.2093914

Tavoletti, E., Stephens, R. D., Taras, V., & Dong, L. (2022). Culture biases in peer evaluations: The country-of-

origin effect in global virtual teams. *International Business Review*, *31*(2), 101969. https://doi.org/10.1016/j.ibusrev.2021.101969

Topping, K. J. (2009). Peer assessment. *Theory into Practice*, 48(1), 20–27. https://doi.org/10.1080/00405840802577569

Tsemach, E., & Zohar, A. (2021). The intersection of gender and culture in argumentative writing. International Journal of Science Education, 43(6), 969–990. https://doi.org/10.1080/09500693.2021.1894499

Uysal, H. H. (2012). Argumentation across L1 and L2 Writing: Exploring Cultural Influences and Transfer Issues. *Vigo International Journal of Applied Linguistics*, (9), 133-159.

Valero Haro, A., Noroozi, O., Biemans, H. J., & Mulder, M. (2019a). The effects of an online learning environment with worked examples and peer feedback on students' argumentative essay writing and domain-specific knowledge acquisition in the field of biotechnology. *Journal of Biological Education*, *53*(4), 390-398. https://doi.org/10.1080/00219266.2018.1472132

Valero Haro, A., Noroozi, O., Biemans, H., & Mulder, M. (2019b). First-and second-order scaffolding of argumentation competence and domain-specific knowledge acquisition: a systematic review. *Technology, Pedagogy and Education*, *28*(3), 329-345.

Valero Haro, A., Noroozi, O., Biemans, H., & Mulder, M. (2020). Argumentation Competence: students' argumentation knowledge, Behavior and attitude and their relationships with domain-specific knowledge acquisition. *Journal of Constructivist Psychology*, 1–23.

Valero Haro, A., Noroozi, O., Biemans, H. J., Mulder, M., & Banihashem, S. K. (2023). How does the type of online peer feedback influence feedback quality, argumentative essay writing quality, and domain-specific learning?. *Interactive Learning Environments*, 1-20.

Van Popta, E., Kral, M., Camp, G., Martens, R. L., & Simons, P. R. J. (2017). Exploring the value of peer feedback in online learning for the provider. *Educational Research Review*, *20*, 24-34.

Van Rompay-Bartels, I., &Geessink, J. (2023). Exploring peer feedback on behaviour in the international classroom: a case study on students' experiences and perceptions. *Journal of International Education in Business*, *16*(1), 1-17. https://doi.org/10.1108/JIEB-07-2020-0063

Van Steendam, E., Rijlaarsdam, G., Sercu, L., & Van den Bergh, H. (2010). The effect of instruction type and dyadic or individual emulation on the quality of higher-order peer feedback in EFL. *Learning and Instruction*, *20*(4), 316-327. https://doi.org/10.1016/j.learninstruc.2009.08.009

Van Weijen, D., Rijlaarsdam, G., & van den Bergh, H. (2019). Source use and argumentation behavior in L1 and L2 writing: A within-writer comparison. *Reading and writing*, *32*, 1635-1655.

Wolfersberger, M. (2003). The effects of explicit instruction on the use of argumentative devices in L2 academic writing. *Journal of Second Language Writing*, 12(2), 139-164.

Wu, S. M. (2006). Creating a contrastive rhetorical stance: Investigating the strategy of problematization in students' argumentation. *RELC Journal*, *37*(3), 329–353. https://doi.org/10.1177/0033688206071316

Wu, S. Y., & Rubin, D. L. (2000). Evaluating the impact of collectivism and individualism on argumentative writing by Chinese and North American college students. *Research in the Teaching of English*, 35(2), 148-178. https://www.jstor.org/stable/40171513

Wu, Y., & Schunn, C. D. (2020). When peers agree, do students listen? The central role of feedback quality and feedback frequency in determining uptake of feedback. *Contemporary Educational Psychology*, 62,

101897. https://doi.org/10.1016/j.cedpsych.2020.101897

Wu, Y., & Schunn, C. D. (2021). The effects of providing and receiving peer feedback on writing performance and learning of secondary school students. *American Educational Research Journal*, *58*(3), 492-526. https://doi.org/10.3102/0002831220945266

Zeidler, D. L., Herman, B. C., Ruzek, M., Linder, A., & Lin, S. S. (2013). Cross-cultural epistemological orientations to socioscientific issues. *Journal of Research in Science Teaching*, *50*(3), 251-283. https://doi.org/10.1002/tea.21077

Zhang, J. (2011). Linguistic, Ideological, and Cultural Issues in Chinese and English Argumentative Writings. *Journal of Language Teaching & Research*, *2*(1). http://dx.doi.org/10.4304/jltr.2.1.73-80

Zhang, J., Kuusisto, E., Nokelainen, P., & Tirri, K. (2020). Peer feedback reflects the mindset and academic motivation of learners. *Frontiers in psychology*, *11*, 1701. https://doi.org/10.3389/fpsyg.2020.01701

Zhao, H. (2017). Understanding L2 writers' use of sources in argumentative essays. *Journal of English for Academic Purposes*, 28, 1-14. https://doi.org/10.1016/j.jeap.2017.06.001

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Appendix I. The Rubric for Providing Argumentative Peer Feedback

Nature of feedback	Feedback features	Points	Label	Description
Affective		0	Poor – discouraging	The comment included discouraging and negative emotions such as anger or disappointments
		1	Average - neutral/not mentioned	The comment did not include either negative or positive emotions
		2	Good - encouraging	The comment included encouraging and positive emotions such as praise or compliments
Cognitive	Description	0	Poor - not mentioned	The comment did not include a summary statement such as description of content or taken action
		1	Average - mentioned to small extent	The comment included a summary statement such as description of content or taken action but to a small extent
		2	Good - mentioned to a large extent	The comment included a summary statement such as description of content or taken action to a large extent
	Identification	0	Poor - not mentioned	The comment did not include explicit identification of problem
		1	Average - mentioned but not localized	The comment included identification of problem without localization of identified problem
		2	Good - mentioned and localized	The comment included explicit and localized identification of problem
	Justification	0	Poor - not mentioned	The comment did not include elaborations and justifications of identified problem
		1	Average – mentioned, elaborated, but not justified	The comment included elaborations but not justifications of identified problem
		2	Good - mentioned, elaborated, and justified	The comment included elaborations and justifications of identified problem
Constructive		0	Poor- not mentioned	The comment did not include any recommendations or action plans for further improvements.
		1	Average – only recommendation is mentioned	The comment included recommendations but not action plans for further improvements.
		2	Good – both recommendation and action plan are mentioned	The comment included recommendations and action plans for further improvements.