Formal Academic Writing Instruction to Advanced English Learner Groups in Science and Engineering

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The acquisition of formal academic writing skills is paramount for EFL university students of science and engineering. However, one ESP context that can pose a variety of challenges is teaching academic writing skills to EFL science and engineering university students who are at an advanced level of English proficiency. These students have in some cases native or near-native English speaking proficiency. However, many may still struggle in understanding and engaging in formal academic writing. This paper shares some basic suggestions to give students at the aforementioned level. It also offers some classroom activities and materials that will engage and empower students to grasp a clearer understanding of some basic aspects of formal academic writing. The activities are designed to enhance both students' analytical and rhetorical skills, and encourage rhetorical consciousness-raising and reflection.

English remains the dominant language of an ever-growing global community of research and scholarship. Along with this growth is the increasing importance of teaching the skills of writing effectively in English to EFL students at the tertiary level. Writing is a key feature of all students' experience, and in fact dominates their lives due to it being perhaps the central activity of educational institutions (Hyland, 2014).

A genre-based approach with ESP conventions focuses on enhancing students' writing competence in specific target text types (Hyland, 2014). The use of this combination is apropos in the case of EFL university students of science and engineering who are required to write research papers. Examples of target text types include writing methods sections using the past tense and passive

voice, or discussion sections where hedging language like modal auxiliaries and adverbs of degree occur frequently. Understanding target genres used in particular instances will assist students in using language that can be understood in relation to those instances. In addition, using appropriate language will aid students in achieving certain goals that are valued and expected within distinct social and cultural scholastic contexts (Hyland, 2014; Paltridge et al., 2009).

Given the foregoing factors, it is clear that the acquisition of formal academic writing skills is paramount for EFL university students of science and engineering. Students in this learner group will find themselves writing in social and cultural academic contexts particular to their field during and after university life (e.g., lab reports, research proposals, conference proceedings). As a result, they will require the basic foundations of communicating in a formal academic manner appropriate to the norms of their science or engineering fields. However, there may be a number of academic situations which pose difficulties for EFL instructors teaching the necessary academic skills.

One ESP context that can pose a variety of challenges is teaching academic writing skills to EFL science and engineering university students who are at an advanced level of English proficiency. Advanced here is being defined as TOEIC scores of 900 or greater. In some cases, these students have native or near-native speaking abilities. However, many of them may still have difficulties in expressing their ideas in formal academic writing. This struggle may be due to uncertainty of what is required of them in writing in a particular academic context (Paltridge et al., 2009). In addition, the prior writing experiences of the students (home, school, or elsewhere) may not prepare them for the literacy expectations of said context (Hyland, 2014). Moreover, simply studying the Academic Word List (Coxhead, 2010) may be insufficient for these students to transform some of their language habits from informal to formal language usage.

This paper looks at one course, shares some basic suggestions to give students at the aforementioned level, and offers some classroom activities and materials. These activities and materials will engage and empower students to acquire a better understanding of some of the basic aspects of formal academic writing. Others objectives from the suggestions and activities are to enhance both

students' analytical and rhetorical skills in an academic environment, and to encourage rhetorical consciousness-raising and reflection (Swales & Feak, 2004).

The rest of this paper is organized as follows. First, the educational context with be explained, followed by the approach and methods of this study. Then, the outcomes will be presented with a discussion on the interpretations of the major findings. Finally, evaluations of the study will be provided, with the future direction in further planned studies.

Educational Context

The course is a special version of a second-year compulsory English discussion and writing course at Waseda University, Faculty of Science and Engineering. What distinguishes this course is that it is offered by invitation only to students who possess a TOEIC score of 900 or greater. The course is called Concept Building and Discussion 1 (CBD1).

In the spring semester of 2014, 19 students accepted the invitation to the advanced version of CBD1. The student make-up could be divided into two general categories: students who acquired their language skills from living in an English speaking country for several years, and those whose TOEIC scores were mainly attributed to their diligent study of English in Japan.

From the first writing assignment, it was clear in many cases that students struggled to write in a formal academic style even though their compositions were lexically and syntactically correct in general terms. For example, personal pronouns, informal casual language, and slang terms were often used in their writing. In the next section, I will explain a particular approach and method that was used to heighten students' awareness of their analytical and rhetorical skills, which resulted in improved formal academic writing skills.

Approach and Method

The standard textbook, *Concept Building and Discussion: Foundations* (Anthony, Rose, & Shepard, 2010), was used in the advanced CBD1 course. However, in order to increase the students' awareness of their language use, a more technical approach was used involving supplemental materials. Many of my ideas for

classroom activities came from the textbook, *Writing Up Research in Science and Engineering: Foundations* (Anthony, 2013). The following stages explain the process of improving the students' skills in formal academic writing while heightening their analytical and rhetorical awareness.

Stage 1

In class, a short explanation was given on the problem-solution structure of writing. Students were then given short sample texts where the sentences were out of order. Students worked together to put the texts in the correct order based on the "Situation → Problem → Response → Evaluation" sub-genre (Anthony, 2013, p. 30). Then some explanation on paragraph structure was given using the "Topic sentence → Supporting sentence(s) → Conclusion/Transition sentence (optional)" pattern .

At the end of class, a short academic writing assignment was given. Students were told to write a four paragraph essay on any topic of their choice based on the Situation → Problem → Response → Evaluation sub-genre. I collected the papers through digital submission, read them, made personal notes (needs analysis), and then returned them to the students without making any evaluations or comments.

Stage 2

One weakness displayed in the students' early writing assignments was the use of the passive voice. In class, therefore, the students worked on passive voice sentences in both past and present tense. One activity that was used was taking a recipe and changing all of the imperative sentence forms.

The students were told that writing in the passive voice is important in some styles of formal academic writing, and that in this course, I wanted them to use the passive voice in their writing as much as possible. I told them that not all academic writing uses the passive voice, and that in the future after they have mastered the passive voice, they could make their own writing decisions using good writing judgment.

Stage 3

In class, I offered some prescriptive advice on stylistic aspects of formal academic writing:

- Avoid using contractions:
  - The results weren't announced. → The results were not announced.
- Avoid using "run-on" expressions (and so on, etc.):
  - Calories can be burned by playing tennis, soccer, etc. → Calories can be burned by playing tennis, soccer, and other active sports.
- Avoid starting sentences with "And," "So," and "But." "In addition," "Therefore," and "However" are preferred:
  - And, gasoline prices are increasing. → In addition, gasoline prices are increasing.
- Avoid using the personal pronoun "you":
  - As you can see from the data, smartphone use is increasing. → As can be seen from the data, smartphone use is increasing.
- Try to make your paper more impersonal by reducing the amount of "I" statements and writing with the passive voice:
  - I think we need to address this issue. → This issue needs to be addressed.

Stage 4

In class, I advised the students to try to avoid short high frequency verbs whenever possible. Then an activity sheet was given to them, and I had them work in groups trying to think of more formal academic alternatives. Table 1 is a sample of the sheet, and some of the answers produced by the students.

We did the same activity for phrasal verbs. Table 2 shows some of the answers produced by the students.

Stage 5

In class, students were given research paper introduction sections from various science and engineering fields (e.g., computer science, environmental resource engineering, life science). They were to analyze and compare these texts with the prescriptive advice and classroom activities in Stages 3 and 4. Following this activity, the students were then to exchange their problem-solution papers from

Table 1

High Frequency Verbs and Their Potential Academic Alternatives (Produced by Students)

High frequency verbs	Academic alternative(s)
do	*perform, conduct*
end	*finish, complete*
get	*obtain, achieve, acquire*
keep	*preserve, maintain, retain*
need	*require*
say	*report, state*
see	*observe, view*
stop	*cease, terminate*
tell	*inform, notify, instruct*
want	*hope, desire*

Stage 1 with a partner and provide verbal peer feedback, comments, and advice on how the author could improve his or her paper. Then the students were given the assignment to reflect on their first problem-solution paper and rewrite it using what they had learned about formal academic writing and the peer feedback they received.

Results and Discussion

Here, I will report on some interesting occurrences and my observations during and after the previously explained process. Unsurprisingly, the students' second problem-solution papers were much improved in quality. What was unexpected, though, were some comments I received from some students.

Some of the students reported that they were surprised at their own improvement, and how much they did not know about formal academic writing prior to the course. Some had thought that they already had sufficient knowledge of English and that the course, albeit "advanced", would be easy. Some also reported that they could see their own improvement developing while doing the classroom activities and that their view of writing academic texts had

Table 2

Common Phrasal Verbs and Their Potential Academic Alternatives (Produced by Students)

Phrasal verbs	Academic alternative(s)
blow up	*explode*
break up (take apart)	*dismantle, disassemble*
come out	*appear*
do again	*repeat*
do well	*succeed*
find out	*determine, investigate*
fill out (a form)	*complete*
finish up	*complete, conclude*
get better	*improve*
give off	*release*
go down (an amount)	*decrease*
go up (an amount)	*increase*
go down little by little	*gradually decrease*
go up little by little	*gradually increase*
go up and down	*fluctuate*
hand in (turn in)	*submit*
leave out	*omit, exclude*
let go	*release*
look at (a problem)	*investigate*
look into (a problem)	*investigate*
make up for	*compensate*
not enough	*insufficient, inadequate*
point out	*highlight*
put out (a fire)	*extinguish*
set up	*construct, establish*
start out	*commence*
think about	*consider*
work out (a problem)	*determine*

changed and evolved. One student disclosed that he found it interesting that he could make so much improvement without teacher comments on his first paper.

The foregoing comments lead me to believe that the approach and method outlined in this paper were effective for three primary reasons. First, the technical approach gave students something specific and concrete to focus on while learning and writing formal academic papers. Second, the students could see measurable qualitative improvements in their writing. Finally, the activities engaged and encouraged students to think and reflect on their own writing. As a result of their increased awareness, the students were able to enhance their analytical and rhetorical skills.

Future Research and Conclusion

Notwithstanding the apparent effectiveness of the approach and method presented here, it was the first time for me to implement the described process. As a result, there were some weaknesses of this type of research. For one, it was based primarily on anecdotal conversations from my students, and there were clearly some areas that could be improved for future use. In future courses, more concrete research designs will be implemented in an attempt to quantify the effectiveness of the language teaching approach and method. In order to measure this effectiveness, concordance and other analyzing software will be used. The end result will be the presentation of concrete evidence to support the proposed approach and method.

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