

Assessment of Academic ESL Writing in an Online Tutorial for Graduate Students

Zhi Li¹, Veronika Makarova¹ and Zhengxiang Wang²

¹University of Saskatchewan, Saskatoon, Canada

²Stony Brook University, Stony Brook, USA

z.li@usask.ca

v.makarova@usask.ca

zhengxiang.wang@stonybrook.edu

Abstract: English-as-a-second language (L2) graduate students often face challenges in developing academic writing skills, which can be exacerbated by a lack of timely support at institutional level. To help address this concern, an original set of online academic writing tutorials with a focus on the genre of Literature Review was designed by the authors to assist international graduate students enrolled in graduate programs in Canada. This paper introduces and compares multiple assessment tools employed in the online tutorial set for international English L2 graduate students. Our project pursues two major goals: First, to address the above-identified gap in Academic Writing support to English L2 graduate students with minimal costs and faculty involvement through designing the online tutorial set; second, to contribute to the research on e-learning of Academic English as a second language (ESL) writing in terms of developing integrated tools for online tutorial building, analysis of texts produced by learners, and assessment of learners' writing progress. The research questions are: 1. What resources can be combined to develop an online tutorial set for graduate students at minimal costs? 2. How can the learners' progress in academic ESL writing be assessed with different assessment tools? First, the paper describes the tools employed in the tutorial construction: MoodleCloud platform, H5P interactive e-book designed by the authors, surveys, and assessment tools. Second, we present and compare assessment tools employed to evaluate learners' writing progress: Expert assessment with an analytic rubric, self-assessments of progress by the participants, and automated text analysis with corpus-based tools as reported in Li, Makarova, and Wang (2023). A comparison of the scores across the three assessment tools shows some discrepancies, which seems to suggest that combined tools yield a more comprehensive picture. The expert assessments and self-assessments demonstrate improvement in the writing quality over the course of the tutorial series, which are partially supported with the findings from corpus-based analysis of participants' texts. The findings are of relevance to e-learning scholars, faculty, and administrators of English-medium universities with substantial intakes of international graduate students in Social Sciences and Education whose native languages are other than English.

Keywords: learners' progress assessment, online tutorials, Academic ESL Writing, International Graduate students whose native language is not English, e-learning

1. Introduction

Writing a literature review in academic English is a common but daunting task for both English as first language (L1) and as second language (L2) writers (Badenhorst, 2018; Li et al, 2023; Shi and Dong, 2015). What may make this task even more challenging is a lack of local or institutional support in English for academic purposes (EAP) due to limited resources that could be channelled into writing support. In addition, in research, there are few studies on standalone or supplementary resources designed to help English L2 graduate students develop literature review writing skills (Storch and Tapper, 2009). As a part of a larger project, this paper reports the development of an online writing tutorial series at a Canadian university and an evaluation of its effectiveness from the perspective of expert assessment of writing samples and participant self-assessment. The results of assessment analyses are then discussed in light of the findings of Li, Makarova, and Wang (2023), a relevant corpus-based study of the same group of writing samples.

1.1 Development of literature review writing skills

In this study, we conceptualize literature review (LR) as a special subgenre of academic writing (Swales and Feak, 2012). LR writing requires multiple skills, such as searching for relevant academic materials, integrating and citing materials properly, developing coherence (flow of ideas) and cohesion (connectedness among sentences), using appropriate academic vocabulary and grammatical structures. To help English L2 learners develop academic writing skills in general, one of the key steps is to raise their genre awareness (Crosthwaite, Sanhueza, and Schweinberger, 2021). In other words, learners need to understand the expected features in the texts of a particular genre. For example, in addition to the commonly investigated features in academic writing such as coherence, cohesion and cohesive devices (e.g., Abdi Tabari and Johnson, 2023; Basturkmen and von Randow, 2014), citation practices are uniquely important in literature review writing (Badenhorst, 2018). While previous studies have explored citation types and forms, functions, and use of reporting verbs in academic writing

(Hyland, 1999), it is not clear how English L2 L-students developed their citation practices as a result of learning. Related to citation practices are the use of academic vocabulary and grammatical structures for referencing purposes in literature review writing.

In a recent study on literature writing development from the same project, Li et al. (2023) performed corpus-based analyses on the literature writing samples completed by English L2 graduate students in an online writing tutorial series. Their analysis results showed that the writing samples produced at later stages of the tutorial series as compared to the beginning were stronger in certain linguistic features such as the use of connectives (e.g., 'so' and 'because') and academic vocabulary, while other linguistic features (e.g., syntactic complexity and global cohesion) remained at similar levels. The learners in the above study also performed better in citation practices, employing more citations and diverse reporting verbs. This study builds on Li et al. (2023) to further investigate other assessment types to examine the effectiveness of the same online writing tutorial series, which is described in the next subsection.

1.2 Design of an online writing tutorial series

A 5-unit online tutorial series was developed in-house to help graduate students improve literature writing skills. The design of this tutorial series was largely informed by the following theories or frameworks: Genre analysis of academic writing, academic English socialization, and corpus linguistics. Based on relevant literature on students' development of academic writing skills (Swales and Feak, 2012), these units included themes such as genre requirements, logic and structure in literature review, sentence structures, academic vocabulary, and grammar of reported speech, supplemented with practices and writing tasks (see Table 1).

Table 1: Overview of online writing tutorial series

Unit	Key notions	Activities	Duration	Writing task
1. Genre of literature review	Components in literature review writing, material selection, citation practices	Interactive e-book, Peer-review, Discussion forum, quiz	3 weeks	Individual writing on the social consequences of legalized cannabis
2. Structure and logic in literature review	Types of logic structure, terms and abbreviations, Coherence, Cohesion	Interactive e-book, Discussion forum, quiz	2 weeks	Collaborative writing on Canadian linguistic landscape
3. Sentence structures	Sentence structures and variety, nominalization, Phrase bank and Swales' CARS (Creating a Research Space) model	Interactive e-book, Peer-review, Discussion forum, quiz	3 weeks	Individual writing on the pros and cons of online learning
4. Academic vocabulary	(academic) formulaic expressions and their functions	Interactive e-book, Discussion forum, quiz	2 weeks	Collaborative writing on lessons from the COVID-19 pandemic
5. Grammar of reported speech	Direct vs. indirect speech, reporting verbs and expressions, verb tenses, modal verbs	Interactive e-book, Peer-review, Discussion forum, quiz	3 weeks	Individual writing on pacifism, peace-making, or just/justifiable war

The main content of each unit is packaged in an H5P (HTML5 Package) interactive e-book, which presents key notions under each theme with examples and allows participants to engage with corresponding practices to check their understanding of the notions (see Figure 1). For example, Tutorial 1 introduces literature review as a genre, focusing on its typical components and expected features such as citation practices for material integration. The tutorial series was delivered fully online via MoodleCloud, an online course management system, to a cohort of participants in three and half months. Since the tutorials, along with writing tasks, support materials, and weekly agenda, were prepared beforehand, participants could self-pace their study within a unit but needed to progress as a cohort across units with scheduled deadlines for the writing tasks.

The screenshot displays the 'LR requirements' section of an interactive e-book. The sidebar on the left contains a table of contents with the following items:

Tutorial 1	
▶ Tutorial One Over...	●
▶ T1 introduction	○
▼ LR requirements	○
The specific requirement...	
○ Drag the words into the c...	
▶ Broad coverage	○
▶ Reliable sources	○
▶ LR components	○
▶ Citations and refe...	○
▶ Citations and refe...	○
▶ Stages of working...	○
▶ References & rea...	○
Summary & submit	

The main content area is titled 'The specific requirements of any academic literature review' and lists eight requirements:

1. Broad coverage of the subject of your literature review as it has been reflected in earlier studies (establishing the knowledge on the subject available up to date);
2. Use of reliable academic sources (Getting Started);
3. Inclusion of the required components of a literature review (Tutorial 1);
4. Correct use of citations, in-text and final references (Tutorial 1);
5. Stages of working on your literature review (Tutorial 1);
6. Avoiding plagiarism (Getting Started);
7. Presenting information in a well-structured and logical way (Tutorial 2).
8. Using academic paper writing style (formal academic English) including the use of specific academic vocabulary and formal grammar (Tutorials 3, 4 and 5).

Below the list is a circular diagram divided into four quadrants:

- Top-left (green): Tutorial 3, 4 & 5: Requirement 8
- Top-right (blue): Tutorial 1: Requirement 1, 3, 4, 5
- Bottom-left (green): Tutorial 2: Requirement 7
- Bottom-right (teal): Getting Started: Requirement 2, 6

Figure 1: Screenshot of HSP Interactive e-book in Tutorial 1 “Genre of literature review”

Each unit is matched with a writing task of literature review on a given topic and a feedback survey. The expected length of literature review writing is 700 to 800 words. Three writing tasks, hereafter referred to as T1, T3, and T5 for their positions in the tutorial series, were to be completed as individual writing tasks and supported with a peer-review process. On the other hand, the remaining two writing tasks hereafter called T2 and T4, were designed as collaborative writing tasks to be completed by a group of two or three participants so that the participants could further socialize with others to develop their writing skills.

To avoid heavy demand on disciplinary knowledge, we selected the writing prompts mainly from the areas of humanities or social sciences, such as social consequences of legalized cannabis (T1), Canadian linguistic landscape (T2), online learning (T3), lessons from the COVID-19 pandemic (T4), and pacifism (T5). For each writing task, a short bibliography on the selected topic was provided to the participants to help them start reviewing relevant studies and searching for other academic resources. In addition, a discussion forum was set up to elicit participants’ views on the key notions covered in the corresponding unit and to encourage them to share and develop their writing ideas. For individual writing tasks, peer review was conducted on MoodleCloud in the format of discussion forum participation. Google Docs, an online word processor, was used by the participants to work on the collaborative writing tasks. This study focuses on participants’ writing performance on the three individual writing tasks because these tasks should capture participants’ initial writing levels of literature review (T1), and then their developmental trajectories through the middle and the end of the tutorial series, respectively, T3 and T5.

Teaching assistants with English language teaching experiences were hired as moderators of discussion forums and raters of the literature reviews submitted by participants. At the end of the tutorial series, all participants were invited to respond to a final survey to reflect on their performance and gauge their progress in literature review writing during this tutorial series.

In this paper, we aim to address the following research question: To what extent could English L2 graduate students benefit from an online tutorial series on literature reviewing writing from the perspective of expert assessment and participants’ self-assessment?

2. Methodology

2.1 Participants

With ethics approval, participants who spoke English as a second language (ESL) were mostly recruited from two Canadian universities. While more than 280 prospective participants initially signed up for the project, only 29 completed the tutorial series in three cohorts in 2021. This high dropout rate was partially affected by the COVID-19 pandemic as well as the non-credit-bearing nature of the tutorial series. At the end of the tutorial series, each participant was paid a gift card of 100 Canadian dollars to compensate for their time and contribution.

The participant characteristics were extracted from a background survey at the beginning of the tutorials: 20 were female participants, seven were male, and two did not disclose gender information. Most of the participants were current master's students (19) or doctoral students (4), and six were prospective graduate students without clear education level information. The main study fields of the participants were Linguistics (7), Education (6), Political Science (5), Computer Science (2), Veterinary Science (2), Health Science (2), Humanities (1), Agriculture (1), and Business (1). A diverse group of first languages was included in this study. These were Chinese (4), Farsi (4), Russian (2), Bengali (2), Hindi (2), and one participant per each of the following languages: Punjabi, Turkish, Vietnamese, Urdu, Spanish, Igbo, Luo, Portuguese, Czech, Jamaican Patois, Lusaka, Arabic, and Ukrainian. The English proficiency levels were at 'upper intermediate' to 'advanced' levels as the average score of their most recent standardized English language tests was about IELTS Band 7 or equivalent based on score conversion from other standardized English language tests, with a range from IELTS 6.5 to 8.5 and a standard deviation of 0.55.

In addition to the participants, five researchers were involved as raters at different stages in this project, including two faculty members and three graduate students in Applied Linguistics. Each literature review was rated independently by two to three raters, including at least one faculty member. The rating was completed on an online platform.

2.2 Data collection and analysis

An analytic rating rubric was developed based on the themes covered in the tutorial series for this project. Nine dimensions of literature review writing were evaluated on a 10-point scale: (1) Material selection; (2) Material integration and citation; (3) Quality of key components; (4) Logic of structure; (5) Content and clarity of ideas; (6) Coherence; (7) Cohesion; (8) Grammar and sentence structure; and (9) Academic vocabulary. To detect changes in analytic scores across T1, T3, and T5 (independent variable), nine repeated-measures ANOVAs were performed with analytic scores as the dependent variable. Follow-up pairwise comparisons with Bonferroni *p*-value adjustment were reported.

As mentioned earlier, an end-of-tutorial survey was administered to the participants. The survey included two main sections: 1) a self-assessment with eight statements on a 4-point scale about perceived progress in various aspects of literature review writing, such as genre awareness, material integration, citation, cohesion, grammar, and academic vocabulary; 2) an evaluation of the usefulness of tutorial content and features with 12 statements on a four-point scale. Each section concluded with an open-ended question for additional comments or thoughts. The survey responses to scale-based statements were analyzed quantitatively for frequencies and the responses to open-ended questions were coded qualitatively for main themes.

3. Results

3.1 Analytic scores

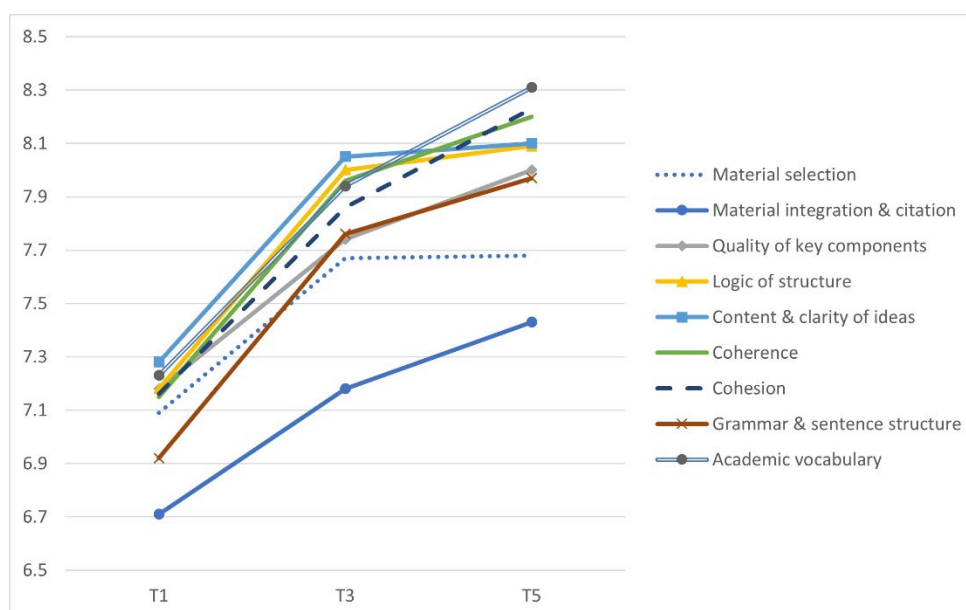
To investigate the participants' writing performance, we averaged the ratings awarded by two to three raters on each of the dimensions. As a result, a participant has nine scores for each of the three individual writing tasks. As shown in Table 2, on average, the participants made progress in all nine dimensions in their literature review writing samples. For example, the mean score in Material selection for the first writing task (T1) is 7.09 out of 10; the score increases to 7.68 for the last writing task (T5) at the end of the tutorial. In writing task 1 (T1), the lowest and highest average scores are 6.71 (Material integration and citation) and 7.28 (Content and clarity of ideas), respectively. By contrast, the average scores in T5 improved significantly and ranged from 7.43 (Material integration and citation) to 8.31 (Academic vocabulary), with remarkable improvement in the last four dimensions: Coherence, Cohesion, Grammar and sentence structure, and Academic Vocabulary.

Table 2: Descriptive statistics for average analytic scores across three writing tasks (T1, T3, and T5)

Score dimension	T1		T3		T5	
	Mean	SD	Mean	SD	Mean	SD
1. Material selection	7.09	0.48	7.67	0.62	7.68	0.68
2. Material integration & citation	6.71	0.71	7.18	0.69	7.43	0.74
3. Quality of key components	7.18	0.53	7.74	0.68	8.00	0.72
4. Logic of structure	7.18	0.59	8.00	0.65	8.09	0.59
5. Content & clarity of ideas	7.28	0.58	8.05	0.63	8.10	0.55
6. Coherence	7.15	0.57	7.96	0.60	8.20	0.54
7. Cohesion	7.16	0.49	7.86	0.60	8.23	0.44
8. Grammar & sentence structure	6.92	0.51	7.76	0.50	7.97	0.50
9. Academic vocabulary	7.23	0.55	7.94	0.75	8.31	0.52

These development trajectories are visualized in Figure 2. It is noticeable that the increases in scores from T1 to T3 were larger than the increases from T3 to T5. The results of repeated-measures ANOVAs confirmed the improvement in all dimensions. For the scores of Material selection, there was a statistically significant difference in the score between at least two groups ($F(2, 56) = 9.311, p < .001, \eta_g^2 = 0.18$). Pairwise comparisons indicated that significant differences existed between the first task (T1) and other tasks (T1 vs. T3: $p = .001$; T1 vs. T5: $p = .004$), while no statistically significant difference was found between T3 and T5 (7.67 vs. 7.68). For the score of Material integration and citation, statistically significant differences were revealed ($F(1.65, 46.22) = 10.118, p < .001, \eta_g^2 = 0.15$). Pairwise comparisons showed the same pattern as the score of Material selection (T1 vs. T3: $p = .002$; T1 vs. T5: $p < .001$). Similar trends are observed in other five dimensions: Quality of key components in literature review ($F(2, 56) = 26.752, p < .001, \eta_g^2 = 0.22$), Logic of structure ($F(1.59, 44.53) = 30.621, p < .001, \eta_g^2 = 0.32$), Content and clarity of ideas ($F(2, 56) = 52.375, p < .001, \eta_g^2 = 0.30$), Coherence ($F(2, 56) = 62.837, p < .001, \eta_g^2 = 0.39$), and Grammar and sentence structure ($F(2, 56) = 54.135, p < .001, \eta_g^2 = 0.46$).

However, the plateau phenomenon at the later stage, i.e., non-significant increase in scores from T3 to T5, does not apply to the scores in Cohesion and Academic vocabulary. For the score of Cohesion, the differences among the three writing tasks were relatively large ($F(2, 56) = 54.135, p < .001, \eta_g^2 = 0.46$) and all pairwise comparisons were statistically significant (T1 vs. T4: $p < .001$; T1 vs. T5: $p < .001$; T3 vs. T5: $p < .001$). The development of academic vocabulary also saw a similar pattern ($F(1.46, 41.04) = 42.052, p < .001, \eta_g^2 = 0.36$), with significant pairwise differences (all adjusted p values lower than .001).

**Figure 2: Average analytic scores across three individual writing tasks**

3.2 Participant’s self-assessment and perceptions

The end-of-tutorial survey invited the participants to share their self-assessment of writing performance as well as perceptions of the tutorial series. Figure 3 presents an overview of the responses to the self-assessment. The majority of the participants agreed that they had made ‘moderate’ or ‘strong’ improvement in all eight categories: Overall performance (27 out of 29), Genre awareness (25), Material integration (24), Citation practice (24), Logic of structure (23), Cohesion (23), Academic vocabulary (22), and Grammar (25). This pattern is roughly in line with the expert assessment, as described above. Meanwhile, only a small number of participants reported ‘no’ to ‘little’ improvement in Academic vocabulary (7), Cohesion (6), Logic of structure (6), Citation practice (5), Genre awareness (4), Grammar (4), and Overall performance (2). This self-assessment outcome may be related to participants’ perceived effectiveness of the tutorial units. Based on participants’ reflection, the first three tutorials were deemed ‘useful’ by 20 or more participants, while the last two were ‘useful’ to 14 and 13 participants, respectively.

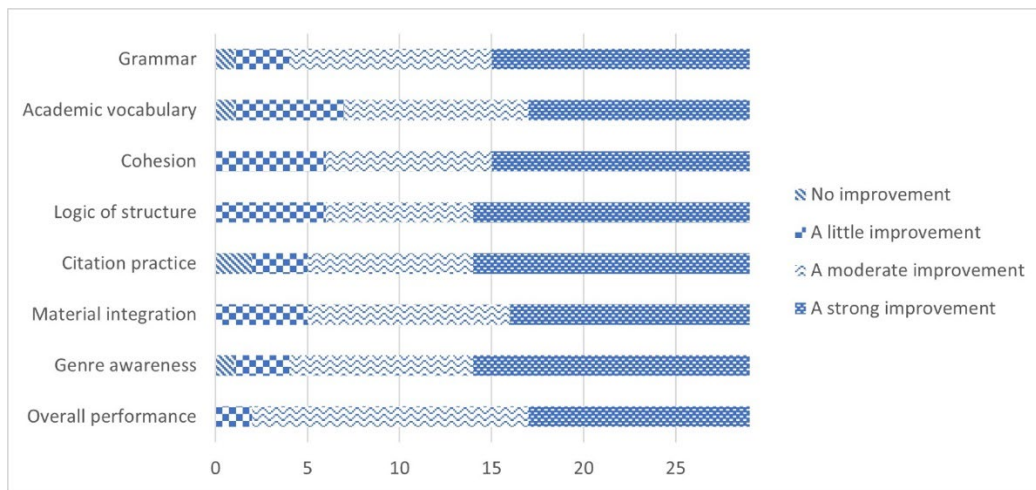


Figure 3: Participants’ self-assessment of writing development at the end of the tutorial series

The participants also reported their perceptions of the main features used in the tutorial series (see Figure 4). All participants agreed that the most useful feature in this online tutorial series is instructor feedback. This shared perception highlights the importance of the presence of instructors. Other highly useful features included content structure in the tutorial series (28), H5P interactive e-books (27) and embedded quizzes (26). Nevertheless, the features for promoting peer interaction were perceived as less useful, for example, peer reviewing (24), use of comments from peers (23), and discussion forum (21).

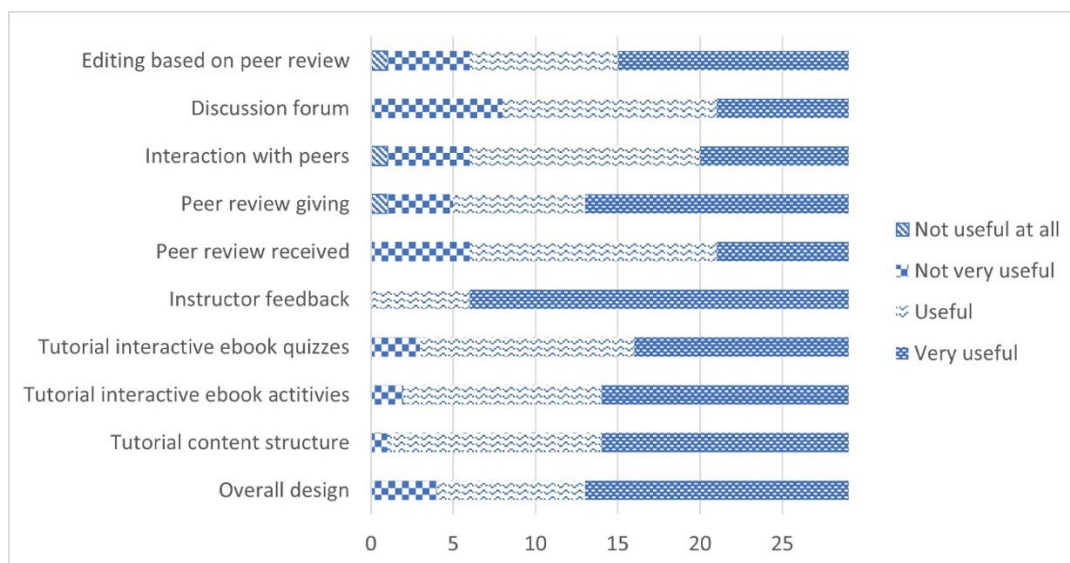


Figure 4: Participants’ perception of tutorial features

Participant's self-assessment and perceptions may be further explained by their responses to the open-ended questions regarding tutorial experiences. Regarding the challenges faced during the tutorial series, three themes emerged from participants' responses: Effective peer interaction (5), time management or restraints (5), and topic familiarity (5). For example, one participant commented that *"the most difficult part for me was to communicate with my group-mates during group submissions and coordinate and combine everyone's work."* This response was echoed by other four participants, complaining about the effort needed to make peer interaction work during this online tutorial series. This concern was also related to the time commitment required in this project, which took three and half months to complete, and the ensuing challenges in time management. Five participants commented on their time management issues. One participant shared, *"The only difficulty was organizing my schedule to give the appropriate time for the readings."* Also related was some difficulty with writing on less familiar topics every two to three weeks, as reported by five participants. As described earlier, the participants had diverse academic backgrounds, including humanities, education, social sciences, business, computer science, and health sciences. Therefore, the selected writing prompts may be too far outside the research areas of some participants. For example, a participant mentioned that *"I need to spend time reading topics that I am not familiar with."* Another participant in social sciences explicitly commented on the last writing prompt, claiming that *"The one for T5, pacifism, was incredibly difficult to understand."*

When asked about what the participants enjoyed most in this tutorial series, four main aspects were highlighted in their responses: Tutorial content and activities (13), instructor feedback (7), writing topics (5), and peer interaction (4). More specifically, the features appreciated by the participants are H5P interactive e-book with embedded exercises, examples illustrated in the tutorials, and quizzes. At the same, participants also suggested some tips for improving the tutorial series, such as adding audio or video clips to supplement interactive e-books, more practices or exercises, and more online resources for self-study. Instructor feedback was greatly valued by seven participants in their responses, corroborating participants' positive perceptions of this practice. One participant stated that *"the instructor's comments were both encouraging and critical."*

The last two favoured aspects, namely writing topics and peer interaction, were enjoyed by some participants, despite the limitations identified above by some other participants. One participant shared that *"I loved the fact that I also enjoyed that the essay subjects made me think out of the box, read different resources. I really enjoyed this experience!"*. Nevertheless, some participants suggested more flexibility in writing prompt choices and consideration of disciplinary differences. Regarding peer interaction, four participants showed positive perceptions without any explanation. Furthermore, seven participants suggested some strategies to better engage participants for peer interaction, such as pairing participants in the same time zone, providing more detailed guidelines, allowing more time for group work, and facilitating online meetings with participants.

4. Discussion and conclusions

Overall, the outcomes of expert assessment and participants' self-assessment are promising regarding the effectiveness of the online writing tutorial series, despite the impact of the COVID-19 pandemic. The increases in analytic scores as well as the positive self-assessment indicate that the online writing tutorial series was helpful for raising participants' genre awareness and development of literature review writing skills. It is noteworthy that the comparisons of analytic scores between T3 and T5 suggest plateau effect in seven dimensions, which may be related to the developmental patterns commonly observed in second language acquisition (Rosmawati, 2014).

Compared to the findings in Li et al.'s (2023) study solely with participants' writing samples, the expert assessment and participants' self-assessment provided more macro-level information regarding genre features in literature review writing. Different from the uneven trajectories reported in Li et al. (2021) in the use of specific linguistic features such as lexical complexity, syntactic complexity, cohesion features, and citation practices, both expert assessment and participants' self-assessment suggested unidirectional development in main scoring dimensions. Such discrepancies can be accounted for by the differences in writing construct presentations in different assessment approaches. The construct of literature review writing captured with the analytic scoring rubric should be more polished, compared to the other approaches. The corpus-based approach focused on fine-grained linguistic features that were extractable by existing corpus tools. These features may not be able to fully represent the targeted writing construct.

The positive findings may be attributed to the design principles followed in this study. Firstly, the tutorial content was informed by multiple theories or frameworks, including academic genre analysis and corpus linguistics, to address English L2 graduate students' needs. Secondly, the activities and the writing tasks provided ample

opportunities to review key notions covered in the tutorials and to practice literature review writing. Considering the effectiveness of the tutorial series and positive perceptions of the participants, the design and content of this tutorial series may be used either as an extracurricular piece or as a part of an EAP program, especially for graduate level students (Douglas and Landry, 2021).

A few limitations need to be mentioned to better understand the findings of this study. Firstly, the sample size is relatively small even after three rounds of tutorial administration. While about 80 to 120 prospective participants were attracted at the beginning of each round, only 29 participants in total completed all tutorial units and the corresponding writing tasks. Several factors may have triggered such a high drop rate. The relatively heavy weekly workload and extended duration of the tutorial series may have made the free series somehow intimidating and tiring, as mentioned by one of the participants in the final survey. Secondly, only a fixed selection of writing prompts was employed in this project, leading to two possible consequences. On the one hand, using the same set of prompts allows participants to share writing experiences, develop ideas, and compose early drafts together when applicable. On the other hand, these pre-determined prompts may not be of interest to some participants or may be way outside their areas of expertise to produce a proper literature review. Some possible topic effect was noticed in the corpus-based analysis of texts (see Li et al., 2023).

Future development of the online writing tutorials or similar online resources should consider a balance of tutorial content and required writing tasks to ensure gradual progression to a final writing product, in this case, a literature review. For example, some bite-size activities can be prepared to help English L2 learners practice key steps in conducting a literature review and writing up the review, such as searching for academic materials (e.g., research articles) from reputable sources, evaluating the quality of academic materials, and synthesizing related academic materials with appropriate academic formulaic expressions. If possible, each unit in a series should be made self-contained and accessible separately, thus reducing the need to proceed in a linear fashion.

Initially, we planned to design a standalone online writing tutorial series that demands minimal involvement of instructors. As revealed in participants' survey responses, it turns out the presence of instructors and their feedback played key roles in engaging participants in this non-credit-bearing tutorial series. Future design should still maintain some involvement of instructors to support English L2 learners. While we also valued peer interaction for Academic English socialization, an interactive process in which English L2 learners become proficient in language use in a particular community of practice (Duff and Anderson, 2015), the asynchronous mode of the online tutorial series made it difficult to facilitate peer interactions for reviewing and collaborative writing. The peer interaction features in this tutorial series were deemed less useful than other features.

Other technologies or tools such as automated writing evaluation and generative AI (e.g., ChatGPT) may be incorporated in the future design to mitigate the sole reliance on instructors for feedback. Other peer interaction tools such as peer review plugins for Moodle and Zoom meetings may help promote connections among participants in this online environment.

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