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Title	Exploring first-year undergraduates' difficulties in writing the discussion section of a research paper: A Singapore study
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Source	<i>The English Teacher</i> , 42(2), 117-136
Published by	Malaysian English Language Teaching Association (MELTA)

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Citation: Cheung, Y. L. (2013). Exploring first-year undergraduates' difficulties in writing the discussion section of a research paper: A Singapore study. *The English Teacher*, 42(2), 117-136. Retrieved from <https://journals.melta.org.my/index.php/tet/article/view/235>

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# **EXPLORING FIRST-YEAR UNDERGRADUATES' DIFFICULTIES IN WRITING THE DISCUSSION SECTION OF A RESEARCH PAPER: A SINGAPORE STUDY**

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## **ABSTRACT**

Much of academic writing research is conducted with academics and postgraduate students in the United States, Hong Kong, and Saudi Arabia. There is less published research on how undergraduate students reflect on their writing activities in Singapore. Little is known about what challenges these students face in writing academic papers, in particular, the discussion of results of their first academic paper written in their first year of study. The present study fills this gap by investigating Singaporean undergraduates to uncover their perception of difficulties in writing their first research papers in a compulsory academic writing course offered by a teacher training institute. In-depth interviews were conducted to the four undergraduate students. Results found that, with regard to undergraduates' perceptions of writing the discussions section, the main problems were selection of content, organization of content, demonstration of appropriate stance, grammar, and choice of words. Additionally, based on the instructor's comments on the students' term papers, results revealed that there were mismatches between the writing instructor's professional understanding and students' understanding of their own difficulties. The findings of this study have pedagogical implications pertaining to ways to improve the teaching of undergraduate student teachers' discussion of results not only in Singapore, but also in similar contexts outside Asia.

Keywords: Academic writing, writing difficulties, writing instruction, first-year undergraduates

## **Introduction**

Over the last three decades, the field of second language writing has seen a number of studies on research paper genres. These studies identify difficulties faced by academics and graduate students, as members of the academic communities in the United States, Hong Kong, and Saudi Arabia, in writing research papers (Adams-Smith, 1984; Bazerman, 1988; Cheung, 2010a; Dudley-Evans, 1994; Flowerdew, 1999a, 1999b, 2001; Johns, 1993; Mauranen, 1993; St. John, 1987; Swales, 1990). They do not deal with similar challenges faced by

undergraduate students in writing research papers. Indeed, little is known about what difficulties these students face in their writing tasks, and this subject deserves further research attention. In Singapore, the National Institute of Education offers an ALS 101 course entitled Academic Discourse Skills. It is a mandatory course taken by the first-year undergraduates, and they are required to write and submit a research paper at the end of the course. Using email interviews with students who took the course and instructor's comments on those papers, the present study aims to identify specific challenges faced by Singaporean undergraduates in their paper writing activities. From the student interviews, we understand what the students perceived as major difficulties they faced in developing the discussion section. By analyzing the instructor's comments, we gain understanding of the perceptions of the same difficulties by a writing professional. We will compare and contrast the two perceptions, which will give insights into how writing instruction may be given to be responsive to student needs.

Over the past two decades, studies have been conducted in the United States, Hong Kong, and Saudi Arabia to examine the difficulties faced by English-as-a-second-language writers in writing research papers in English. According to St. John (1987) and Flowerdew (1999b), the discussion section is more difficult to write than the rest of the paper because it is abstract and less formulaic than the method and result sections. In addition to the general abstract feature of the discussion section, some scholars (Adams-Smith, 1984; Bazerman, 1988; Dudley-Evans, 1994; Flowerdew, 1999a, 1999b, 2001; Johns, 1993; Mauranen, 1993; St. John, 1987; Swales, 1990) have noted a number of areas which are problematic to non-native English speaking writers in particular. These areas of difficulties include organization of content, use of hedges and boosters when making claims about the findings of the research, establishment of a link between the findings and the literature, appropriate citations, grammar, use of a rich vocabulary, structure of arguments, and projection of the authorial voice. Other scholars (Bizzell, 1982; Johns, 1993) have commented that novice writers, being inexperienced members in the discourse community of their field of research, find it challenging to deal with the new genre of research paper because it is a "highly advanced written task" (Gosden, 1996). Flowerdew (1999b) explains that writing the discussions is difficult because it requires a persuasive writing style, in which writers are expected to show their authorial voice and to convince the readers of the significance of their research and the arguments they are presenting (p. 258).

Another set of studies has focused on student writers' perceptions of their own writing difficulties. How students perceive their problems in writing research papers are reported by Cho (2004), Fageeh (2004), and Cheung (2010a, 2010b).

In the United States, Cho (2004) conducted an interview study with four graduate students to understand their challenges in writing research papers. These students, two majoring in Education, one in Psychology, and one in Communication, speak different first languages: Greek, Japanese, Korean, and Ukrainian, respectively. The results of Cho's (2004) study indicated that linguistic difficulty in writing research papers was the most common problem. The lack of academic writing proficiency in English was a problem cited by the students, although they had lived and studied in the United States for 5 years on average at the time of the study.

Fageeh (2004) studied 37 students majoring in English at a university in Saudi Arabia. The participants, who had the same educational and cultural background, shared similar experience in writing in English. Similar to those in Cho's (2004) study, these students' difficulties were related to grammar and word choice. Besides, they mentioned that they had few opportunities to write academic papers as their writing assignments were exercises focusing on grammar drilling and memorization of texts.

Moving to Hong Kong, Cheung (2010a, 2010b) conducted in-depth interviews with six applied linguistics graduate students in three local universities. Three of the students were Mainland Chinese while the rest were Hong Kong-born Chinese. All interviewees mentioned that the discussion section was difficult to writers because it required them to convince readers about the importance of their research and the soundness of their arguments. The other problems were the need to show their authorial voice in the writing, use of appropriate tenses, and choice of words.

To sum up, the previous work has highlighted the areas which created problems for students in the discussion section of research articles. Specifically, students faced the problems of organization of content, appropriate citations, grammar, use of a rich vocabulary, structure of arguments, projection of the authorial voice, and use of hedges and boosters when making claims about the findings of the research, as well as establishment of a link between the findings and the literature (e.g., Adams-Smith, 1984; Bazerman, 1988; Dudley-Evans, 1994; Flowerdew, 1999a, 1999b, 2001; Johns, 1993; Mauranen, 1993; St. John, 1987; Swales, 1990).

## **Theoretical Framework**

Bereiter and Scardamalia (1987) suggest that the knowledge telling model and the knowledge transforming model can help explain the differences in the writing processes among unskilled and skilled writers. The *knowledge telling* model is

used by unskilled writers, who tend to write down everything they know about the topic, without setting a clear macro rhetorical goal. The *knowledge transforming* model, on the other hand, involves the knowledge telling process, embedded in a problem-solving process, which involves two problem spaces: the content space and the rhetorical space. In the content space, the writer decides what s/he knows, and what s/he does not know about the topic. In the rhetorical space, the writer finds ways to achieve his or her rhetorical goal. In order to achieve this rhetorical goal, skilled writer decides what information to extract from the content space, and whether this information within the content space needs to be modified in order to fit the rhetorical goal.

The knowledge telling model and the knowledge transforming model, according to Bereiter and Scardamalia (1987), have distinct differences with regard to how unskilled and skilled writers plan, organize, and write / revise their writing. In terms of planning, unskilled writers tend to ask themselves the following questions: What do I know about the topic? Do I have enough points to be included in the essay? Where can I find more information? Is this piece of information relevant to the topic? On the contrary, skilled writers are concerned about the rhetorical situation and problem. They are concerned about their goals in relation to the reader effect as well as the writer role. They consider what information and moves would fit the rhetorical situation. In particular, they consider whether certain piece of information or moves would help them to achieve their macro rhetorical goal.

When it comes to the organization of their writing, Bereiter and Scardamalia (1987) have pointed out that unskilled writers tend to tell the information in the order in which it happened. Their essays must have introduction, body, and conclusion; they tend to group ideas in some neat way. On the contrary, skilled writers would consider whether the ordering of the information helps them achieve their rhetorical goal. They will make sure that the organization structure fits the rhetorical situation. They are aware of the reader's expectation, and they will anticipate what the reader would like to know in their essays.

With regard to the writing / revising the essays, unskilled writers tend to have problems in deciding what to say next, as Bereiter and Scardamalia (1987) have observed. They tend to re-read the previous clause before they decide what to say next. They are over preoccupied with mistakes in facts, grammar, and spelling. They tend to use the vocabulary that is simple and monosyllabic in nature. On the contrary, skilled writers, when deciding what to say next, refer to the macro rhetorical goal, and anticipate reader expectation. They check that organization and content support rhetorical goal. They choose words that suit the rhetorical situation. They change organization, if needed, to fit the macro rhetorical goal.

Although Bereiter and Scardamalia's (1987) knowledge telling and knowledge transforming models suggest that there are subtle differences in processing complexity of skilled and unskilled writers, Hyland (2011) points out that it is difficult to observe how "novice make the cognitive transition to a knowledge transforming model, nor do they spell out whether the process is the same for all learners (p. 19)." One thing that we can derive from Bereiter and Scardamalia's (1987) models is that skilled writers tend to set clearly their macro rhetorical goal and try to include information that suits that goal. Unskilled or novice writers may not state explicitly the macro rhetorical goal in their academic writing. They write, depending on the knowledge of their essay topics.

### **Gap in the Literature and Research Questions**

As evident from the above literature review, students not only encounter difficulties in English language proficiency but also in internalizing the requirements of the research paper genre. St. John (1987) and Flowerdew (1999b) suggest that the discussion section is the most difficult to write in a research paper. It is worthwhile to understand the specific difficulties because writing a good discussion is important for the academic success of undergraduate students, given that it is an essential component in the requirements of many university courses. Furthermore, few published studies have focused on the undergraduate students' perception of their difficulties. The only published study of this kind (Bitchener and Basturkmen, 2006) investigated four English-as-a-foreign-language graduate students who were at the stage of writing up their theses in New Zealand. It does not deal with the problems faced by beginning undergraduates in their first year of study. Prior research (e.g. Bitchener and Basturkmen, 2006) on writing problems has pointed out the importance of shared understanding of these problems from the perspectives of both the writing instructor and the students within the same study, but this kind of research remains inadequate. Hence, the present study was undertaken to fill the research gaps identified and to answer the following questions:

1. What are the difficulties faced by the first-year undergraduate students in Singapore in writing the discussion section of their research papers?
2. In what ways are students' perceptions of their writing difficulties similar to or different from those of their writing instructor?

## **Context of the Study**

The study took place in the context of a four-year, full-time BA in English Language program offered by the National Institute of Education at in Singapore. Students in the program are pre-service teachers. The data of the study were gathered from a 12-week compulsory course titled ALS 101 Academic Discourse Skills, offered in the first year of the undergraduate program, which the researcher taught in the January 2010 semester. The course covered topics such as key ideas about academic writing, aspects of research papers, structuring, developing, and evaluating arguments, as well as the rhetorical (knowledge transformation) approach and the information-focused (knowledge telling) approach to academic writing. Students were taught to critically evaluate the data and to make connections between the literature and the data they collected. Towards the end of the course, each student had to produce a term paper (about 1,500 – 2,000 words) on a topic that involved the collection of primary data and the use of secondary research to back up discussion. The quality of the paper was assessed based on four aspects: (1) rhetorical development and quality of argumentation; (2) quality of primary research; (3) language; and (4) presentation and referencing of sources.

## **Methods**

This study adopted a qualitative research approach (Atkinson, 2005; Porter, 1995; Ramanathan and Atkinson, 1999). In this paper, I reported mainly the data collected from email interviews and the instructor's comments on the students' term papers. The interview questions, adopted from Bitchener and Basturkmen (2006), were all open-ended (see Appendix A). The reason for using their set of questions as a guide is because the questions help find out the range of problems faced by undergraduates in writing the discussion. I was the researcher and the writing instructor for two tutorial groups in the January 2010 semester. Interviews occurred in May 2010 during the student vacation period. Invitation emails were sent to 44 students to participate in the study. In two weeks, 18 students agreed to take part. These 18 students answered interview questions sent by the researcher through email. This paper focused on four undergraduates: Rachel, a History major; Phoebe, a Biology major; and Beth and Shirley, English majors (pseudonyms were used). They were chosen on the basis of the good results they received for their term papers. They were suitable participants because they were still learning how to write a good research paper. The students told the researcher that they use English as their first language. Since their research provided intriguing information on writing research papers, I believe that they would give meaningful data for a thorough analysis of their difficulties in writing the discussion.

Apart from submitting answers to the interview questions, the interviewees attached the final copy of their ALS 101 term papers, which they wrote in one of the following areas: (i) the academic writing process in the university and (ii) using the web for academic purposes.

While the interview data informed us about the students' experience and difficulties in writing the discussion, their term papers allowed the researcher to check the examples cited by the students in the interviews. An additional source of data used was the instructor's comments on the students' term papers. The comments helped find out in what ways the instructor's and the students' beliefs differed with regard to specific writing issues.

I conducted the interviews myself to ensure that I provided meaningful follow-up questions with the interviewees. I read through the interview transcripts several times to gain familiarity with their content and developed a set of categories for the responses obtained in the interviews. First, I assigned each interviewee a pseudonym. Then, I grouped interviewees' responses within the categories that I had developed. Finally, I categorized their responses into groupings with labels which concerned different kinds of writing problems. I compared those subcategories and identified similarities and differences in the responses.

## **Findings**

### ***Undergraduates' Perceptions toward Writing the Discussion Section***

After categorizing students' responses, only five salient problems were identified: selection of content, organization of content, demonstration of appropriate stance, grammar, and choice of words, which are explicated with extracts from the participants' interviews. All interview excerpts are kept in the original. Overall, the findings indicated that students had problems more in knowledge-transforming, since they did not refer to the macro-rhetorical goal when they planned, organized and wrote their term papers. In other words, students appeared to adopt the knowledge-telling approach by writing what they knew about the topic, instead of ordering the information that helped them achieve their macro-rhetorical goal. For example, students were pre-occupied with grammar, instead of choosing words that suited the rhetorical situation.

### ***Selection of Content***

When asked about whether they had encountered any difficulties in deciding what content to include in the discussion, Rachel and Phoebe both said yes but perceived the sources of the problems differently. When asked about what Rachel presented in her discussion, she was uncertain whether direct quotation or paraphrasing would be appropriate when discussing the results:

*I had to be aware that I conveyed the rightful meaning behind their responses, when I quoted some of them in the Discussion section... I had to decide whether direct quote from the interview or paraphrasing was more suitable for the discussion.*

Compared with Rachel, Phoebe's problem concerned use of secondary sources to support her arguments. She attributed the source of the problem to the difficulty of identifying relevant literature to the learning experience of first-year Biology undergraduate students in Singapore:

*I understood that I had to use online journals to support my discussion. However, for my area of study, I had a difficult time finding references to support my results.*

Unlike Rachel and Phoebe, Beth and Shirley had no difficulties in selecting content for the discussion of results. Beth found it quite easy to decide what content to include in the discussion as she got similar answers from the interviewees. Consequently, she did not have to make great efforts to collate and contrast the responses:

*I wasn't difficult to select content for my discussion because my interviewees gave almost similar opinions like lack of opportunity to converse in English.*

In comparison with Beth's experience, Shirley carefully constructed her questionnaires to elicit the types of responses that supported her arguments. Apart from having an appropriate survey design, she planned her discussion section well. She seemed to understand what should be included in the discussion and how the section should be organized:

*I didn't have that great difficulty in selecting content as my questions were architected in that responses gathered either seeks to support/reinforce my claim.*

### **Organization of Content**

Shirley found it difficult to organize the content so that the ideas would flow logically. She believed that organizing the content well could improve the readability of the section:

*I struggle in trying to organize the findings I have gathered to create a flow in the discussion, so that the reader can read and understand.*

Like Shirley, Phoebe considered the reader's perspective when she organized the content of the discussion section. She discussed the findings according to the order of the survey questions:

*It's difficult to ensure that the report flowed smoothly and was understandable to the reader... The first paragraph discussed the results of the first question; the second paragraph discussed the second question.*

Unlike Shirley and Phoebe, Beth had little difficulty in organizing the content as she had carefully planned how to present the findings before she started to write the discussion. She arranged the content from general to specific, and from interesting to less interesting findings:

*I organized my content, from a general statement of the topic to details supporting my discussion... I started with the most interesting point followed by a less interesting point.*

Like Beth, Rachel found it effortless when it came to the organization of content in the discussion section. Rachel planned in advance what information she would like to include in the section. Similar to Beth, Rachel presented information in the discussion according to the order of the survey questions. She elaborated on how she had elicited the survey data from a professor in a specific order:

*The interview began by asking the professor whether she agreed that there is a gap in the research about the writing process of students, before moving on to the next question that asks her to define the gaps that she sees in the students' work.*

### ***Demonstration of Appropriate Stance***

Unlike many other participants in the interviews, Shirley, who was critical of her writing, found that it was not difficult to establish an authorial stance in her paper. It was because she always questioned herself whether she had revealed her stance in the paper:

*While writing the section, I always ask myself: if I have given my opinion on the findings; if I have shown my "presence" in the paper.*

Like Shirley, Phoebe was clear about her own position as a writer as evidenced in her writing. She reminded herself that she needed to be firm in her stance, even if the data might conflict with her point of view. In the following excerpt, she elaborated on how she handled the data she collected from her biology major subjects concerning the utilization of online journals:

*I had to remind myself to ensure that my paper did not bend too much to the disadvantages of using online journals whereas to give an original account of my results of the students' interview.*

In contrast to Shirley's and Phoebe's ease in revealing their stance in the discussion, Beth's statements displayed an ambivalent stance because she oscillated on a continuum between agreeing with the data on the one hand and later disagreeing with the data on the other. This might seem strange since the data were objective; Beth's subjective interpretation must agree with the

objective facts and hence it must agree with the data. This tussle hindered her from making a clear stance in the discussion section:

*I kept switching sides, agreeing and disagreeing with different parts so it was very difficult to stay focus while writing this section.*

In comparison with Beth, Rachel was uncertain about how to reveal her stance in the discussion section, because she felt that her participants did not give honest responses. She discovered that the participants' responses from casual talk and survey were different; her participants appeared to have given politically correct responses in the survey. Consequently, Rachel was confused at the writer stance she should take, i.e., whether it should be based on her understanding of the participants before they completed the survey, or on socially desirable responses which she gathered from the survey:

*Many individuals whom had completed the survey had initially claimed that they were guilty of not following the research processes. However, in the survey, many responded positively when they were asked if they employed any strategies of the information gathering process.*

### **Grammar**

When asked about whether they had difficulties with grammar when writing the discussion, Beth and Phoebe commented that grammar was not an issue to them. When asked about how Beth switched tenses within the discussion section, she responded:

*I know I have to use past tense when making reference from my interviews but present tense when presenting my views.*

Similar to Beth, Phoebe found it easy when dealing with grammatical aspects of the paper. Phoebe knew that she could not use the same tense throughout the discussion section; instead, she had to switch tenses, depending on the functions of the text:

*Concerning tenses, I try to switch between what has been done, what needs to be discussed, and use the grammar needed for that context.*

In contrast, Shirley and Rachel had a different experience when they were interviewed about problems with grammar in writing the discussion. Shirley found it difficult to write in correct grammar when discussing the results, because she was puzzled about what tense to use:

*I got confused at what tense I should use when I showed my interpretation on the findings.*

Rachel's problem concerned the proper use of commas and semi-colons. She misused these punctuations in various places throughout the discussion section. She failed to understand that appropriate use of punctuations could make the structure of the sentences clear. Asked why she thought the problem had

occurred, she said that she did not write multiple drafts of the paper. Her final paper was the only and final version of the paper she had:

*I expected the use of comma to conjoin the sentences, when it instead serves to splice the sentence. The problem is the same with the use of semi-colon... I believe the problems were caused because of my lack of drafts.*

### **Word Choice**

Like other participants in the interview, Beth found it difficult to demonstrate a range of vocabulary when discussing the results. Her vocabulary was weak because she did not have a habit of reading for pleasure; she thought that her limited vocabulary posed a barrier when she wrote the discussion section:

*Word choice is the most difficult. I do not have a large pool of vocabulary as I seldom read. Since I should use an array of words, when changing some words, I'm afraid I may change the meaning of the sentence.*

Shirley also thought that she had limited vocabulary. To cope with the problem, she devoted a huge amount of time to looking up synonyms using a thesaurus and a dictionary to help her find the most appropriate vocabulary to convey her meaning:

*Much time and effort was spent on this vocabulary aspect with the thesaurus and dictionary, to find "right" words to express certain meanings.*

Phoebe was aware of the importance of word choice in academic writing for her to effectively convey her viewpoints/positions. Specifically, she realized that she used hedges and boosters in her discussion section (see underlined phrases):

*It was important that I made use of hedges. For example, "This may show that online journals help Year One Biology students overcome the difficulties they face in completing the discussion section of their reports to a large extent."*

In contrast to Beth's, Shirley's and Phoebe's problem with the word choice in the discussion, Rachel was confident about her vocabulary. However, she believed that her problem was related to her convoluted sentence structures:

*The irony is that despite their knowing of the inadequacy of research process, they continue to follow it for their assignments. I could have made this sentence less convoluted.*

### **Differences in the Difficulties Perceived by the Instructor and Students**

In this section, I will show what the instructor said about the main difficulties faced by her students (i.e. Beth, Shirley, Phoebe, Rachel) in writing discussion. The instructor's comments will be compared with students' comments to find out whether there were any mismatches between the instructor's professional understanding and students' understanding of their own difficulties. It is important to identify the discrepancies so that writing assistance can be directed to address the needs of students in classes.

### ***Instructor and Beth***

The instructor believed that Beth tended to ground her writing on her own opinions. Beth also expressed her problem in including too many personal opinions, but she did not mention reasons for giving too much importance on her personal opinions in the discussion.

The other problem that the instructor highlighted was that Beth did not adequately explain the connection between her findings and the literature, and this problem could be related to her English proficiency. Beth also commented that she found it difficult to express her ideas and that she had difficulties with vocabulary. She did not comment about her failure in establishing links between findings and the literature, though she admitted that she had limited academic vocabulary for writing.

### ***Instructor and Shirley***

The instructor felt that Shirley's main problem was in the organization of the content and that was linked to her penchant for writing complex sentences. Shirley did not recognize that she made numerous grammatical errors because of her long, run-on sentences. The other problem that the instructor pointed out was the inappropriate citation given by Shirley, who had a habit of excluding quotation marks for direct quotes.

Shirley perceived her problem differently from the instructor. Shirley did not make specific comments related to the organization of content, long sentences, and improper citation. She felt that she could have added more personal opinion to the discussion, in addition to describing what previous researchers said.

### ***Instructor and Phoebe***

The instructor felt that Phoebe did not make a connection between the description of the results and the discussion. What Phoebe could have done was to state how her findings related to what previous researchers had discovered. Phoebe commented that she found it difficult identifying relevant literature to be included in her discussion; she had a hard time in finding biology journals which documented the kind of research that she did.

A further problem raised by the instructor was that Phoebe did not discuss some of the salient results, which might be due to a lack of relevant literature in supporting her claims. However, there was no mention of this problem from Phoebe.

### ***Instructor and Rachel***

The instructor felt that Rachel did not discuss the findings in the context of the existing literature. Another problem mentioned by the instructor was related to Rachel's use of long paragraphs throughout her discussion section. According to the instructor, Rachel focused too much on the details of the findings. Rachel made a similar point: she found it difficult to select relevant information from the response she gathered from her open-ended questions. She could have focused on a few main ideas and developed upon those ideas, and she might avoid having long paragraphs in her discussion. However, Rachel did not realize that she failed to discuss the findings in the context of the existing literature.

## **Discussion and Conclusion**

There has been active research investigating students' difficulties in writing research papers over the past decade. However, getting first-year Singaporean undergraduates to share their problems in writing the discussion, and finding the differences between the instructor's and undergraduates' own understanding of these problems, is a new contribution in academic writing research.

The instructor's comments on students' writing difficulties reveal a difference in the understanding of what should be included in the discussion section. The instructor thought that her students could have made connections between the results and the literature and students could have consistently cited the literature using the APA style. However, students interviewed were unaware of the need to make links between results and the literature and they failed to persistently adhere to the APA citation convention. They appeared to be concerned about the organization of the content and the demonstration of appropriate stance in their writing. This piece of finding echoes Bitchener and Basturkmen's (2006) study in which students frequently projected too much of their own belief onto the data. Students in this study felt strongly that they had to incorporate personal opinions while discussing the data.

Research paper is a specialized genre and an advanced written task, which requires a persuasive style of writing. Bitchener and Basturkmen (2006), Flowerdew (1999b), Gosden (1996), and St. John (1987) point out that this persuasive style of writing in the discussion poses greater cognitive demands on

students than methodology and findings sections. This may explain why first-year undergraduates tended to find it difficult to organize the content and cite sources when discussing the data. Besides, the first-year students in this course were not required to write the literature review section although they still consulted references related to their research topic. Since they were not asked to write up a section on literature review, this may be another reason why they failed to make connections between the literature and findings.

The other problem is that students included too many details in the discussion section, instead of focusing on and discussing the key findings. According to the instructor's notes on student term papers, students sometimes did not discuss certain salient findings that they discovered. This means that students might have encountered more problems in selecting which findings to report. Within the knowledge transformation process, if they have clearly set the macro rhetorical goal of their papers, they would have organized information that only supports the rhetorical goal (Bereiter and Scardamalia, 1987). In addition, they might have failed to discuss certain key findings because they had difficulties in identifying relevant literature to support their arguments. Flowerdew (1999b) points out that novice writers may not have a clear understanding of their community of practice. Consequently, they may not be informed about the kinds of reading that are pertinent to their fields. Flowerdew (2000) reminds us that "an individual has to learn the conventions that underpin Swales' six factors before s/he wants to become a member in a discourse community" (p. 129). These six factors are "common goals, participatory mechanisms, information exchange, community-specific genres, highly specialized terminology, and a high level of expertise" (Swales, 1990, pp. 24-27).

In Singapore, undergraduates gain entry into the discourse community of their specializations by writing research papers to fulfill the requirements of their degree programs. Students are engaged in formal participatory mechanisms by enrolling in writing classes for course credits. The information exchange may include completing writing assignments and reading and analyzing academic research papers. The kind of writing is a community-specific genre through which students practice their apprenticeship using academic language. It is important to teach students to understand that the discussion section involves thoughtful analysis and synthesis of key findings; they are not encouraged to describe the small details of the data without discussion, and they should use relevant literature from the discourse community and link the literature to the discussion.

The interview data show that English proficiency, which includes grammar and vocabulary, is another challenge faced by students. This finding concurs with

Bitchener and Basturkmen's (2006) study that students 'tended to use limited proficiency as a default mode of explanation' for their writing difficulties (p.4). Some writing teachers admitted that their students' grammar, word choice, expression of ideas, was problematic (e.g. Casanave & Hubbard, 1992; Cheung, 2010a; Cooley & Lewkowicz, 1995, 1997; Dong, 1998; Hinkel, 2003; James, 1984). It is worth pointing out that students in this study have English as their first language, while many of them would switch to Singlish when conversing outside of the classroom. Tan and Tan (2008) suggest that "Singlish is a variety valued by the students because they use it regularly and they enjoy using it" (p.476). There are more and more studies (see Alsagoff, 2007; Tan & Tan, 2008) suggesting that the standard and non-standard English forms play significant roles in Singapore society. Writing teachers are concerned about whether students may unconsciously transfer sentence structures from Singlish or their mother tongue to their written English. The use of English language for academic writing paralleled with its use outside of the classroom in Singapore deserves further research, given that both the writing instructor and the students in the present study identified English proficiency as a main problem area in the students' writing.

### **Pedagogical Implications**

The four students and the teacher-student pairs offer some implications for the teaching of academic writing. The findings point to the need for the instructor to address the difficulties encountered by students in academic writing by offering strategies to cope with these difficulties. Firstly, the writing instructor can teach research paper genre by incorporating pedagogy on the move structure (Berkenkotten and Huckin, 1995; Swales, 2004). In addition to instilling in students the move organization within the discussion section, practice is helpful in effecting change in learning (Lamie, 2004). In class, activities should include a critical evaluation of writing samples of discussion section, to raise their awareness of how the move structure can help contribute to a good discussion section. Secondly, to improve students' ability to discuss the findings in connection with the literature, the instructor should familiarize students with the differences between the knowledge telling model and the knowledge transforming model in processing complexity of skilled and unskilled writers, as well as the discourse communities of their specializations through analyzing journal papers in the respective specializations. Finally, the present study has shown that English proficiency is a crucial factor in academic writing. Since tackling the language problem is a tough issue, students should come up with short term and long term plans in achieving the necessary proficiency. Students may make use of online resources (e.g., *Check My Words* software) to check their writing for common errors, and they must develop a writing habit that

exposes themselves to increased writing opportunities including a greater variety of writing experience. Writing not only is important to one's academic study, but it is also central to student teachers' own professional development (Lee, 2010).

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## **APPENDIX A**

### **Interview questions for students**

\*\*Your comments will be used solely for research purposes and your name will remain anonymous throughout the study.\*\*

Dear Student,

I am working on a study titled “Perceptions of the difficulties of first-year undergraduates writing the discussion section.” The purpose of this study is (i) to identify the problems and the sources of the problems in writing the Discussion of Results section; (ii) design better teaching practice to better serve future students who are going to take ALS 101.

I would like to ask some questions about writing ALS 101 paper. Your name will remain anonymous.

At this point, I am interested in the difficulties you have experienced in writing the Discussion of Results section.

1. What do you think are the strengths and weaknesses of the Discussion of Results you wrote?
2. Can you tell me about any difficulties you experienced in writing this section?
3. Now I am going to ask you about some specific types of possible difficulties:

Did you experience difficulties in:

- a. understanding the functions of the Discussion of Results?
  - b. selecting content (can you give an example or two?)
  - c. organization of content? (please elaborate your answer.)
  - d. showing appropriate stance (how writers position themselves)?
  - e. grammar (can you give an example or two?)
  - f. word choice (can you give an example or two?)
4. Why did these problems (in question 3) occur?
  5. In your opinion, what is most important to get right in writing a good Discussion of Results and why?
  6. Do you use English as your first language?

In your reply, please attach to the final version of your ALS paper.

Do you have questions you would like to ask me about this study?

I appreciate your comments on or before Monday, July 26, 10:00 p.m.

\*\* Your name will remain anonymous.\*\*