

Building of academic discourses in university students' writing*

Pun, Fung Kan (a) & Webster, Jonathan (b)

a. Department of Chinese, Translation and Linguistic, City University of Hong Kong, ctfkpun@cityu.edu.hk

b. Professor, Head of Department of Chinese, Translation and Linguistic, City University of Hong Kong, ctjjw@cityu.edu.hk

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Abstract

This paper focuses on investigating the development of university students' writing ability in academic discourse in English. Following the substantial literature dealing with the patterns of language choice typical of academic discourse of English, a list of linguistic features was compiled and applied to measuring students' academic writing potential. The linguistic features located at lexicogrammatical level are objective and measurable, covering language formality, language complexity, and objectivity. Comparison of the linguistic features has been made along two major directions, across the successive assignments of Biology students, and between the students studying in the disciplines of Biology and Linguistics. The comparison of linguistic features across successive drafts of students' written assignments shows that students have demonstrated improvement across assignments in terms of grammatical accuracy, and slight improvement in their ability to produce academic writing.

1. Introduction

This study is concerned with the development of academic discourses among university students in Hong Kong who have English as their major teaching language and for whom English is a second language. By academic discourse here I am referring to the essay-type assignments that students produce as part of their coursework in their tertiary education.

The development of university students' writing ability in academic discourse in English is evaluated through a logogenetic perspective. However, rather than covering the effectiveness of feedback (as in Hyland, 1998) which is indispensable within the drafting and commenting cycle of a text, this study focuses on the linguistic features that are normally associated with academic writing. The main focus of this study is on how students' potential development with respect to English writing might be modeled and contrasted in terms of linguistic features.

Currently at the City University of Hong Kong (henceforth CityU), a writing across curriculum project, the Language Companion Course (henceforth LCC) project is conducted to provide a web-based platform for online language specialist coaches to interact with students on designated written assignments has been implemented. The LCC project was developed by a team from several units in CityU including Dr. Jerry Yu (Chief Information Officer), Prof Lilian Vrijmoed (Dean of Student Learning), Dr. Eva Wong (Head, Education Development Office) and Prof Jonathan Webster (Head, Department of Chinese, Translation and Linguistics; and Director, The Halliday Centre for Intelligent Applications of Language Studies).

In the LCC project, there are three frontline parties, including students, online language specialist coaches, and subject teachers. Students can submit drafts of their assignment to their assigned language specialist coach via a blog-based interface implemented in Blackboard (a web-based course-management system used in CityU). The comments given by the coach include those selected from a supplied comment bank and their own comments. The comments from the comment bank appear as numbered links in the essay. By clicking on each comment, the student is able to see an explanation and examples. Coaches avoid simply correcting students' work, but instead identify the nature of the problem to be addressed. A final version will then be submitted to the subject teacher who will grade the assignment on content, and also to the online language specialist coach who will grade it for language. Before finally submitting their essay to the subject teacher, each student could have worked through two prior drafts with their online language specialist coach. The following figure shows the workflow of the three parties mentioned.

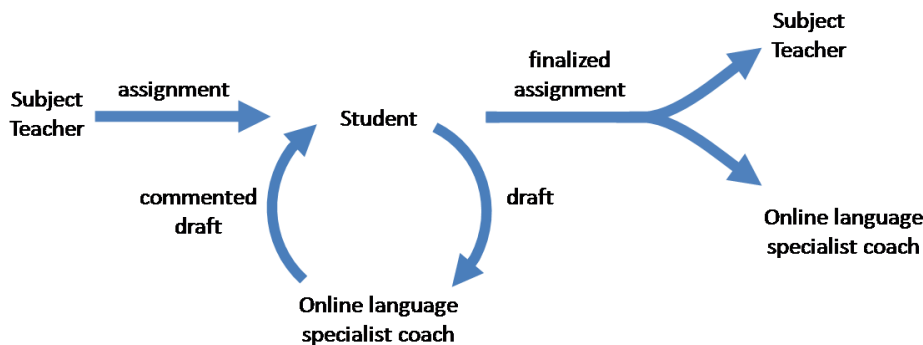


Figure 1 Generic workflow of LCC project

There are also supporting parties from CityU as well, including the Office of Dean of Student Learning which provides administrative support; the Education Development Office which provides training and pedagogical support; and the Computing Services Centre which provides technical support.

The Halliday Centre for Intelligent Applications of Language Studies (HCLS) is responsible for the LCC project evaluation. The research team in HCLS led by Prof Jonathan Webster conducts the evaluation to study the effectiveness and further developments of the LCC project in terms of writing performance. The research team carries out an in-depth investigation on the comments given by the online language specialist coaches, and the corresponding student progress and performance in relation to the comments given (Webster and Chan, 2008). This study is part of the evaluation which focuses on the linguistic features.

The courses participated in the LCC project are voluntary. The service provided is optional; students are free to submit drafts to the online language specialist coach, and to revise according to the comment. To motivate students improving their English, there is a 5% to 20% language component allocated to the final assignment submitted, depending on the course nature.

As the project evolved, front loaded pedagogical support was provided to students by the research team led by Prof Jim Martin and Dr. Ahmar Mahboob in the University of Sydney (henceforth USYD) since 2008 under the Scaffolding Literacy in Adult and Tertiary Environments (henceforth SLATE) project. Besides the course-based mode in which the participation is voluntary, a program-based model has also been started. There are two undergraduate programs, one in Biology and the other in Linguistics, in the program-based mode. In the program-based mode, the same cohort of students is accompanied by the LCC project throughout their 3 years curriculum. However, the data used in this study come from the first three phases of LCC project (as shown in the following table) before the SLATE project started.

Phase	Period	Milestone	Number of courses	Number of students
I	Jan-April, 2006-07	LCC project launched	3	147
II	Sept-Dec, 2007-08		3	153
III	Jan-April, 2007-08		10	602
IV	Sept-Dec, 2008-09	SLATE project evolved Program-based mode commenced	10	1395
V	Jan-April, 2008-09		7	829

Table 1 Timeline for LCC project

2. Related works

There are substantial descriptive studies on linguistic features in the literature, which are broadly categorized into four categories, (i) scientific text (Eggs and Martin, 1997; Halliday 1993, 2004b, 2004d; Martin, 1986, 1991, 1993b, 1993c, 1993d, 2007; Martin and Rothery, 1993; Schleppegrell 2004), (ii) historical text (Martin, 1991, 1993a, 1993b, 1993d, 2007), (iii) cross-disciplinary text (Hiltunen, 2006; Hyland, 2002; MacDonald, 1987; Martin, 1991, 1993b, 1993d, 2007) and (iv) classroom writing (Christie, 2002, 2007; Christie and Dreyfus, 2007; Martin and Rothery, 1986; Martin and Rose, 2005). Besides these descriptive studies, there are also corpus-based studies on academic writing as in the studies of Tribble (2002) and Hinkel (2004).

In academic writing, the technique of transforming the ideational element is essential, like in the process of summarizing and paraphrasing. Interpersonal and textual meanings also play their roles in producing an academic writing, however, these two concepts are not the focus of in this study. This study addresses those linguistic features noted in the above-mentioned literatures which have to do with the ideational concept of meaning, in which the features denotes a relatively complex, formal, and objective piece of academic writing.

As regards ideational choices, those ideational elements that encode academic writings are studied in terms of three features: complexity, formality and objectivity. These three features are often observed in academic writing. For instance, it is grammatically more complex compared to spoken language or

other kinds of writing that a student usually comes across. Academic writing is relatively more formal and aim at communicating objectivity. For complexity, two linguistic features have been identified, namely the occurrence of attributive adjectives and nominalization, however, complexity at clausal level is not addressed in this study (a section on projection and expansion (section 5.2) is included in Pun, 2009). Nominalization is widely noted in the literatures (as in Christie, 2002, 2007; Eggins and Martin, 1997; Halliday, 1993, 2004b, 2004d; Hinkel, 2004; Martin, 1986, 1991, 1993b, 1993d, 2007; Schleppegrell, 2004). However, other than those popular features such as nominalization, particular interest has been given to attributive adjectives. Unlike nominalization, less attention has been given to the use of adjectives in the literature. The use of attributive adjectives may also denote the complexity of a text, which allows for the formation of complex nominal group as premodifiers. For formality, the occurrences of contractions (Eggins and Martin, 1997) and the preposition “of” (Halliday, 1989; Tribble, 2002) were identified. The preposition “of” introduces a prepositional phrase which may involve a post-modification of nominal group. One linguistic feature related to the expression objectivity is the author’s use of first person pronoun (Eggins and Martin, 1997).

3. Method

To investigate the possible development of university students’ writing ability in academic discourse in English, five linguistic features normally associated with academic writing at lexicogrammatical level have been identified. The linguistic features include attributive adjectives, nominalization, contractions, the preposition “of”, and first person pronouns. By comparing the use of those features, this study attempts to address the following research questions:

1. How can the development of academic writing be mapped to the presence of linguistic features?
2. By participating in the LCC project, have the students improved their academic writing ability in English in terms of selected linguistic features in English?

The data used for this study mainly come from phase I to III of the LCC project (Table 1). The data collected are the assignments given by the lecturers in each course, and the assignments are more “content specific” than “language specific”, which means the assignments address the students’ understanding of the subject matter rather than focusing on their use of the English language. The language part is addressed by the online language specialist coaches. Some of the online language specialist coaches provide front-end language-writing resources for their students prior to undertaking the assignment. Tutor’s language support is mainly provided by way of comments on their drafts. The cycle of commenting and revising any draft is stored in the blog system; such storage of every piece of writings facilitates the data collection. All the drafts and final versions are downloaded and served as a rich resource for this study. However, not all of them are included in the analysis of academic features. Of particular interest are the Biology students and Linguistics students. Out of the total population in the three Biology courses throughout the three phases, 31 students participated in all the three courses in the phases which allow longitudinal study. There is no longitudinal data available however for the Linguistic major.

Out of the 31 students enrolled in the Biology courses as mentioned above, only 12 of them are included in this study. These 12 students submitted 4 or more assignments in total. Among the Linguistics students, 12 students from each course were randomly selected. The number of writings that the 36 students produced, including their first drafts (V0s) and the final versions (Vfs), is shown in Table 3.

Concerning the sample size, there are 102 unique texts collected from 9 assignments (please refer to Table 2 below for brief descriptions), in which 36 are collected from the Linguistics students and 66 are from the Biology students. A total number of 182 writings (including the first draft and the final version that student produced) are considered in analyzing the academic features, the drafts within the commenting and drafting cycle is not considered in this study.

All the 36 students included in this study are undergraduate students at CityU. All of them are second language users of English. In terms of English proficiency, the students fulfilled the general requirements set by the University, meaning they have obtained at least grade E or above in the HKALE AS Use of English or equivalent qualification.

Phase	Discipline	Assignment	Brief description
I	Bio	A1	Descriptive essay
		A2	Website evaluation
		A3	Lab report— discussion
	Ling	A1	Descriptive essay
		A2	Argumentative essay
II	Bio	B1	Unclear
		B2	Argumentative essay
	Ling	B1	Website evaluation
III	Bio	C1	Descriptive essay

Table 2 Brief descriptions on course assignments

Phase	Discipline	Assignment	Number of students	First draft received	Final version received
I	Bio	A1	12	10	11
		A2		9	9
		A3		10	8
	Ling	A1	12	9	12
		A2		12	12
II	Bio	B1	12	8	10
		B2		10	10
	Ling	B1	12	9	12
III	Bio	C1	12	9	12

Table 3 Number of writings collected

The identification of the linguistic features is partially automatic depending on their nature. Despite computerization may help to some extent in processing the text, human verification is still necessary. Only the occurrence of attributive adjectives needed to be identified manually. The occurrence of

nominalization is identified through affixation by computer program with manual verification. However, for our study here only instances of nominalization including the formation of abstract noun from a verb or adjective by derivational morphology were included. Those nominalized words not involving affixation were not considered. The occurrence of the contractions, preposition “of”, and first person pronoun are identified by means of a concordancer with human verification.

After obtaining all the occurrences of linguistic features and the total number of words in each text, a frequency ratio was then calculated (number of occurrence/total number of words). Besides investigating each feature, an evaluation matrix was established to facilitate the comparison. As all the fractions are in fact the occurrence of each feature, it allows addition and subtraction among them. The overall index for evaluation could be obtained by applying the following equation, which includes the frequency of attributive adjectives, nominalization, the preposition “of”, contractions, first person pronouns. An assumption is made here that the features carry equal importance, and thus the weightings (w) are the same. However, not all the features share the same polarity. The frequency of contractions and frequency of first person pronouns are inversely correlated with academic discourse, and thus a negative value is assigned accordingly.

$$\sum_{n=1}^n w_n x_n$$

To facilitate comparison, a control index is calculated. The same methodology is applied to four texts (approximately 200 words per text) which are extracted from the reading materials from the Biology and Linguistics classes. After obtaining the corresponding linguistic feature occurrences, the indexes are calculated and the average is 0.14. This index could serve as a reference for comparison with the students’ writings.

4. Findings and Discussion

The results obtained through analyzing the linguistic features of the writings as mentioned above will be discussed in two ways: (i) an overview and (ii) two linguistic features (nominalization and first person pronoun) in particular. The last section includes a case study of a Biology student’s writings in Phase I.

The students’ writings are categorized into four groups, the first draft (V0) and the final version (Vf) of Biology group and of Linguistics group. In addition, an index from the control text is also included. Figure 2 shows the summation of the ratio under five categories, in which the color scheme of the control index is in green, while the Biology group is represented in blue, and the Linguistics group in red; the color tone for V0 is darker (blue, red), and the tone for Vf is lighter (light blue, pink).

4.1 An Overview

Considering the overall students’ performance in terms of identified linguistic features, the index of the Biology group shows a higher value than the Linguistics group for both V0 and Vf. Comparing with the control value, it is lower than the Vf value of Biology group, and higher than the remaining ratios. The corresponding values of Vf in both groups are higher than the corresponding V0 with a greater increment in the Biology group than in the Linguistics group.

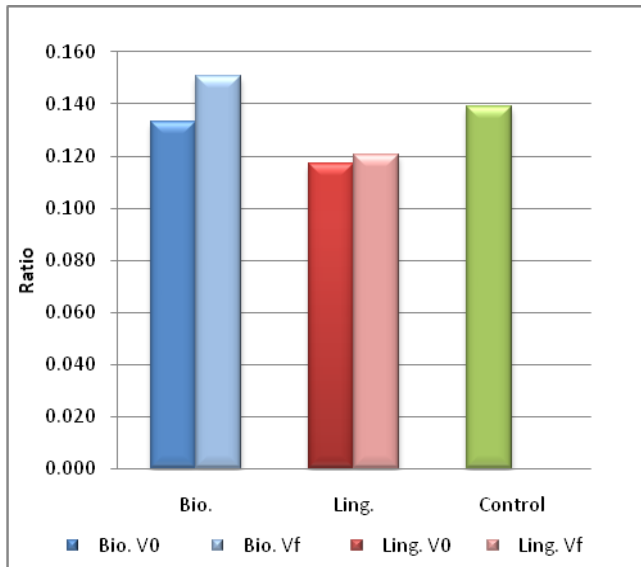


Figure 2 Overview of evaluation indexes

When we look into the breakdown of the V0 and Vf ratios in each assignment as shown in Figure 3 below, some tendencies could be observed across the assignments. The first three assignments (Bio. A1, Bio.A2 and Bio.A3) of the Biology group and the first two assignments in the Linguistics group (Ling.A1 and Ling.A2) come from the same semester, whereas the subsequent two assignments from Biology group (Bio.B1 and Bio.B2) and the last assignment of the Linguistics group (Ling.B1) come from the following semester. The remaining assignment of the Biology group (Bio.C1) comes from the third semester since the LCC project launched.

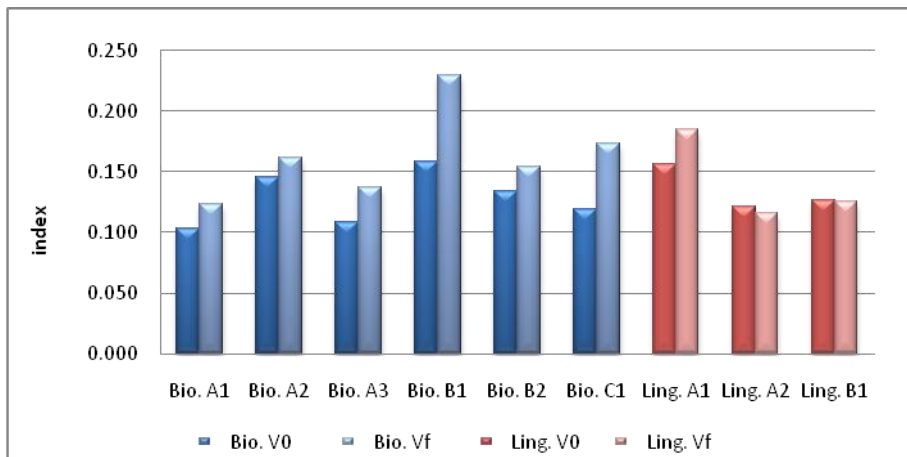


Figure 3 Index of evaluation matrix across assignments

Through studying the indexes across assignments (Figure 3), all the indexes of Vf have a higher value than that of V0 in the Biology group. There is only one index of Vf which shows a lower value in the Linguistics group (Ling.A2). When considering the first drafts (V0s) of Biology and Linguistics groups, unlike the overall evaluation index as presented above, the V0 indexes of the Linguistics students show

higher values than those of the Biology students in general (except Bio.B1), especially when comparing the Ling.A1 with the other assignments in the Biology group. Comparing the last assignments of the Biology group and the Linguistics group, the V0 value in last assignment of Phase I of the Biology group (Bio.A3) is smaller than the Linguistics group (Ling.A2). In phase II, however, the V0 value in the assignments of the Biology group (Bio.B2) is higher than the one in the Linguistics group (Ling.B1). There is only one assignment in the Biology group in phase III, and the value of V0 is smaller than the first and last assignments of Linguistics group in phase I (Ling.A1 and Ling.A2).

The above observations suggest that there is no linear improvement or development across the assignments, though a tendency of improvement across versions can be concluded, especially in the case of the Biology group. However, if register is taken into consideration, the development in writing ability of the Biology group is more evident in their descriptive writing. There are two assignments (Bio.A1 and Bio.C1) involving description out of a total of six assignments in the Biology group. In addition to these two assignments, the first assignment in the Linguistics group (Ling.A1) also belongs to the same register. By considering the Bio.A1, Bio.C1 and Ling.A1 in Figure 3, development in the ability of the Biology students in their descriptive writing is noted. The value in V0 shows improvement from the first assignment (Bio.A1) to the last one (Bio.C1), as well as the Vf value. Therefore through the identified linguistic features, in the descriptive writing of the Biology group, improvement is demonstrated.

When comparing the Biology texts (Bio.A1 and Bio.C1) with the Linguistics text (Ling.A1) which are descriptive in register, the ratio of using linguistic features is higher among the Linguistics students. Despite improvement observed in the Biology group across versions (V0 and Vf) and assignments (Bio.A1 and Bio.C1), the Linguistics group showed better performance in handling the linguistic features contributing to academic writing.

There are two major possible explanations for the variation in V0 and Vf, sentence rewriting for the Biology group (an extract is shown in example 1) and extensive revision for the Linguistics group as shown in example 2. The bracketed number is the comment inserted by the online language specialist coaches, and the corresponding description is also included within the example.

Example 1 (extracted from Biology group)

V0: “Plants form [4]mutualism relationships with specific fungi”
Note: [4]. Word choice: Do you mean mutually beneficial relationship?
Vf: “Plants form mutually beneficial relationships with specific fungi.”

Example 2 (extracted from Linguistic group)

V0: “In the processes or action clauses, transitive and ergative exist. The oldest accessible form of English has an ergative-type construction, [14]then a transitive pattern in earlier English emerged and eventually an ergative pattern [13]in contemporary [15]English.”
Note: [13]. Missing verb: You can put a verb here.
[14]. New sentence: You can begin a new sentence here.
[15]. Weak illustrations: You need to explain this idea more. It may be helpful if you can use an example to illustrate your idea here.

Vf: “In order to capture the whole truth about the representation of material processes of the grammar of English, it is necessary to distinguish the differences between doing process and material process. Doing process refers to the whole event that covers the material process from within.”

It is noted that from the samples, the performance of the two groups is similar in most cases. For instance, the Biology group did not use any contractions in their writings, but the Linguistics students did. The Biology group also used fewer first person pronouns than the Linguistics students. However, higher frequencies of attributive adjectives and the preposition “of” are observed in the writings of the Linguistics group. For both groups, improvement was evident when considering the value of V0 and Vf.

4.2 Nominalization

The frequencies of nominalization in the first drafts and final versions of Biology and Linguistics are shown in Figure 4 below. Fluctuation is observed between V0 and Vf for the Biology students from assignments to assignments. Similarly, for the Linguistics students, there is no apparent tendency between V0 and Vf, but the differences between them is much fewer than those of the Biology group. Considering the V0 and Vf ratios across the assignments, no linear trend is observed in the writings of the Biology group, whereas there is a decline in both V0 and Vf in the writings of Linguistics students. However, since the students were not the same for both courses in Linguistics, it cannot be concluded that the change is an indication of a change in students’ performance. However, if we map the performance with the register of descriptive writing (Bio.A1, Bio.C1 and Ling.A1), the frequency of using nominalized words is increase from the very first assignment Bio.A1 to the last assignment Bio.C1 in the Biology group. However, the Linguistic students used a larger variety of nominalization than the Biology group, some examples are shown in Table 4 below.

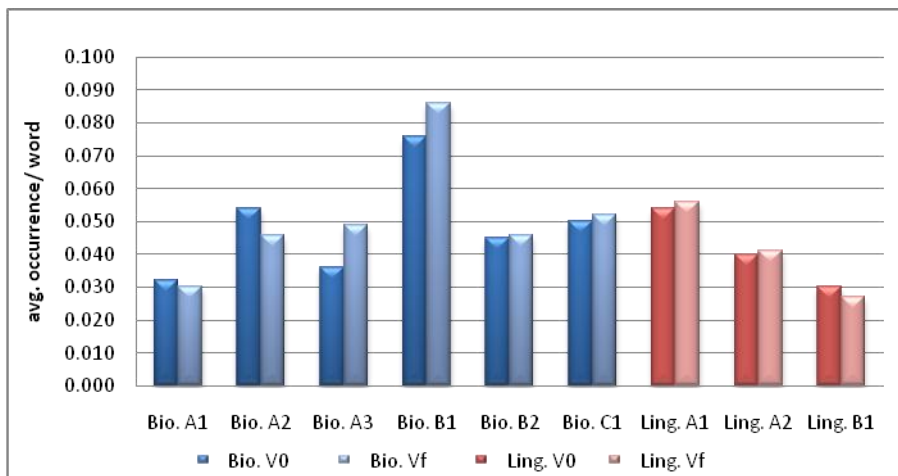


Figure 4 Average frequency of nominalization across assignments

Assignment	Examples	
Biology (Student A) Bio.A1 V0	mutualism	relationship
Biology (Student A) Bio.C1 V0	abundance, adaptation, migration, evolution, ...	alternation, distribution, prevention, ...
Linguistics (Student B) Ling.C1 V0	transitivity	explanation, communication, reconstruction, existence, expressing, importance, ...

Table 4 Examples of nominalization used in students' writing

Considering the differences between V0 and Vf of the first two assignments (Bio.A1 and Bio.A2), the values of Vf are lower than the corresponding V0. As suggested before, this is normally a result of rewriting the sentences after receiving the comment from their coach. An example for illustration is given below (Example 3).

Example 3 (extracted from Biology group)

V0: "They can [21]be produce life saving products like penicillin as new generation of super-drugs."

Note: 21. Delete this

Vf: "They can produce life saving products like penicillin as super-drugs"

In Example 3, in addition to deleting the copula verb "be" as suggested, the student further revised the nominalized noun phrase "a new generation of super-drugs" into a simple compound-noun "super-drugs" as shown in Vf. Consequently, the nominalized lexis "generation" was deleted during the process of rewriting. This kind of sentence rewriting and deletion accounts for much of the decrease in students' use of nominalization. Another example illustrating the occurrences of both attributive adjectives and nominalization is shown in Example 4. The student misused the nominalized lexis "mutualism" as an adjective to modify "relationship" in V0. After the online language specialist coach commented about the students' "word choice", the student made the following change in Vf.

Example 4 (extracted from Biology group)

V0: "Plants form [4]mutualism relationships with specific fungi"

Note: 4. Word choice: Do you mean mutually beneficial relationship?

Vf: "Plants form mutually beneficial relationships with specific fungi."

After the amendment made by the student, there is a change in linguistic features with two attributive adjectives added and one nominalization deleted. Therefore, a decrease in frequency of nominalization is observed across V0 and Vf, and it is not necessary to observe an increase from V0 to Vf.

4.3 First Person Pronoun

Another highlighted linguistic feature is the occurrence of first person pronoun taking a participant role referring to the writer. This linguistic feature is negatively correlated with objectivity in writings. The frequencies in the first drafts and final versions of the Biology and Linguistics groups are shown in Figure 5 below. Most of the Vf ratio in the graph is the same as the V0 ratio, with a few fluctuations observed. There is no general tendency across the assignments concerning the V0 and Vf ratios. However, following the similar argument placed before, by considering the descriptive writings Bio.A1, Bio.C1 and Ling.A1, the occurrence of first person pronouns drops linearly in the Biology group. This suggests that the awareness of the inappropriate use of first person pronoun has been raised.

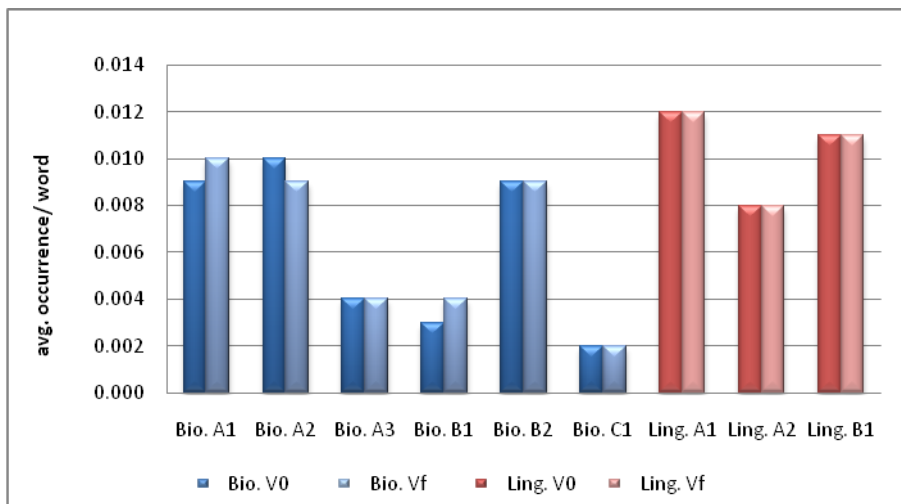


Figure 5 Average frequency of first person pronoun across assignments

There is no linear observation in the longitudinal study of the Biology group across the assignments. However, by taking the text type into consideration, the development in writing ability of the Biology group is more evident in their descriptive writing. The Linguistic students also showed better performance in descriptive writing than the Biology group in terms of the identified linguistic features.

If we take an example from the first assignment of the Biology group in Phase I, which is about a summary of a video, the use of first person pronouns in this assignment mainly serves two purposes. The first is to facilitate the verbal or mental projection such as “we” in Example 5. The second purpose is to use first person pronouns as collective nouns as demonstrated by the use of “we” in Example 6. However, by that phase the online language specialist coach did not address the issue of the use of first person pronouns. By later phases, with the modifications on the comment bank, there are fewer first person pronouns observed. However, some students still use first person pronoun to reflect their evaluation, as shown in Example 7 which comes from the assignment in Phase III.

Example 5 (extract from Biology group)

V0: “We can conclude that [13]the tree can provide sugar for the fungi, while the fungi provide nutrients and water [14]as returns.”

Example 6 (extract from Biology group)

V0: “We have to be careful [20]on using fungi when making food.”

Example 7 (extract from Biology group)

V0: “I disagree with this project.”

By modeling the essential and distinctive features of academic writing according to genre and register, we should achieve a better understanding of academic writing and how to produce it.

5. Conclusion

This study attempts to investigate the possible development of student’s writing ability in academic writing in English. In the study, students’ English language writing ability is evaluated in terms of linguistic features which are objective and measurable, including choices related to language formality, language complexity, and objectivity. The linguistic features are located at the lexicogrammatical level including the occurrences of attributive adjective, nominalization, the preposition “of”, contractions, and the first person pronouns.

The data for the present study consists of the written work produced by the students who participated in the Language Companion Course (LCC) project carried out at City University of Hong Kong. The grammatical indicators denoting academic discourse in their writings are identified qualitatively and quantitatively. An evaluation matrix is established based on the features to optimize the analysis to allow comparison between courses, assignments, and versions.

The results show that students have demonstrated improvement across versions and assignments in terms of grammatical accuracy, and slight improvement in the achievement on producing academic writing.

One of the major implications of this study deals with making explicit this notion of academic writing: what academic writing is and how to produce it. Students need to know what makes a text into a piece of academic writing, for instance, beyond simply referring to “introduction-body-conclusion” or “topic sentence for each paragraph”. A starting point for this might be a study on the differences between genres, as well as the various registers of academic writing in terms of method of development and grammar. However, the texts collected in this study are of a variety of registers, which may affect the outcome of the review. Among the registers of academic writing, for example, objectivity in an argumentative text will be higher than that of an evaluation. However, although certain features may help to distinguish registers, it is important to control the level as well. For example, nominalization is typically a kind of suitable grammar usage in academic writing, but should not be excessive. The point is to ascertain what constitutes an appropriate level of nominalization.

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