

Entering into the Scientific Community: Problematizing Science Postgraduate Students' Negotiation with the Demands of Writing a Conference Paper in English

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Abstract

In the past two decades, a great deal of attention has been given to discipline-specific writing in the literature on teaching English for Specific Purposes. This study reports on Thai science students' experiences in writing a conference paper in English. Situated in an interpretive, qualitative research design, the study implements a theoretical framework drawing on the notions of legitimate peripheral participation (Lave & Wenger, 1991) and the social perspectives of second/foreign language writing (Casanave, 2002; Huang, 2010; Leki, 2006; Li & Casanave, 2008). The participants of this study were 21 master's degree students from science disciplines in one university in Thailand. Data were derived from a series of semi-structured interviews and collaborative conversations with the participants. The collected data were analyzed qualitatively by identifying emerging themes. The findings revealed that the participants put a great deal of effort into preparing themselves to tackle the perceived linguistic demands of conference paper writing. Many students however perceived that their preparation, to a large extent, was not satisfactory. The findings also unfolded that during the writing-up and revising stages, the participants engaged in different literate activities of their communities of practice. This study articulates the various needs in understanding disciplinary writing practices as socially constructed in a local, immediate milieu. The study also provides EAP practitioners with pedagogical implications for planning, preparing, and delivering writing support for science postgraduate students.

Keywords: disciplinary writing, EAP, EFL students, writing challenges

การเข้าสู่ชุมชนนักวิทยาศาสตร์: การศึกษาประเด็นปัญหาเกี่ยวกับ การเขียนบทความสำหรับสัมมนาวิชาการเป็นภาษาอังกฤษ ของนักศึกษาระดับบัณฑิตศึกษาศาสาวิชาวิทยาศาสตร์

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บทคัดย่อ

ในช่วงสองทศวรรษที่ผ่านมา การเขียนเฉพาะศาสตร์ได้รับความสนใจอย่างมากจากการศึกษาด้านการสอนภาษาอังกฤษเพื่อจุดมุ่งหมายเฉพาะ งานวิจัยนี้ศึกษาประสบการณ์ของนักศึกษาศาสาวิชาวิทยาศาสตร์เกี่ยวกับการเขียนบทความสำหรับสัมมนาวิชาการเป็นภาษาอังกฤษ รูปแบบงานวิจัยเป็นงานวิจัยเชิงคุณภาพและตีความ โดยใช้กรอบทฤษฎีการมีส่วนร่วมจากรอบนอกอย่างชอบธรรม (Lave & Wenger, 1991) และการเขียนภาษาที่สอง/ภาษาต่างประเทศจากมุมมองทางสังคม (Casanave, 2002; Huang, 2010; Leki, 2006; Li & Casanave, 2008) โดยทำการศึกษาจากนักศึกษาระดับมหาบัณฑิตจำนวน 21 คน ที่ศึกษาในสาขาต่างๆด้านวิทยาศาสตร์จากมหาวิทยาลัยแห่งหนึ่งในประเทศไทย เก็บรวบรวมข้อมูลสำหรับงานวิจัยโดยการสัมภาษณ์กึ่งโครงสร้างและการสนทนาในบริบทแบบไม่เป็นทางการ และวิเคราะห์ข้อมูลวิจัยโดยวิธีเชิงคุณภาพโดยการระบุและวิเคราะห์ประเด็นหลักที่พบ ผลการวิจัยแสดงให้เห็นว่านักศึกษาระดับมหาบัณฑิตสาขาวิชาวิทยาศาสตร์ใช้ความพยายามอย่างสูงในการเตรียมตัวเพื่อให้ตนมีความพร้อมที่จะรับมือกับการเขียนบทความสำหรับงานสัมมนาวิชาการ ซึ่งต้องใช้ความสามารถด้านภาษาอย่างสูง อย่างไรก็ตาม มีนักศึกษาจำนวนมากมองว่าการเตรียมตัวของตนส่วนใหญ่แล้วไม่เป็นที่น่าพึงพอใจ ผลการวิจัยยังพบว่าในระหว่างการเขียนและการแก้ไขต้นฉบับบทความ นักศึกษาได้มีปฏิสัมพันธ์เชิงการเขียนในรูปแบบต่างๆในชุมชนนักปฏิบัติของตน งานวิจัยนี้ได้แสดงให้เห็นถึงความจำเป็นที่ต้องมีความรู้ความเข้าใจเกี่ยวกับการเขียนภาษาอังกฤษเฉพาะสาขาจากมุมมองทางสังคมของบริบทการเขียนในระดับสังคมนักปฏิบัติ รวมทั้งได้เสนอแนะแนวทางแก่อาจารย์ที่สอนภาษาอังกฤษเพื่อจุดมุ่งหมายทางวิชาการ ในด้านการวางแผน เตรียมตัว และการปฏิบัติการสอนและการให้ความช่วยเหลือด้านการเขียนแก่นักศึกษาระดับบัณฑิตศึกษาศาสาวิชาวิทยาศาสตร์

คำสำคัญ: การเขียนเฉพาะศาสตร์ ภาษาอังกฤษเพื่อจุดประสงค์ทางวิชาการ นักเรียนที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ ปัญหาการเขียน

Introduction

Postgraduate education in the disciplines of science differs from country to country and from university to university. In a university in Thailand, usually both master's and doctoral degree programs in science are research-based and on a full-time basis. The students are initially required to undertake coursework, followed by writing a thesis/dissertation based upon their research projects as well as attending an oral thesis/dissertation defense. Prior to leaving their postgraduate programs, it is a common practice for the students to attend an academic conference and deliver an oral or poster presentation based upon their ongoing research project. This kind of academic activity can serve as a credential that the students are capable of communicating their constructed knowledge to other scientists in their field. It could also be considered as representative of the students' efforts in gaining legitimate peripheral participation in their disciplinary communities of practice (Wenger, 1998).

In the disciplines of science, when ones apply for conference participation as presenters, they are usually required to submit a short conference paper, which will be later published in the conference proceedings. Even though the conference may be at the national level and held in Thailand, where Thai can be used as a medium for delivering a presentation, it is a conference paper in English which is usually required by conference organizing committee. This disciplinary practice of the scientific community may pose certain writing challenges to postgraduate students who study in a university where Thai is used as a medium of instruction. Hyland (2002, 2006) and Huang (2010) have pedagogically argued that English for Academic Purposes (EAP) teachers are responsible for equipping students with literacy practices appropriate to the students' disciplinary communities of practice. Should EAP teachers want to help these science students to prepare to write their conference paper successfully, they should have a profound

understanding of the students' writing and literacy experiences in dealing with the production of the papers.

L2 researchers interested in disciplinary writing have articulated the needs to insightfully understand the writing experiences of L2 students as they engage in different writing tasks. On one level, studies on L2 writing (e.g. Cho, 2004; Ho, 2017; Hu, 2000; Huang, 2010; Li, 2007; Li & Flowerdew, 2007; Yui, 2009) have portrayed a range of writing challenges that L2 students had encountered when writing a course assignment, a research proposal, an academic paper for scholarly publication, and a thesis/dissertation. The results have been resonated with, for example, the students' lack of control over writing, due to their limited English proficiency, the inadequate language support offered by the university, and their inability to establish a good working relationship with their mentors. On another level, the literature has firmly informed that the students' writing practices varied from one context to another, corroborating the social perspectives of academic writing in that the local, immediate, interactive factors had profound influences on L2 writers' experiences (Bardi, 2015; Belcher, 1994; Casanave, 2002, 2004; Huang, 2010; Jenkins, 2011). Despite a growing body of studies investigating L2 students' engagement in different writing tasks, it seems that most of them were conducted in English-medium universities in Anglophone countries. The writing contexts of those studies are clearly different from the writing contexts in Thai-medium universities. There is also another niche in the literature. That is, it seems that no research has thus far explicated how L2 students in the disciplines of science, particularly those studying in an EFL context, make use of different literacy activities in completing their conference paper. The lack of research on this unexplored writing genre in the field of L2 academic writing raises the intriguing question of how postgraduate students in the disciplines of science in a Thai university negotiate the demands of writing their conference paper in English.

Given the writing context and a lack of literature on writing a conference paper in English, this study sets out to delve into how postgraduate students in the Faculty of Science at a public university in Thailand negotiate the linguistic demands of writing their conference paper. It is worth noting that the term ‘negotiate,’ as particularly used in this study, is intended to connote more than an interest in capturing the students’ writing practices during the writing-up phase. Rather, the term is extended to cover how the students linguistically prepare themselves, construct their own writing context, manipulate available linguistic resources and deal with multi-dimensional engagement in different literacy practices of their scientific community of practice. The study also enquires into the students’ perceived needs in the institutional provision with reference to disciplinary writing support. This study, therefore, formulates the following research questions:

1. How do the students prepare themselves, with the confine of linguistic resources available in their writing context, to cope with the perceived demands of writing a conference paper in English?
2. How do the students engage in different academic literacy practices in writing their conference paper during the writing-up phase?
3. What kinds of writing support do the students perceive as effective in helping prospective postgraduate students in science disciplines to complete a conference paper?

Theoretical Framework of the Study

This study is theoretically guided by social perspectives of academic writing in L2. Casanave (2002), Casanave (2018); Ho (2017), Leki (2006), Li and Casanave (2008) observe that L2 studies in the past few decades have shifted away from the perspective of language as autonomous, cognitive activity to theoretical perspectives of how language learning is embedded in, constructs and reflects its local and dynamic context, a shift which Trimbur (1994) refers to as a ‘social turn.’ In the premise of research on disciplinary

writing, researchers following this orientation have postulated that writing is governed by the conventions of the community where writing is produced, and that writing involves a process in which writers gradually seek membership into the target disciplinary community (e.g. Casanave, 1995, 2002, 2018; Hyland, 2000; Li, 2007; Swales, 1990). Researchers who hold this perspective, thus, take a more contextualized look at academic literacy and writing practices used in a given discipline, placing critical emphasis on the more local, immediate, interactive context of language use and writing (Bardi, 2015; Belcher, 1994; Benesch, 2001; Casanave, 2002). Writing is thus not regarded as a mere acquisition of sets of skills or shared conventions held by the experts of the community. Rather, writing is argued to be highly complex, interactive, situated, and dynamic, charged with tension (Casanave, 2002; Ho, 2017; Jenkins, 2011; Li, 2007). Resonating with this view of writing, researchers enquire into L2 writers' experiences with particular interests in what literacy practices they bring to their writing, and how they negotiate the demands of writing while they are positioned as novice writers in their disciplinary community of practice (e.g. Krase, 2007; Li, 2007; Tardy, 2005).

This theoretical orientation of academic writing research aptly provides a broad theoretical framework for the study. This is because this study aims to contextualize and gain insights into 'how' the students negotiate the demands of writing their conference paper in their 'real-life settings.' Situated in the social perspective of L2 writing, the study does not endeavor to examine the linguistic and rhetorical features of the completed conference paper *per se*. Given this broad theoretical framework, the study further develops a more elaborate theoretical framework by drawing on the notion of communities of practices (Lave & Wenger, 1991; Wenger, 1998). These scholars have argued that learning can take place in a 'community of practice' by the process, to which they refer as 'legitimate peripheral participation.' Put it another way, new members of a given community can gradually gain knowledge and expertise of the community through their engagement in

different community activities and interactions with more experienced members. By applying the notion of legitimate peripheral participation in the community of practice to this study, science postgraduate students are regarded as novice scientists and writers. They are therefore considered to be legitimate peripheral participants of their academic programs and scientific communities. The students' experiences in writing their conference paper can be understood from the ways in which they gradually learn to write from others, by engaging in different literate activities of their communities, such as discussing their writing drafts with their research mentors, sharing research and writing ideas with peers, seeking language assistance from English teachers, and seeking textual mentorship from the literature in their fields.

Research Methods

Research design

This study adopted an interpretive, qualitative research design to explore the writing experiences of postgraduate students in the discipline of science in one university in Thailand. Several researchers (e.g. Casanave, 2002, 2018; Hyland, 2002; Leki, 2007) have advocated that a qualitative-oriented study is an effective method for gaining an insightful understanding of how and why people write, for it aims to gather naturally-occurring data under normal conditions from various sources. In other words, this study placed a great deal of emphasis on collecting data in 'their natural setting' in order to reflect the real phenomenon of the students' writing experiences.

Research participants

The participants of this study were Thai students who were working on their master's degree in the Faculty of Science at a major university in Bangkok, Thailand. To recruit the participants, a purposive sampling procedure was employed using the following criteria. First, the participants must have completed their first degree in Thailand with the Thai language as a medium of instruction in their program of studies. Second, the participants

needed to have experience in writing a conference paper. This was to ensure that they had experienced most of the conference paper writing process and then could reflect on their writing practices. There were 21 students who met the established criteria and volunteered to serve as research participants of this study.

Research instruments

Two types of research instruments were used in this study: semi-structured interviews and collaborative conversations. A semi-structured interview was used as the main instrument for gathering the data due to its potential to extract rich information based on the participants' perspectives. It is therefore a useful tool for investigating the participants' writing experiences in depth (DeCapua & Wintergerst, 2005). The other research instrument was collaborative conversations. In this study, a collaborative conversation refers to any occasions where the researcher had an informal interview or conversation with each research participant apart from a more formal, sit-down, semi-structured interview. A key difference between the collaborative conversation and the more formal interview, such as the structured or semi-structured interview, is that the former is more reciprocal because the researcher and the participant freely engage in sharing their ideas and information: a give and take exercise between the two parties (Patton, 2002). This, in turn, helps alleviate the typical hierarchical nature of relationships between the two parties (Bailey, 1996). With this regards, the researcher can establish a good rapport with the participants, resulting in his receiving more in-depth and valid data from the participants.

Prior to collecting the data for the study, both instruments were examined by three experts specializing in L2 writing teaching and research in order to ensure high content and construct validity of the instruments. The instruments were also tried out with five students. Any challenges found during the tryout were considered and discussed with the three experts in order

to improve the quality of the instruments before they were implemented in the main study.

Data collection

To collect the data, the researcher conducted three sessions of semi-structured interviews with each participant. Each interview lasted between 30-45 minutes and was carefully audio-recorded. All participants were interviewed in Thai so that any language barriers and ambiguity during the interview could be avoided. The first session of the interview focused on how the participants prepared themselves to write. The second was aimed at eliciting how the participants wrote and then subsequently revised their drafts, while the third was conducted in order to provide the participants with opportunity to reflect on the whole process of their writing as well as express their needs for writing support.

In order to augment the interview data, this study also used collaborative conversations to collect more qualitative data from the participants. The collaborative conversations used in this study included any informal conversations during the interval between the three semi-structured interview sessions and after the last interview session. They might be arranged by the researcher and participants, and they may range from less than ten minutes up to 20 minutes. Every so often, several collaborative conversations were not arranged. For instance, the researcher unexpectedly met the participant on campus, where they then engaged in some conversations. In these circumstances, the researcher and the participant discussed some issues surrounding the students' writing practices. It is important to note that the conversations were not audio-recorded. Rather, the researcher took notes of major issues discussed in the conversation after the conversation ended. As can be seen, two instruments were employed in this study in order to methodologically triangulate the collected data, resulting in the researcher receiving rich, in-depth, and valid data for the study.

Data analysis

All interviews were transcribed and then analyzed recursively. Guided by the three research questions and the review of relevant L2 writing literature, the researcher developed coding categories for coding the interview transcripts. The researcher coded and recoded all interview transcripts in order to achieve high intra-coder reliability. In addition, another researcher who was familiar with qualitative research analysis was invited to recode 25 percent of the interview transcripts in order to ensure inter-coder reliability. Any segments that were coded differently were discussed and then reanalyzed by both researchers in order to achieve a consensus. As for the data from the collaborative conversations, all notes taken were neatly typed. The procedures of analyzing this kind of data were similar to those of analyzing the interview transcripts.

Findings

Postgraduate students' preparation to cope with the perceived demands of writing a conference paper

Data from the interviews and collaborative conversations revealed that the students engaged in different academic literacy practices as a way of preparing themselves to tackle the perceived demands of writing a conference paper in English. The students under investigation brought to their graduate studies a variation in learning and personal histories. However, one of the similarities among them was that none of them had taken any writing courses specifically geared towards research paper writing. All of them admitted that they were very concerned about writing a conference paper, particularly when they embarked on their second year of studies. One student, for example, elaborated that he was unaware that he was expected to write a conference paper. Before joining this program, he thought that he would be required to conduct research and then write a master's thesis. Yet, when he was in a second semester, he found that some second year students attended a

conference, and they were required to write a paper for the conference. As he noted, “My friends and I were very worried as we realized that our English was poor. We studied all courses in Thai, so how could we write a paper in English?” (S3: Interview).

Studying in the linguistically less advantageous context of a Thai-medium university, most students perceived that they were underprepared to cope with the potential linguistic challenges of conference paper writing for two major reasons. First, the educational curricular and settings did not encourage them to practice and then improve their English because all courses in their programs of studies were conducted in Thai. A student in biochemistry noted that “though we read research papers and textbooks in English, we write all assignments in Thai. We don’t have an opportunity to practice our writing in English” (S1: Interview). The second reason why the students felt they were linguistically underprepared was attributed to the fact that they had not learned how to produce extended pieces of academic writing in English. Several students mentioned that in their previous English classes, what they wrote was only a short paragraph. As the students were aware of the demands of paper writing, coupled with their lack of effective training in academic writing, they seemed to be more inclined to look for formal learning for mastery of their writing skills. Most of them mentioned that they had planned to take academic writing courses, particular the ones offered by the university. This showed that they viewed language courses as key accessible resources for their linguistic preparation. However, most students seemed to be disappointed that the available courses did not focus on academic writing, particularly scientific writing. As a student in computer science said, “How could I prepare myself to write a paper while the university does not have such a course? (S7: Interview). Once the students learned that there was no such course available, they seemed to shift their attention to other existing courses considered to be useful for enhancing their English.

It is important to note that not all students looked for English courses to improve their English. Some students reported that they were very busy with their coursework and laboratory experiments. A few students admitted that they did not like English, so they did not have any motivation to take any English course. To them, they believed that they could learn how to write by reading more research articles in English. As a student in biology said:

“I thought that I could improve my English gradually when time progressed as I read a lot of papers in English. Unfortunately, when it comes to writing, it is very difficult. Now, I’m finishing up my conference paper, but I struggle a lot. It’s not as easy as I thought.” (S8: Interview)

One of the interesting findings was that even though most students seemed to be eager to improve their English, a few of them recognized the availability of other kinds of language support provided by the university. Most students were unaware that the English Language Teaching Center (ELTC) offered different kinds of short tutorial courses and workshops on academic writing and study skills. The Center also offered a variety of self-study resources, with some books on academic and scientific writing. Only a few students visited the ELTC for training on academic writing. One student in biology said that “the training was useful although it was not actually about scientific writing. At least, I learned how to connect sentences to form a coherent paragraph. I could later apply this to my writing” (S11: Interview). Another student expressed how thankful she was to receive language assistance from the writing tutor at the ELTC. She said that after the tutorial session, the tutor introduced some good grammar books and academic writing books to her. This kind of help, as she perceived it, was useful since she could be “more autonomous in learning and eventually learn how to deal with my writing problems on my own” (S14: Interview). However, another student

commented on the way in which the ELTC publicized its activities to postgraduate students. She said:

“If you’re postgraduate students, you’ll know nothing about the ELTC. The Center seems to publicize its activities to undergraduate students. Unfortunately, I knew what the Center offers when I was in my second year. I should have sought some writing help from the Center sooner” (S19: Interview).

Another interesting issue regarding the students’ preparation for their conference paper writing was about the role of science teachers. All six students from chemistry said that lecturers from their program were the ones who encouraged them to improve English. On the induction day, they were told by the program director that they should take some English courses as English was important for their graduate studies. The director and other lecturers in chemistry also put effort in convincing them of the importance of English, particularly speaking and writing skills. One student elaborated:

“My lecturer said that I should brush up my speaking as I needed to give a presentation in English in a conference for sure. Also, I needed to write a conference paper in English. So, he suggested that I take some English courses, or go to the ELTC to attend some English training sessions or seek writing consultations from the tutor there as early and often as possible.” (S18: Interview)

It can be summarized that the students were aware of their limited English proficiency and their lack of academic writing experiences. To prepare themselves to meet the perceived demands of writing their conference paper, the students put efforts into fostering their linguistic knowledge by attending English language classes. Unfortunately, they were disappointed that

the courses on offer did not seem to meet their writing needs. A few students were fortunate to get to know the ELTC, so they could access available resources of language support.

Postgraduate students' engagements in literacy practices in writing their conference paper

As most of the students seemed to lack adequate academic writing experiences, they developed different literacy practices as initial preparation for writing their conference paper. The students reported that it was fundamental to their preparation to be able to conceptualize the generic features and readerships of a conference paper in their disciplines. This awareness led them to develop different practices. First, they consulted different sources in order to learn about the macro-structure of a conference paper. Secondly, they appealed to their peers and advisors to clarify certain aspects of conference paper writing about which they were uncertain.

Despite the fact that none of the students were formally taught about the macro-structure of a conference paper in their discipline, they reported that they had had certain rudimentary ideas of it before embarking on the writing-up stage. They attributed this to their consultation with their thesis advisors and other senior students in their program of studies. The students also mentioned that they had learned about the components and structure of a conference paper through reading several papers published by the same conference in previous years. For example, one student stated that he “needed to browse through many conference papers previously published, and then I knew what the organizing committee expected to see” (S20: Interview). Another student said that when she found that she needed to submit a conference paper, not just an abstract, to conference organizing committee, she was quite confused about the overall structure of the paper. She then asked some senior students with experience in writing a conference paper for help. Several students said that they first discussed the overall structure and

components of a conference paper with senior students and then asked their thesis advisor for confirmation. They agreed that their advisors, with many years of teaching and advising postgraduate students, could best serve as a source of expected genre knowledge. Many students also mentioned that their advisors had engaged in several conferences, both as a presenter and a committee member. Therefore, appealing for clarification from their advisors would help them affirm what the conference paper should look like. One student said:

“My advisor knows best in what way I should write the paper to meet the expectations of the conference committee members. English teachers may know how to write English, but they may not have a clear idea what is expected in our field.” (S21: Interview)

In addition to acquiring the genre knowledge, the students also needed to rationalize the content of individual sections of a conference paper. They prepared elaborated written outlines for individual sections prior to writing their first drafts. This was to ensure that the content of each section was logically and adequately presented. All students admitted that this outline preparation was very important because it would help them to make a decision of what to be included in the paper. One student in applied mathematics said that a conference paper was based on part of a thesis research project, so one thesis could be then turned into two to three conference papers. As he noted:

“As I didn’t have experience in writing a conference paper, I thought that I needed to include everything I did in it. But my advisor suggested that I present only one part of my research project. We could not include everything in one short paper. Putting too much information, as my advisor said, would make my paper lack a focus. My thesis, as my advisor said, can be divided into 3 smaller papers.” (S5: Interview).

The students reported that working with their thesis advisors in choosing the content for the paper was not without a problem. Oftentimes, they did not agree with their advisors, but they found it difficult to negotiate with the advisors. Most students felt that as postgraduate students and novice researchers, they were placed in a lower status compared to that of their advisors. One student mentioned:

“When I made an outline of the paper, my advisor didn’t seem to agree with what to be included in my paper. I discussed this issue with another senior student, and he told me that I should follow my advisor’s suggestions. He said the advisor knew more than me, and as he was my advisor, I should not disagree with him. I should have a good relationship with my advisor. Then everything would be fine.” (S12: Interview)

However, some students seemed to feel more comfortable to negotiate the content of the paper with their advisors. These students reported that their advisors encouraged them to do so. One student said that this kind of student-advisor working relationship was crucial. As she put it, “we need to be strategic in working with our advisor; we need to know if our advisor wants us to be independent or to reply more on them” (S7: Interview).

Some students gave an example of a problematic relationship between advisors and students, resulting in students having difficulty in completing their conference paper. They commented that success in writing a conference paper relied not only on the student’s writing ability but also on the advisor-students working relationship. One student gave an example:

“My friend didn’t agree with his advisor, and he insisted to include some information that his advisor suggested that he remove. It seemed that his advisor was unhappy, so she

didn't seem to help guide him in writing the paper at a later stage. My friend suffered a lot.” (S16: Interview).

The students also mentioned the kinds of help they received from their peers and advisors, which they believed greatly contributed to the completion of their paper. Students who considered themselves to have a low English proficiency in particular reported that they relied primarily on feedback from their peers and advisors. In other words, they perceived that the quality of their work was primarily determined by the extent to which they received language support from those surrounding them. One student in computer science said that a doctoral student in his department, who had some experience studying abroad, “not only corrected the language mistakes in this paper, but also often explained why they were incorrect” (S17: Interview). Another student said that her advisor gave very detailed comments on her draft, and he also rewrote several paragraphs for her. She further elaborated that she looked at what her advisor did on her draft, and it could serve as a good writing model for her to learn from and then follow.

Several students reported that they redrafted their writing for several times as recommended by their advisor, and they gradually improved their writing ability. Some students however said that they did not receive much feedback from their advisors as expected, resulting in their having difficult time in completing their draft. A student from computer engineering mentioned that “my advisor just said that I didn't have to worry much about writing a conference paper because it was low-stakes, unlike a research paper in a journal. So he just told me to work on it on my own” (S8: Interview). This student further said that without language help from his advisor, he felt it was not fair. He thought that the supervisor should help him with the language in addition to advising him how to conduct experiments in the laboratory.

Data from collaborative conversations with the students also provided insightful information about how the students wrote their paper. Even though

the students had not received any formal training or instruction in writing a conference paper, they said that they learned how to write by putting conscious efforts into acquiring writing ability through seeking help from other members in their immediate community. It can be seen that the data from the collaborative conversations were in congruence with those from the interviews. Data from collaborative conversations also further revealed that the students held the belief that being successful in writing a conference paper would help prepare them to enter a community of professional scientists in the future. This is because they viewed that giving a presentation and writing a paper for a conference were academic activities that all scientists were expected to engage in.

As can be seen from the findings presented in this section, postgraduate students in the disciplines of science engaged in different kinds of academic literacy. To complete their writing task, they employed different literacy practices to acquire the knowledge of the conference paper genre and utilized different types of resources, including seeking help and support from other peers and advisors. The students were also aware of the importance of the advisor-student working relationship, which could affect the success or failure of their writing.

Postgraduate students' perceived needs for writing support

Most of the students reiterated that the university and the Faculty of Science should provide more appropriate writing support in terms of contents and course management. Several students mentioned that they wanted to improve their scientific writing, but the university did not have any courses specifically geared towards scientific writing. One student said, "Most of the English courses offered by the university seem to be about general English; I think the university needs to consider what postgraduate students really need" (Student 10: Interview). Although other students were well aware that general English courses were useful for their communication and future use, they

expressed their concerns over immediate writing needs and support. One student who had completed two conference papers mentioned:

“I wrote two conference papers. Some of my friends thought that I was a successful writer, yet I realize that I’ not. I struggled a lot. There’re lots of things that I need to learn more. Yes, I could write two papers, but it took time and the quality may not be very good. If there is a course focusing on scientific writing, especially writing an academic paper, it will certainly help me and other friends.” (S14: Interview)

Another student also mentioned that most of their friends were not satisfied with the provision of English support by the university as there were only a few courses available for master’s students. They proposed that the university should offer more elective English courses, and those courses should be on scientific English. One student felt that the course he attended when he was in this first year was not very useful for him:

“I was so excited that there was a course for graduate students. But I was later disappointed because I was taught, for example, how to write a narrative essay and read some news articles about business. Well, the course was interesting to some extent, but it didn’t meet my immediate needs as a science postgraduate student. So, I quit after 3 weeks.” (S19: Interview)

Data from collaborative conversations also revealed that the students also felt that their program of studies should work collaboratively with the university to offer English courses relevant to their needs. The students held strong beliefs that their science lecturers, with years of experiences in teaching and helping students write a conference paper and other kinds of writing in English, could serve as useful resources for those responsible for designing

and delivering English courses. Some students questioned if EAP teachers, not only the ones at their current university but also those from other universities, had enough information about what English skills and contents postgraduate students in science wanted. As they commented, it was not always EAP teachers' fault in teaching English that did not meet their immediate needs. Rather, their programs of studies should clearly identify the students' needs and then inform EAP teachers who were responsible for teaching English to students from a variety of disciplines. Many students said that writing in science, as they observed, was different from writing in social sciences. With this regards, EAP teachers - as they reiterated - needed more information from science lecturers in preparing English courses.

In addition to the required contents of the English course, the students also expressed their concerns about certain constraints to attend the English courses, particularly time constraints. Most of them found it very difficult to attend the class due to their busy schedules. For example, many students from chemistry said that they needed to work in the laboratory, and their schedules could be affected by the unsatisfactory lab results. They therefor needed to repeat the experiment. This incidence was unexpected, resulting in their inability to leave the laboratory to attend the English class. Some other students also seemed to face a rather similar time constraint. One student from biology mentioned that:

“I once wanted to take the English course offered by the university, but I was afraid that I'd have problems with my class attendance. Based on my research schedule, I needed to do some fieldwork every other week. I needed to go to six provinces to collect samples of wild ants there. This certainly made me unable to attend the class on a regular basis as the English teacher required.” (S 6: Interview).

Some students who could not attend English courses offered by the university further commented that places available for each course were limited. For example, a student in physics said that many of his friends wanted to take the English course, but they could not make it. As he elaborated:

“The course accepted only 30 students, but there were a large number of students who wanted to take the course. This top-notch university should, I think, learn how to manage this kind of thing more effectively. This is our basic need, I’d say, so they should do their best to provide us with it!” (S1: Interview).

Several students recommended that the writing course focusing on scientific writing be offered through blended learning. That is, the course should be a combination of face-to-face learning in the classroom and online learning. Through this mode of delivery, they believed that their class attendance would be made more flexible, and this kind of teaching and management would be more suitable for postgraduate students. One student stated:

“I think the university should reconsider the way in which English courses have been delivered. Don’t forget that postgraduate students are different from undergraduate students. Some need to do experiments in the lab for many consecutive days while others may need to attend some off-campus workshops or conferences. So, the courses should be accessed online, too. (S19: Interview)

It is important to note that although many students preferred to study via blended learning, they did not want to take the course entirely online. Data from collaborative conversations also revealed that most students looked for blended learning courses. The major reason was that they felt that face-to-face

learning in the classroom was still necessary as it could provide them with more opportunities to discuss learning problems, if any, with course teachers and other classmates with ease. From their view, online learning was useful in terms of course management as it could accommodate more students. However, several students were uncertain to a certain extent if a full online course was effective. In particular, those who considered themselves having a low English proficiency were concerned that they would not be able to follow the lesson without the presence of a course teacher.

As can be seen, data from the interviews with the students, as triangulated with those from collaborative conversations, yielded useful information about the students' needs for English support. The students felt that the available courses, which tended to focus on general English, did not meet their immediate needs as postgraduate students in science, particularly when writing a conference paper in English. To meet their needs, they recommended that EAP lecturers work collaboratively with science lecturers in designing and delivering EAP courses. They also suggested that EAP courses be offered to postgraduate students via blended learning as some students may find it difficult to attend the face-to-face class.

Discussion

Given the findings, it is apparent that even though the students enthusiastically sought access to different linguistic resources and support, not all of them could effectively do so. On one level, it is primarily attributed to the university's lack of effective provision of language support to them. On another level, the students' access to language support provided by the university was further constrained by their own tight schedules due to their academic and research activities required by their program of studies. These aspects seem to reflect what Haneda (2005), Norton (2001), and Ushioda (2009) have advocated in that students with high motivation in learning and improving their L2 may not invest, or may not be successful in their

investment, in learning L2. It is thus reasonable to conclude that the students appeared to be underprepared in their abilities to cope with the linguistic demands of writing their conference paper. This raises an intriguing question of what practices they then used in completing a conference paper at later stages as a means to compensate for their limited English proficiency, especially for their writing ability.

As Swales (2001) has noted, writing at a postgraduate level is not a straightforward process. It is however more concerned with “new starts and unexpected adjustments” (p. 52). Casanave (2002, 2004, 2018) and Kruse (2007) have argued that L2 writers who do not understand their academic communities’ expectations usually approach their literacy activities through trial and error, an approach found to be common among students at both undergraduate and postgraduate levels. The findings in this study revealed that the students put considerable effort into coming to grips with the tacit academic literacy expectations of the wider scientific community, with reference to writing a conference paper. They learned how to negotiate the demands of preparing, writing, and revising a conference paper through their engagement with other members of their local community of practice, or their program of studies.

One characteristic of learning in a community of practice is an ability to gradually understand and produce its set of shared resources, or a ‘shared repertoire’ (Wenger, 1998). The findings of this study showed that a shared repertoire used by the students in the process of learning how to write a conference paper included previously published conference papers by other scientists and their writing drafts with feedback from advisors and peers. These artifacts are useful because, as Lave and Wenger (1991) and Wenger (1998) have argued, they “can be reengaged in new situations” (p. 83) and thus used as shared points of reference for learning. This aspect of literacy activities supports Casanave’s (1995, 2002, 2018) call for a more meaningful understanding of L2 writing practices by considering the more local,

immediate, interactive factors that have influenced individual L2 writers when they write. To put it another way, the students' writing practices can be characterized by their evolving forms of mutual engagement in their communities of practice (Wenger, 1998). Not only did they gain disciplinary knowledge, but they also gradually developed writing practices through their interactions with different people in their academic community. As several scholars (e.g. Krase, 2007; Li, 2007; Li & Flowerdew, 2007; Tardy, 2005) have noted, academic writing is socially situated, constructed, and distributed among members of writers in communities of practice. This perspective of learning to write is different from the cognitive tradition in that it does not gloss over the socio-interactional milieu from which writers have developed certain literacy practices (Hyland, 2003, 2007; Long & Doughty, 2003).

It is worth noting that the students provided insightful information about their writing support needs. The information mentioned by the students should be therefore taken into account should the ELTC aims to improve their services in order to successfully prepare the students to negotiate with the demands of writing a conference paper. This issue will be further discussed in more detail in the subsequent section.

Implications of the Study

Based upon the findings of this study, particularly the needs mentioned by the students, it can be postulated that should EAP teachers want to help prepare science students to write a conference paper, they should acquaint themselves with writing and literacy practices expected by the students' program of studies. A question raised, then, is how EAP teachers can construct such knowledge where they do not actually engage in literate activities of those academic programs. A straightforward but seemingly daunting way is that EAP teachers should conduct more research on discipline-specific writing in their educational establishment. Another more practical and less demanding

means is that the teacher should discuss issues of academic literacy practices in detail with science lecturers and postgraduate students.

This study also argues that EAP teachers should take a new role as academic brokers or mediators of literacy, the idea proposed by Benesch (2001) and Curry and Lillis (2004). As an academic broker, an EAP teacher plays a role in helping the students to conceptualize conference paper writing practices as socially situated and constructed activities, influenced by their local, immediate setting of writing. In implementing this concept, EAP teachers should be able to assist their students not only in mastering linguistic competence but also in raising their awareness of academic literacy expectations embedded in their programs of studies.

Another useful idea is that EAP teachers, as academic brokers, may invite ‘disciplinary insiders’ (Curry & Lillis, 2004), i.e. science lecturers and postgraduate students with experience in writing conference papers, to visit their EAP classes. This will offer students an opportunity to discuss with guest speakers what strategies these more experienced writers employ in dealing with the writing demands. In addition, as mediators, EAP teachers can also raise issues surrounding ways in which the invited students improve their English, use available language support provided by the university, and negotiate writing assistance with their advisors. By using these activities, these EAP teachers will adopt a role of the ‘guide by the side’ (Curry & Lillis, 2004). The classes can thus be an ideal forum to encourage students to critically discuss and recognize the contested nature of conference paper writing, resulting in their helping students in making smooth transitions from being less experienced writers to more experienced ones.

Considering the needs for language support, it is important that the ELTC consider how EAP classes should be best managed. As the students expressed their concern about the limited number of seats for the existing EAP classes and their tight schedules as affected by their academic and research activities, the ELTC may consider offering EAP classes via blended learning

in which a larger number of students could enroll and the number of face-to-face contact hours can be reduced.

It can be concluded that this study could contribute to the existing body of scholarship on academic writing in L2 on several grounds. On the very local level of pedagogy, findings from this study would help EAP teachers to better understand science students' experiences in writing a conference paper which will be later published in the conference proceedings. This would assist EAP teachers in planning, preparing and delivering relevant writing support to meet the students' expectations. The findings also prompt those concerned, including EAP teachers, subject teachers, policy makers and even conference organizing committee members, to reflect on mentoring practices and support systems available to these novice scientists and writers.

Limitations of the Study

Like other empirical studies, this study has some limitations intrinsic to the research design and methodology. Firstly, as this study collected the data only from those who were considered successful writers as they could complete their conference papers, the findings of this study seem to be restricted to the perspectives or voices of these successful writers. In reality, there are other students who may not be successful in writing their conference paper. Therefore, this study may not provide multiple perspectives of writing experiences as those that incorporate data from 'less or unsuccessful' novice writers. The second area of limitations concerns the frequency of access to the research participants. As this study investigated L2 writing in its natural settings, there appears to be more challenging, compared to research on academic writing in L2 classrooms, in approaching research participants. As a result, the researcher of this study could not interview the participant as often as expected due to the participants' busy study schedule and other personal engagements. Had the researcher had more frequent interviews and collaborative conversations with the participants, he would have gained more

insightful data for the study. The aforementioned limitations are those other researchers should be aware of in conducting L2 writing research, particularly the one to be conducted in a natural setting.

Recommendations for Further Studies

The theoretical and methodological frameworks of this study can serve as a springboard for further situated explorations of disciplinary writing practices in natural settings. The following are challenging directions and recommendations for further studies.

Firstly, replicate studies at the same research site and other academic settings can yield additional fruitful findings to our understanding of L2 writing, particularly in a linguistically-less advantageous context. Researchers should take into consideration the areas of limitations, as addressed in the preceding section, so as to avoid any pitfalls in designing their study. A worthwhile and more challenging research strategy is to conduct collaborative research by EAP lecturers and science lecturers. This research collaboration would provide them with ample opportunities in easily accessing and recruiting research participants and in conducting more in-depth, ethnographic-oriented studies. This would result in their gaining a more comprehensive understanding of students' writing experiences.

Secondly, as this study placed emphasis only on the 'voices' of science students, more research should be conducted by exploring the voices of other stakeholders, including science lecturers, EAP lecturers, and science program directors, with reference to their perceptions of students' challenges in writing a conference paper. It is also interesting to listen to 'voices' from conference committee members with reference to perceived writing problems as they experience when evaluating conference papers submitted to them, particularly the ones written by postgraduate students, or novice scientists seeking membership in the wider community of scientists.

Another fruitful line of inquiry is to focus more on practices and challenges during the writing and revision processes, particularly when the students are working on the conference paper with their thesis advisors and other lab members. As can be seen from the reported findings, the participants of the study learned, to a large extent, how to write and revise their paper from their advisors and lab members. The findings to be received from this line of studies would shed light on how EAP teachers can work in collaboration with thesis advisors and perhaps, other science students with high English language proficiency, in providing effective support to science students who need help with their conference paper writing.

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