

Integrating Seamless Learning within a Peer-Assisted Learning Center to Develop Student English Academic Writing Skills

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Article information	Abstract
Article history: Received: Jun 21, 2020 Accepted: Apr 22, 2021 Available online: May 4, 2021	<p><i>Although an emerging field, seamless learning (SL) can be a powerful tool, and in this study, it was integrated into a peer-assisted learning (PAL) center in such a way to concentrate on the development of undergraduate English writing skills in Thailand. This quasi-experimental quantitative and qualitative study was conducted at an international college, where the control and experimental groups consisted of 18 and 17 research participants, respectively. The objective of this study was to examine whether student involvement in a seamless learning-focused PAL center could help develop academic writing skills of undergraduate students in an international faculty at a private university in Thailand. In this study, the instrument utilized to elicit and collect information was in the form of a sample IELTS writing test, which mirrored Task 2 of the examination. Those providing peer feedback to the participants were their fellow classmates who had achieved a CEFR English level of B2 or higher. There was a total of 48 student peer-mentors (SPMs) in this study. Based on the findings of this study, it can be concluded that by integrating SL into a PAL center, it could significantly develop undergraduate student writing skills. With more and more university faculty budgets becoming smaller, higher educational institutions are being influenced to become more creative in adopting more fiscally responsible academic projects, and seamless learning-focused PAL centers could be implemented in such a way to develop undergraduate student writing skills at little or no cost to universities. The research implications for this study offer a framework on how to better develop academic writing skills for undergraduate students.</i></p>
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INTRODUCTION

Writing has long been considered as one of the most important language production skills. However, they are challenging for both native English speakers and second language (L2) learners. Internal factors such as students' attitude towards writing skills and students background and external factors like teaching methodologies, content and learning materials are involved in writing skills (Muhammad, Habibullah & Syed, 2018; Chokwe, 2013). The best-case scenario

in teaching and learning academic writing can be found in Thailand where the Ministry of Education has regulated the minimum English level of undergraduate students to attain CEFR level of B1 (Common European Framework). According to the standard of CEFR, B1 learners' writing ability is expected to demonstrate good organization in their written compositions. The written text has to be connected and coherent with the use of a limited number of cohesive devices. Conversely, the overall students' present performance is ironically on the opposite side of that requirement from the Ministry of Education. Because of that, various educators in Thailand are questioning how this task can be achieved on a broad spectrum since passing this provision. A study of Thai EFL students' difficulties in academic writing reveals that students have problems when the writing task is at a high level and they rate grammar as the most problematic (Boonyarattanasoontorn, 2017). Studies (e.g., Noom-ura, 2013; Noopong, 2002) also report that two causes of the problem are the lack of students' language practice and the inadequate exposure to English outside the classroom. The existing evidence could be found when undergraduate students who were participants from Suwanarak and Phothongsunun's study (2009), as they attributed the failures in successful language learning to themselves that they made less effort in learning the language. Many cited studies from Suwanarak and Phothongsunun (2009) (e.g., Williams and Burden, 1999; Dodds, 1994; Whitley and Frieze, 1985) explaining the reasons of the learners' levels of language investment that the internal factors affecting students' learning are their motivation and attitudes. Meanwhile, the insufficiency in language exposure outside the classroom is highly rated as the current major problem. To alleviate the lack of engagement in the target language among those who want to attain a higher level of English, self-directed learning through the use of technology under the notion of seamless learning (SL) could be the answer. Students with a high level of motivation could obviously improve their learning achievements by using SL techniques with technology as it allows students to be exposed to the target language.

To promote self-directed learning, seamless learning (SL) could be a tool that alleviates the problem of insufficiency as it allows students to learn whenever they are curious and in various scenarios. The term is referred to continuous learning as "The word seamless suggests that what was once believed to be separate, distinct parts (e.g., in-class and out-of-class, academic and non-academic; curricular and co-curricular, or on-campus and off-campus experiences) are now of one piece, bound together so as to appear whole or continuous" (Wong & Looi, 2011: 2365). The concept of SL can be integrated into a peer-assisted learning (PAL) center in such a way to concentrate on the development of undergraduate English writing skills in Thailand.

The reason why PAL was chosen as an integral concept to be implemented in supporting students' writing is that it is suitable for self-study according to the advantages like acquiring authentic language inputs from interacting with others, fostering belonging in academic settings and significantly improving students' grades (Clemson University, 2020; Puranik, Patchan et al., 2017; Maheady, 1998). This quasi-experimental study utilized Rensing, Vierbuchen, Hillenbrand and Grünke's (2016) 6-step process where the participants of the study worked closely with their student peer-mentors (SPMs) in developing socio-cultural relationships by completing the following steps during the writing process: (1) idea generation, (2) drafting, (3) reading, (4) editing, (5) best copy, and (6) evaluating. Limited numbers of prior PAL studies

(e.g., Loan, 2017; Topping & Ehly, 2001) on EFL students lead to insufficient literature when exploring PAL in an ESL context. Thus, further investigation is needed on how PAL can be enhanced by utilizing SL. The objective of this study was to examine whether student involvement in a seamless learning-focused PAL center could help develop academic writing skills of undergraduate students in an international faculty at a private university in Thailand. Therefore, we hope to answer the following research question: *Did the English academic writing skills of participants (dependent variable) of a seamless learning-focused PAL center (independent variable) develop significantly more than the participants in the control group?*

LITERATURE REVIEW

This section first reviews how human interactions lead to students' learning which is supported by Zone of Proximal Development (ZPD) theory. Then, the review describes how Peer feedback (PF) is helpful to improve students' writing performance through peer-assisted learning (PAL).

Social constructivism

In an educational context, academic writing in particular, social constructivism views students' learning as active learning. That is, students discover the facts and knowledge through peer collaboration, problem-based instructions, or any learning involving interactions with others where teachers' roles are facilitators of the learning. For example, Denzin and Lincoln (2011) seek to understand how interactions and meaning making between participants and peer mentors lead to the development of academic writing skills. By peer mentors asking inductive open-ended questions, the participants can express their ideas, views, experiences, etc. towards the writing topic. These interactions and the questions help lead to success in academic writing (Denzin & Lincoln, 2011).

There are also a wide range of studies (McKinley, 2015; Abasi et al., 2006; Storch, 2005; Cotterall & Cohen, 2003) which incorporate social constructivism concepts in students' academic writing skills. For example, Cotterall and Cohen (2003) point out that students who receive writing scaffolding instructions by working with their peers and mentors have ownership of their writing and established an appropriate rhetorical context. Similarly, Storch (2005) argues that students need to work together with peers and teachers to gain a better understanding of the collaborative writing process. In addition, McKinley's (2015) and Abasi et al.'s (2006) studies reveal that interactions between students and peers have developed students' critical thinking. That is, students' awareness of identity construction leads to understanding their own ways of constructing social and academic arguments used in their own writing. Therefore, social constructivism is the best theory which practices students' critical thinking skills in writing because it helps students see other social realities where multiple social identities and realities are intersected (McKinley's, 2015; Abasi et al., 2006). According to these studies, it starts with the notion that students have limited knowledge pertaining to what they are supposed to initially perform and comprehend. Then, when they are supported by teachers and particularly peers, their writing tends to improve better. The range of writing skills development (Fani & Ghaemi, 2011) which students do not receive help or support until they are engaged in writing

activities through peer and teacher collaboration is called Zone of Proximal Development (ZPD). The next section explains more in detail on how social constructivism is connected to ZPD.

Zone of Proximal Development (ZPD) and scaffolding

Zone of proximal development (ZPD) was coined and developed by Vygotsky (1978), Soviet psychologist and social constructivist, who defined ZPD as *“the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers”* (p. 86). ZPD was supported by the term ‘Scaffolding’ (Reiser & Tabak, 2014) which consists of activities designed and provided by a competent adult or peer to help support a student’s learning.

What could be used as a scaffold can be seen from Fithriani’s (2019) recent study. It found that social interactions between students, their teacher feedback, and particularly, their peer feedback, had been proven successful in promoting students’ academic writing skills. That is, the study was conducted with seven students majoring in English education in a university. They went through four stages of essay writing and feedback. Right after stage 1 and 2, peer feedback was given. Then the teacher feedback was given in stage 3 before the students completed the writing on the stage 4 (last stage). Surprisingly, the results clearly showed that interactions between students and peers (stage 1 and 2) through written feedback activities helped develop students’ higher cognitive functions more than they did with teachers’ feedback. To be more specific, students tried to understand the feedback from peers and applied it in their writings. This can be seen from the evidence that students produced more self-revisions after peer feedback than after teacher feedback. This indicated that students felt more comfortable revising their writing after they interacted with their peers. This intellectual action enhanced students’ cognitive awareness of their own mental processes. This leads to self-control of their own writing by self-identifying mistakes and revising them without any help from others. These three stages of intellectual action, conscious awareness, and self-regulation are the importance of higher psychical processes within the ZPD.

The results did not only show students’ writing improvement from the peer and teacher feedback, but also encourage their critical reasoning skills, and promote learning autonomy. This study clearly shows important patterns of how ZPD and scaffolding are integrated. To be more specific, it shows that stages of peer feedback were designed to assist students move up to the higher range of ability. In our opinion, this is useful for teachers to allocate a section where students and peers can give each other’s writing feedback. Moving from ZPD and scaffolding to a specific method *peer feedback*, the following section explains how it helps a learner; especially, in a classroom English writing setting, perform better.

Peer Feedback (PF)

Peer feedback (PF) is a method where learners are working together to provide their writing feedback to each other such as strengths, weaknesses, or suggestions for improvements (Loan, 2017) and it has been successful in the ELS writing class (Rollinson, 2005). It is a scaffolding

strategy that helps learners learn and improve from their peers. The interactions where students and peer mentors start working together from beginning to end is a period where students are learning through scaffolding. Therefore, there are several factors and benefits which help improve learners' writing ability.

Interestingly, the first factor is being able to understand the peers' writing problems. Nelson and Schunn (2009) point out that peers who understand other peers' writing problems well tend to give honest feedback and this will result in improving student performance. Once peers understand their peers' problems, they need to ensure that the feedback should be informative, accurate, and constructive because it will be positively related to the writing improvement (Gielen, S., et al., 2010; Narciss & Huth, 2006). Most importantly, providing justification during the feedback session is essential (Webb & Mastergeorge, 2003). In short, awareness of peers' writing problems, informative, accurate, and constructive feedback, and justifications are important factors to improve peers' writing performance.

There are also several benefits of peer feedback. To be precise, PF promotes collaboration and communications among peer writers and readers (Fithriani, 2019; Villamil & De Guerrero, 1996). That is, PF engages the writers and the readers in critical dialogue trying to negotiate what needs to be revised or edited. If one disagrees, they have to justify their reasons and compromise with each other. In addition, Caulk (1994) argues that peer readers' comments and feedback are received immediately which helps peer writers to be able to revise accordingly and effectively. Further, peers have full authority to retain or reject comments resulting in the possession of their own work (Zamel, 1985). Moreover, peers have more time to provide comments and feedback than teachers do.

However, several studies also suggested teachers to be more careful when adopting the PF method. That is, first, time spent on giving feedback may be so much that it exhausts the peers (Mendonca & Johnson, 1994). Second, the peers may feel that their peers' English proficiency are not good enough to comment on their work, so they don't trust the peers' accuracy and quality of their comment (Zhang, 1995). Some peers' comments and feedback may not be helpful and tend to be more judgmental than teachers' (Leki, 1991). Nevertheless, Mangelsdorf and Schlumberger (1992) recommend that teachers' intervention for specific problems and pre-training for peers on how to provide feedback can resolve the problems of English inaccuracies, issues pertaining to trust and being judgmental.

Seamless Learning (SL)

The term 'Seamless learning' (SL) originated from American College Personnel Association which did not consider anything related to technology (Wong & Looi, 2011). That is, it was just a focus on students learning in and out of classrooms to create seamless learning for academic success (Kuh, 1996). Later, Chan et al. (2006) incorporated technology with learning where students were able to learn whenever they had questions in any formal and informal contexts. To date, Wong and Looi (2011) argue that seamless learning consists of the following 10 characteristics:

1. Encompassing formal and informal learning
2. Encompassing personalized and social learning
3. Across time
4. Across locations
5. Ubiquitous knowledge access (a combination of context-aware learning, augmented reality learning, and ubiquitous Internet access)
6. Encompassing physical and digital worlds
7. Combined use of multiple device types (including “stable” technologies such as desktop computers, interactive whiteboards)
8. Seamless switching between multiple learning tasks (such as data collection + analysis + communication)
9. Knowledge synthesis (a combination of prior + new knowledge, multiple levels of thinking skills, and multi-disciplinary learning)
10. Encompassing multiple pedagogical or learning activity models (p. 2367).

Several studies have incorporated a notion of SL into their customized teaching approaches and found interesting results. For example, Hwang and Tsai (2011) conducted ‘Inquiry-based Seamless Learning Project in Taiwan’ to find out how mobile learning and assessment strategies had an impact on students’ in-field inquiry activities on a four-year longitudinal project. Each student was provided a mobile phone, a telescope, and a digital camera, for data collection in the field, then came back, and prepared for the presentation. After a few rounds of interviews with the students, the results indicated that this technique improved students’ learning achievement, motivation and attitudes. Similarly, SL was adapted in ‘The Personal Inquiry (PI) project in the United Kingdom’ (Wong & Sharples, 2013) using notebooks and smartphones as the main tools for students aged 11-14 to self-discover themselves and their world. Through a process of scientific inquiry, students acting as scientists used the nQuire software installed on the notebooks and mobiles to conduct mini research online under a teacher’s close supervision. The results indicated the seamless learning took place during interactive inquiries between students and teachers. Interestingly, SL was also applied to the Geometry mobile (GEM) project in Sweden (Sollervall et al., 2011) by designing in-and-outdoor activities related to geometry. The results suggested that students were more active in learning this subject both indoors and outdoors. From these studies, it is obvious that different locations play important roles for students to learn. In addition, SL can stimulate students’ inquiry skills. That is, students are able to look for answers to any questions they are having or any questions which are not making sense. Students in turn are practicing their critical thinking skills. Undeniably, including physical and digital words such as having students work outside the classrooms with mobile phones, notebooks with the nQuire software can help enhance students’ learning. Based on the above, it can be concluded that SL can turn students from passive to active learners who are nurturing autonomous learners (Anastopoulou et al., 2012). If continuously practiced, this process gradually transform learners to be self-directed to be able to explore borderless learning anytime and anywhere (Wong et al., 2012).

While SL offers several benefits as the studies above attest, teachers or educators should closely observe how students interact with learning content and peers through a variety of technologies and location (Wong & Looi, 2011). That is, some students may be having problems with their

device or software and have no one to turn to when learning takes place outdoors. Another concern is that looking for a right device and software which matches teachers' lesson plans and students' learning needs is also challenging (Stahl, 2002), so teachers should be able to adapt to whatever best fits with students' needs.

SL tends to have patterns of students working together and supporting each other when conducting activities which are formal and informal, personalized, indoor and outdoor, or according to the 10 characteristics mentioned above. Corroboration and support among students are essential in active learning and this can be called 'Peer Assisted Learning' (PAL), so the following section explains PAL in more detail.

Peer Assisted Learning (PAL)

Topping and Ehly (2001) define peer assisted learning (PAL) as *'the development of knowledge and skill through explicit active helping and supporting among status equals or matched companions, with the deliberate intent to help others with their learning goals'* (p. 114). Several studies implementing PAL suggested good results increasing students learning outcomes. For example, Fuchs, Fuchs, Mathes, and Simmons (1997) adapted PAL in their tutoring reading program for three learner types: Low achievers with and without disabilities and average achievers and the findings revealed students in PAL experimental groups showed more progress than the control groups. PAL is also implemented in research related to medical students. Usman and Jamil (2019)'s study results suggested that both students and mentors were satisfied with each other's teaching abilities. Therefore, PAL is beneficial because it helps each other to learn, ensures that learners are on the same page of teachers' lecture and activity instructions, and creates equal opportunities for students to questions and justify their answers. However, those applying PAL should be concerned about its limitations. That is, it may not work with students with disabilities. According to Fuchs et al., (2002), more than 50% of disabled students did not respond well to PAL.

According to the literature reviewed above, there are common patterns which are beneficial for this study. First, there must be interactions among students trying to negotiate critical dialogue let alone increasing critical thinking skills. Second, teachers are overseeing and serving students' performance and intervene when necessary. Then, willingness to learn, understanding, and assisting each other obviously display a great collaboration among students. As a result, students are becoming an independent, yet collaborative learner, who are always striving in their pursuit of knowledge when in doubt or necessary. Given all these benefits, the researchers believe that the seamless learning (SL) approach and the peer-assisted learning (PAL) method is a great combination to help develop undergraduate academic English writing skills in Thailand. Therefore, this present study applies SL and PAL methods to examine whether student involvement in a seamless learning-focused PAL center could help develop academic writing skills of undergraduate students in an international faculty at a private university in Thailand. This private university is a context where our present study is situated among other studies reviewed above.

Objective

This study had the following research objective:

To examine whether student involvement in a 10-week study in a seamless learning-focused PAL center could help develop academic writing skills of undergraduate students in an international faculty at a private university in Thailand.

Hypotheses

From the benefits of developing student academic writing skills mentioned in the literature review, the hypotheses for this study are:

H₀: There will not be a significant difference between the mean of the writing post-treatment scores between the experimental and control groups.

H₁: There will be a significant difference between the mean of the writing post-treatment scores between the experimental and control groups.

METHOD

Participants

The study was conducted in an international faculty at a large private university in Pathum Thani, Thailand. The participants' ages ranged from 18-19 years old with 57.14% identifying as female and 42.86% identifying as male. They were 35 first and second-year students enrolled in an intermediate English reading and writing course with a Common European Framework of Reference for Languages (CEFR) level of B1 or equivalent. Both groups, who registered for separate sections of the same course that were taught by two different native-English teachers, were recruited for this quasi-experimental study. The study also included 48 SPMs registered in an advanced English course with a CEFR level of B2 or equivalent.

Procedures

The following sections clearly outline in detail the various procedures involved in this academic study.

1. Ethical approval

Prior to any research taking place, the researchers first obtained ethical approval to conduct research at the university where the study took place.

2. Group selections

The two groups were regarded as *homogeneous*, and one section was assigned as a control

group and the other the experimental one. Both the control group and the experimental group were enrolled in the same course and with the same course curriculum (in terms of traditional classroom teaching). The only difference, however, was that the experimental group received treatment in the PAL center, where the control group did not.

3. Writing pre-test

The two groups then completed a sample International English Language Testing System (IELTS) writing pre-test (task 2). The study content for the two groups of students was identical for the formal learning environment (classroom); the only difference was that the experimental group was tasked with attending an informal learning environment (a seamless learning-focused PAL center) for a 10-week program.

4. SPM training

Prior to the treatment beginning, every SPM participated in a 3-hour workshop on how to give effective feedback on a typical IELTS-based essay that would attain a B2 (5.5) level or higher by utilizing Google Classroom as the element that connects the participants' formal and informal learning environment. The SPMs were trained in the emerging field of SL, but the researchers emphasized only 8 of the 10 tenets of SL (1) Encompassing formal and informal learning; (2) Encompassing personalized and social learning; (3) Ubiquitous knowledge access (a combination of context-aware learning, augmented reality learning, and ubiquitous Internet access); (4) Encompassing physical and digital worlds; (5) Combined use of multiple device types (including "stable" technologies such as desktop computers, interactive whiteboards); (6) Seamless switching between multiple learning tasks (such as data collection + analysis + communication); (7) Knowledge synthesis (a combination of prior + new knowledge, multiple levels of thinking skills, and multi-disciplinary learning); and (8) Encompassing multiple pedagogical or learning activity models. (This training program was administered by the researchers in conjunction with the student management team of the PAL center).

5. 10-Week treatment stage

During the 10-week treatment stage, each participant was paired up with specific SPMs for the duration of the study, and for each session both the participants and SPMs went through the previously mentioned 6-step writing process while utilizing Google Classroom. This 6-step writing process encompassed the following stages: (1) idea generation, (2) drafting, (3) reading, (4) editing, (5) best copy, and (6) evaluating. Google Classroom acted as the *virtual land bridge* synthesizing both the formal and informal learning environments that make up the emerging field of seamless learning. This process was repeated until the SPMs believed the participant's writing was at a satisfactory level (CEFR B2 level). Each participant received a minimum of two rounds of peer feedback. Each weekly session at the seamless learning-focused PAL center would last approximately 1 hour but may be longer or shorter depending on how long the students take in the completion of the 6-step writing process.

6. Writing post-test

After the completion of the 10-week program, both groups were required to complete a sample IELTS writing post-test (Task 2). This post-test was not exactly the same as the writing pre-test, but similar in topic. In evaluating the participants' sample IELTS writing tests, the official IELTS TASK 2 Writing band descriptors (public version) (British Council, n.d.) was utilized. As per the IELTS guidelines, all of the participants' writing was rated on a scale from 0 to 9.

7. Semi-structured interview

Following the writing post-test, semi-structured interviews were conducted as a way for getting qualitative data for the data analysis. The semi-structured interviews will be covered in more detail in the following *Research Instruments* section.

Research instruments

The instrument used to collect data in this study consisted of the following items: (a) sample IELTS writing pre-test and post-test (task 2), and (b) semi-structured interviews.

1. Writing pre-test and Writing post-test

The reason why a sample IELTS Task 2 writing test was utilized is that in the faculty where this research took place students need to pass an IELTS-based Task 2 test with an English CEFR level of B2 (or higher) administered by an outside English language expert. Therefore, by focusing on an IELTS-based test for this study, it will better prepare the participants for their English exit exam (which is a prerequisite for graduation).

The topic for the sample IELTS writing pre-test was summer vacation and the topic for the sample IELTS writing post-test was winter vacation. For both selections, the participants were expected to describe in detail various travel destinations. As previously mentioned, the writing was based on the official public version of the IELTS TASK 2 Writing band descriptors and was based on a 0 to 9 scale.

The IELTS Task 2 Writing is quite similar to a typical academic essay, whereas both have an introductory paragraph, body paragraphs and a concluding paragraph. Where they differ, however, is that an IELTS Task 2 Writing task has shortened introductory and concluding paragraphs but both have fully developed body paragraphs, and this was fully explained to the participants of this study in the formal classroom setting by their teachers. The four main components which make up a typical IELTS Task 2 Writing Test (Task 2) are the following: (1) task achievement; (2) coherence and cohesion; (3) lexical resource; and (4) grammar (British Council, n.d.). The IELTS Task 2 Writing Test is given a score of 0 to 9, and this score is called a band descriptor, which will gauge an individual's writing skills.

2. Semi-structured interview

Utilizing semi-structured interviews was favored over classroom observations, based on the fact that observations may have interfered with the student-SPM relationship, and thus, raising the possibility of bias. The main objective in utilizing semi-structured interviews was in order to obtain data not readily available from the writing pre-tests and post-tests. Therefore, semi-structured interviews were conducted. 14 participants were randomly selected (through a lottery system) to participate in private semi-structured interviews. Ten were students who came to the PAL center to receive help with their English writing skills, and the other four were SPMs. In order to properly answer the research questions, the researchers designed it so that there were more participants in the semi-structured interviews than SPMs. The researchers, however, also wanted to get feedback from SPMs who were actually in charge of the daily operations of the PAL center. Therefore, it was decided to have a minimum of 10 participants in the semi-structured interviews and to have (at most) half as many SPMs (in the semi-structured interviews). The difference in the number of students and SPMs in the focus group reflected the total distribution of the participants of the study: 35 students (an aggregate of the control and experimental groups) and 48 SPMs.

The semi-structured interview questions were divided as follows: (a) analysis of the participants' feedback to the university's PAL center, (b) benefits of the PAL center, (c) disadvantages of the PAL center, (d) potential improvements that could affect the PAL center, and (e) analysis of the participants' recommendations for the PAL center. The following five questions were asked to those chosen for the semi-structured interviews: (1) Please explain your experiences at this peer-assisted learning (PAL) center; (2) What was one benefit of this peer-assisted learning (PAL) center? (3) What was one disadvantage of this peer-assisted learning (PAL) center? (4) If you could change one thing about this peer-assisted learning (PAL) center, what would it be? and (5) Would you recommend this peer-assisted learning (PAL) center to a friend? The participant focus group responses were video-recorded, and the information was transcribed later. These results were kept confidential and only the researchers have access to them.

RESULTS

1. Writing performance

In an effort to increase reliability in the evaluations of the sample IELTS writing pre-tests and post-tests interrater reliability was utilized. Interrater reliability is in reference to the uniformity of a particular evaluation by two or more experts (Sage Publications, Inc, & Lavrakas, 2008). One of the raters is a researcher for this study and the other rater was the actual teacher of the course that the participants were enrolled in. Both of the raters have had extensive experience in being interraters in higher educational academic writing.

The IELTS Writing pre-tests and post-tests were analyzed using the Statistical Package for Social Science (SPSS). The results revealed that the IELTS pre-test ($p = .778$) scores were not significantly different. This finding indicated that both the control and the experimental groups had comparable English writing skills at the study's outset.

Subsequently, the quantitative data from the sample IELTS writing post-tests were analyzed using SPSS. The results are shown in Table 1. In conducting the Independent Samples T-Test, the results indicate that there was significant difference in performance between the control and experimental groups, $t(22) = .000$, $p = .000$. That is, the average sample IELTS writing (Task 2) post-test scores for the experimental group ($M = 6.147$, $SD = .5800$) was significantly higher than that of the control group ($M = 4.000$, $SD = 1.5435$). The control group displayed a mean score lower than the experimental group; the difference was significant at less than the .001 level. This indicated that the experimental group's academic English writing skills were superior to those of the control group.

Table 1
Development of participant writing skills

Group	N	Mean	Std. Deviation	p-value
1 (control)	18	4.000	1.5435	.000
2 (experimental)	17	6.147	.5800	

However, based on the fact that there was a small sample size (i.e. under 30 participants for each group), the researchers needed to verify that the data met the assumptions in terms of normality and homogeneity of variances. As can be seen in Table 2 (below), a Kolmogorov-Smirnov Normality Test (K-S Test) was conducted. The K-S test can be utilized to provide “a means of testing whether a set of observations are from some completely specified continuous distribution” as “it can be used with small sample sizes” (Lilliefors, 1967, p. 399), and K-S test functioned well in this study to let the researchers to gauge whether the writing test scores were distributed normally.

Table 2
Tests of normality

	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig.
POST_TEST	.213	35	.000

Based on the previously mentioned definition of the K-S Test, the results displayed a significant value for the post-tests at less than .001, which means that it was statistically significant. So, there is a statistically significant difference between the post-test values and the normal distribution. According to these results, the null hypothesis would be rejected, and the researchers presume the post-test scores were not normally distributed.

2. The participants' perception on PAL

The responses to the semi-structured interviews are presented under the headings highlighted in the subsequent sections.

2.1 Feedback on appropriateness

After a critical analysis of the feedback from the semi-structured interviews regarding the PAL center, three principal areas were raised: (a) development of socio-cultural relationships, (b) development of English language skills, and (c) recommending the PAL center to others.

Of the participants in the focus group, 71% stated that as a result of their participation in this 10-week study, they were able to develop socio-cultural relationships. That is, the participants of the study were all first-year students aged 18-19 years old, and for some, this is the first time they have been away from home. As one participant in the experimental group stated, *"I met many interesting students in the PAL center. Although our English was not good, we all learn together and grow together."* Not only away from home, but for many, this was the first time they have lived in a foreign country, so by participating in the PAL center study, it was a great way for them to develop friendships with students in a multicultural environment. In doing so, they were able to develop friendships both inside and outside of the classroom.

The second topic discussed by the participants of the semi-structured interviews was the development of their English language skills, as 50% stated that they believed their English skills had developed; particularly, in writing. For example, 50% of the participants in the experimental group in the semi-structured interviews stated that they believed their English academic writing skills had developed, based on the practice they got in the PAL center, and also because of the effective peer feedback they received. As one participant in the experimental group stated:

The most thing I have learned from the PAL center is writing and grammar because even though I think I have known most of the grammar in reality I didn't know much of the things (that I learned) from the center, and I have improved my writing a lot because it is like consistently writing, and I didn't expect that much, but at the end of the sessions I have learned a lot of things in the writing sections.

Beyond writing skills, one participant stated that by building relationships with various SPMs, they could improve their pronunciation and comprehend various English dialects. As one participant in the experimental group stated, *"The most important thing I learned from this class is I got a new experience about sharing my education and background I have learned before with my mentor . . . I can improve my grammar and pronunciation."* The student management team at the PAL center was composed of students from seven different countries, which enabled students to get accustomed to various versions of the English language. The final topic that was discussed in the semi-structured interviews focus was whether they would recommend the PAL center to their friends or classmates. 100% of them stated that they would, in fact, recommend the PAL center to others. As one participant of the experimental group stated:

I would like to recommend for my friends to join the program because if we want to practice English or try English, if we want to join an English program outside of the university like it is very expensive, right? So here, we can join free, for the university

students, it is a good opportunity for them to practice here English. And when we mention about the peer mentor program, some of them are really good. One mentor, he is from Mynamar, Civil Engineering. Even though he is not a scholarship student, he is always here always helps the students and always explains his experiences and recommends how to improve English skills by listening to English music or watching movies. If we have a chance to meet this type of peer mentor, we can improve our English skills. Also, we can improve our social skills. And I really want to recommend my students, my friends to join this program.

There were various reasons for this, but the predominant reason (36%) was the effective feedback they received from the SPMs. They believed that the SPMs were a great source to develop their own English skills. This is in congruence with Kunwongse's (2013) assertion of the effectiveness of peer feedback. Another reason that was stated for their recommending the PAL center to others was that 14% said the PAL center was a great way to adapt to their new university life. As stated earlier, the PAL center was a great place to develop socio-cultural relationships in building relationships with their classmates both inside and outside of the classroom.

As previously stated, 50% of the respondents from the semi-structured interview said that they believed their English language skills had improved due to their collaborative participation in this 10-week study, which is in line with social constructivism in that the participants were able to express their views and experiences in a collective environment. Besides the writing skills which they had acquired, 71% of the respondents stated that they believed their English speaking and listening had improved in the duration of this study. This is not surprising as many had stated that they had developed socio-cultural relationships with their fellow classmates and SPMs as a result of their participation in this 10-week study.

2.2 Disadvantages of the PAL center

Although the feedback about their involvement in this 10-week PAL study was overwhelmingly positive, not all the comments were positive. The disadvantage that was stated the most during the semi-structured interview by both the participants in the experimental group and the SPMs had to deal with the quality of feedback that was received by some of the SPMs. Whereas the participants stated that some SPMs gave effective feedback, 50% of the participants in the semi-structured interviews stated that some of their SPMs were either lacking necessary skills to fulfill their duties or were not interested in fulfilling their duties. This topic is addressed in more detail in the next section: *Improvements Sought by Participants*.

2.3 Improvements sought by participants

In the semi-structured interviews, 21% of the respondents stated that they would want to change the time and duration they were expected to attend the PAL center, as some participants did not always attend the PAL center during their designated times. One student stated that the time length was too long and would rather have some breaks in between each activity in the informal learning environment otherwise they would be too tired to participate in writing

activities and, in turn, it would affect their writing performance. Two other respondents stated many times their lunch time was limited due to their participation in the PAL center. As in the previous section (*Disadvantages of the PAL Center*), this directly correlates to SL and the ability to gain knowledge irrespective of time and location, so that participants will be able adjust the time in which they study in the PAL center. Beyond that, as previously stated, 50% of the participants in the semi-structured interviews were not satisfied with the peer feedback they received and wished their SPMs were higher qualified.

2.4 Participants recommendations for the PAL center

As stated earlier, 100% of the participants of the semi-structured interview were clear in asserting that they would recommend the PAL center to their fellow classmates. All of the participants in the study recognized the importance of the PAL center, but what was even more striking was how the SPMs thought of the effectiveness. One participant of the semi-structured interview stated that as a SPM, she enjoyed her time so much that she recommended the center to three other friends. This, in turn, only made the PAL center even more productive as three more SPMs were able to help develop the English language skills in their fellow classmates. The effectiveness of the PAL center is in conjunction with the underlying foundation of PAL, as previously mentioned PAL learners work collectively with their peers to develop their weaknesses, and wherever possible, to further develop their strengths in areas they wish to improve.

DISCUSSION

In answering the research question that was presented in the introduction, this study came to the conclusion that English writing skills can develop significantly within the framework of a seamless learning-focused PAL center. Given those facts, however, due to the small sample size it was found that the results (of the Kolmogorov-Smirnov test) of the post-test scores were not normally distributed. This aforementioned finding, pertaining to the development of English writing skills in a PAL center, is consistent with a related study where writing skills were developed as a result of participating in a PAL scheme (Niandari & Syahrudin, 2012). In addition, in a separate study, the researchers came to the conclusion that PAL schemes can be a compelling pedagogical strategy for developing writing efficiency (Nurhidayat, 2016).

The PAL center synthesized both formal and informal learning environments in successfully significantly developing the writing skills of this study's participants. Instead of having two separate learning environments, when viewed at a macro level, the theoretical framework of this study achieved its goals and went further than other comparable studies by establishing technology as the *virtual land bridge* that expanded formal and informal learning environments into essentially one all-encompassing learning environment with two separate physical locations. This is what builds the foundation of the merging field of SL in that there is a formal learning environment and an informal learning environment, which is connected through the utilization of technology.

There is an ever-expanding interest in innovative educational approaches, especially those that can be utilized in various learning environments (Kohen-Vacs, Mildrad & Jansen, 2019), and in creating this *virtual land bridge* in the PAL center, the researchers sought to utilize the emerging field of SL, which encompasses both formal and informal learning environments with technology being the synthesizing element. In this study, the *virtual land bridge* was Google Classroom, and by utilizing this technology, it allowed the study's participants, SPMs and teachers to know in real-time the writing development skills of the students who were involved in the PAL center. Beyond that, the teachers also had the ability to view all the comments of each SPM.

In creating a PAL scheme, one of the key elements that are needed in order to create a seamless transition between formal and informal learning environments is adopting social constructivism into its theoretical framework. Social constructivism allows teachers to take a different role in the educational process from being solely viewed as educators into a role as a facilitator. This is especially important in informal learning environments where students can take a lead-role in their knowledge acquisition process and have the ability to take knowledge they already possess and integrate it with newly acquired knowledge and formulate it into a higher understanding of a particular topic.

In any PAL scheme, the one element that is the most vital is feedback. While teacher feedback is the most sought-after form of feedback, when not available, the next best form of feedback is PF. This is where students gain a greater understanding of a topic from their peers. The findings of this study indicate that PF is a powerful tool in helping students to develop their English writing skills. Beyond that, PF could also be a way to develop socio-cultural relationships in any PAL schemes. As the participants in this study were first-year or second-year university students, the participants were able to develop relationships both inside and outside of the classroom with their peers. This can be very important for young university students who are in a new learning environment in which they are learning English as a second or sometimes third language.

As previously mentioned, ZPD is where one student's zone or area of learning varies from that of other students. Within the confines of a PAL center, a student can understand their abilities and inabilities, and by them understanding their deficiencies students can learn to extend their learning potential. This was evident in this study, where the students in the experimental group significantly developed their English writing skills.

Beyond the scope of this study, there may be other potential advantages to a seamless learning-focused PAL center. In a separate study, Jauregui, et al. (2018) came to the conclusion that PAL advocates that students take an active role in the learning process and establish long-term critical thinking skills. The researchers of this study agree with this line of reasoning as the participants (of this study) had to work closely with their SPM in completing each of the 10 weekly writing tasks in the PAL center. Getting two rounds of peer feedback at each stage of the 6-step writing process, all participants would unavoidably have the necessary skills to develop academic writing skills, which are necessary in higher education.

RECOMMENDATIONS

The most notable facet of this study that needs to be improved is the quality of the SPMs. The SPMs need to be screened better in terms of their English language proficiency and eagerness to provide mentoring services to their fellow classmates. Even though all SPMs participated in a comprehensive training program prior to their involvement in this study, it is clear that there needs to be alterations made to their training.

Beyond the improvements that are needed with the SPMs, when organizing the timetable for the SPMs, the researchers endeavored to generate a schedule that was equally balanced with the same number of participants and SPMs for each time slot. Despite all our effort, during the second half of the study, a significant number of the participants simply disregarded the detailed timetable and had the tendency of coming to the PAL center collectively with their new-found friends. The positive side of this indicated that by participating in a PAL center it allowed students to develop socio-cultural relationships, but the drawback was that at certain times the PAL center's timetable ended up being somewhat lopsided. Given these facts, the researchers highly recommend embracing all 10 elements of SL: (1) Encompassing formal and informal learning; (2) Encompassing personalized and social learning; (3) Across time; (4) Across locations; (5) Ubiquitous knowledge access (a combination of context-aware learning, augmented reality learning, and ubiquitous Internet access); (6) Encompassing physical and digital worlds; (7) Combined use of multiple device types (including "stable" technologies such as desktop computers, interactive whiteboards); (8) Seamless switching between multiple learning tasks (such as data collection + analysis + communication); (9) Knowledge synthesis (a combination of prior + new knowledge, multiple levels of thinking skills, and multi-disciplinary learning); and (10) Encompassing multiple pedagogical or learning activity models. Regretfully, the integral parts of across time and location of SL were neglected, as the researchers believed it was paramount for participants and SPMs to develop face-to-face relationships. In retrospect, this was a major miscalculation, as all 10 elements of SL should be embraced equally. To correct this miscalculation, in future studies, it is highly recommended to have on-site mentoring at PAL centers, but it is also paramount to embrace a digital learning ecosystem by offering online mentoring services as well.

In integrating SL with the PAL center in this study, the researchers strived to follow the 10 dimensions of SL outlined by Wong and Looi (2011) in the *Review of Literature* section. However, two dimensions that were inadvertently neglected by the researchers were dimensions #3: *time* and #4: *across locations*. These entail students being able to learn in any location. Believing that students needed that direct interaction with their SPMs, the researchers stressed the need for all students to build relationships with their mentors inside of the PAL center. Reflecting on this requirement and taking into account how COVID-19 has altered the role of education in today's society, the researchers of this study now emphasize it is time to embrace dimension #3 and #4 and allowing for students to either receive their PF in-person in the PAL center, or remotely via various *virtual land bridges* (i.e., Facebook Messenger, Zoom, YouTube, Microsoft Teams, etc.). In this scenario all the SPMs will be required to be in the PAL center during their designated times, but the students will have the option on how and when they will receive their PF.

LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

The findings of the study were in reference to a PAL center being used in an international faculty at a large university in Thailand, and some limitations need to be recognized. Beginning with how the schedule was arranged for the PAL center, as it was set up in a way for there to be a 1:1 ratio for participants and SPMs (wherever possible). Another limitation has to deal with the number of students involved in this study, as there were only 18 students in the control group and 17 students in the experimental group, with another 48 upperclassmen acting as SPMs. In future studies, there needs to be at least 30 students in each control group and experimental group, respectively.

CONCLUSION

Due to an array of other international factors, more and more universities and their faculties are in search of ways to lower their overall expenses without compromising their educational ideals. Given these facts, teachers and administrators are seeking groundbreaking pedagogies, procedures and practices that are in line with the expectations of their students. In order to compete with universities that have the core of their students studying online, many universities are looking for ways to implement their own online strategies. The findings of this study emphasize the advantages of creating a seamless learning-focused PAL center at universities, and in doing so, this will allow for the world of academia to seamlessly create a *virtual land bridge* between formal and informal learning environments.

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