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A New Approach To Teaching Academic Writing: *How philosophers can contribute to educating young scientists*

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Abstract: Since April 2009, a new approach to teaching Academic Writing has been developed as a project of applied philosophy. This approach aims to improve graduate student's academic writing skills by improving their logical thinking skills rather than merely language skills. Under this approach, teachers of the Academic Writing course are mainly philosophers, and students of the course are required to learn how to form logically valid arguments rather than just grammatically correct sentences. The objective of this paper is to explain why it is important to learn logical thinking skills for academic writing, and how philosophers can deliver that kind of training. In section 2, we shall explain why the training of logical thinking skills is important for writing academic papers by highlighting a common misunderstanding about academic writing. In section 3, we shall show how the training of logical thinking skills can be practically applied. In section 4, we shall present the results achieved by our academic writing course so far (between April and October 2009).

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1. Introduction

Nowadays when people think about what philosophers do, they tend to think that philosophers are doing something very abstract and out of touch from the reality. This stereotypic image of philosophers is becoming more and more obvious in the contemporary Japan where emphasis has been mainly placed on the scientific and technological developments. People tend to think that what philosophers do are exactly opposite to what the current society needs. For this reason, the practical role that philosophers can play in the society seems to get narrower and narrower.

In order to change this negative image about philosophers, an applied philosophy project has been launched at Hokkaido University to promote a practical role of philosophers in the society, particularly in the education of young scientists. The project aims to apply the training of logical thinking skills to the teaching of academic writing. The rest of this paper is to briefly explain why the training of logical thinking skills is important for, and how it can be applied to, writing academic papers.

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2. What Is Really Important In Academic Writing

There is a very strange phenomenon in the Japanese university education. All university students, both graduates and undergraduates, need Academic Writing skills for their essays, reports, dissertations, etc. But unfortunately, Academic Writing course is not a compulsory course in the university education. For this reason, many university students in Japan are not given a proper training on how to write academic papers, and most of them do not understand what is really important in academic writings.

To illustrate what is really important in academic writings, let us consider the difficulty in producing a satisfactory academic paper in English.

Many of the university students thought that the difficulty in producing a satisfactory academic paper is primarily due to a limitation in expressing ideas and thoughts in English. Thus whenever they encounter difficulties or problems in writing academic papers, they naturally think about going to the English teachers to seek help. This way of thinking about the difficulty in academic writing, however, is not only restricted to the students. As a matter of fact, even the top ranking university in Japan[1] employs only language teachers to help their students with the writing problems.

Without any question, knowing how to properly use the language, such as its grammar and punctuation, is very important to academic writing. But knowing how to write well cannot be just knowing how to use the language well. After all, knowing how to properly use the language rules can only help to deal with the sentence-level problems. But the most serious problems confronting academic writing are beyond the sentence-level. This is why native English students also have difficulties in academic writing.

Indeed, based on our years of teaching experiences in various areas, we found that all the unsatisfactory writings have something in common. By and large, all of them can be categorized into either writings that fail to deliver a clear focus or writings whose central ideas are not properly supported; hence they are unable to convey what is in a writer's mind in a clear and persuasive manner. These symptoms of unsatisfactory writings show that the difficulty in academic writing is not primarily due to a lack of language skills, but a lack of a proper training in logical thinking skills; i. e. knowing how to think clearly and argue well. For this reason, the writers lack the ability of knowing how one idea can be correctly and incorrectly connected with another idea.

To make clear this problem, let us consider how people normally reason in their everyday life. For example, let us consider how a student, Peter, might explain to his teacher why he could not submit his assignment on time. Of course there are countless reasons why Peter could not submit his assignment on time (e. g. it could be that he was ill, or he just could not finish it, etc). But for the sake of illustration, let us just suppose that the reason is that his computer was broken.

1 For example, here is how Tokyo University describes its writing program: "Beginning in April 2008, all first-year science, engineering, and medicine undergraduates in the College of Arts and Sciences at the University of Tokyo are required to take the one-semester ALESS course in English-language academic writing and presentation. Each class … is taught by *a highly qualified native English-speaking instructor*." See http://aless.ecc.u-tokyo.ac.jp/aboutus.html Emphasis mine.

That is, Peter could not submit his assignment on time because his computer was broken.

It is easy to guess that many people are quite happy to accept that the reason —— *Peter's computer was broken* —— alone provides a sufficient ground for the conclusion —— *Peter could not submit his assignment on time*. Indeed, every time when we asked our new students to judge if the reason alone is sufficient, most of them would answer *YES* without much hesitation.

However, if we look into the connection between the reason and the conclusion more carefully, we shall see that the former cannot be sufficient for the latter because the former is not *directly* connected with the latter. There are other possibilities that would render the reason irrelevant. Peter could have chosen to handwrite his assignment, or type it using a typewriter. In these cases the brokenness of his computer would have nothing to do with the failure to submit his assignment on time.

In order for the connection between the brokenness of Peter's computer and the failure of his assignment submission to be established, there has to be, among other things, a requirement that *the assignment must be done on a computer*, so that all the other possible ways of doing the assignment can be eliminated. This requirement is necessary for making the brokenness of Peter's computer a relevant reason. But the requirement alone is not enough to make it a fully convincing reason. There are still other possibilities that could render the brokenness of Peter's computer ineffective as a convincing reason for the failure of Peter's assignment submission. That is, even if Peter's computer was broken, he could have used the computer at school or any other computer available during the time of the brokenness, and in which cases the brokenness of the computer would not have directly affected the failure of the submission.

Thus, in order to make the brokenness of Peter's computer a fully convincing reason for Peter's failure to submit his assignment on time, beside the requirement that the assignment must be done on a computer, there has to be a further condition that could eliminate all the other possible choices of computer using. For example, *no other computer was available during the time of the brokenness*.

Having taken all these into consideration, a fully convincing argument should go like this: Since Peter was required to do his assignment on a computer, and since Peter's computer was broken, and since no other computer was available during the time of the brokenness, therefore Peter could not submit his assignment on time.

To be sure, what has been shown here by no means suggests that we should adopt a more careful and comprehensive way of reasoning in our everyday life. There are well-established social factors (e. g. communication efficiency, etc) that explain why everyday reasoning is conducted in such a 'careless' way. However, if such reasoning style were to be adopted in a formal academic paper, then the paper could hardly be clear and persuasive about what the writer wants to convey. Unlike everyday reasoning, reasoning in academic writing has to be more careful and comprehensive.

Indeed, the most fundamental objective of an academic paper is to persuade its readers to accept the paper's conclusion by demonstrating, in a systematic and coherent way, all the logical steps that are necessary for reaching the conclusion. Thus, as far as writing an academic paper is concerned, knowing how one idea is correctly or incorrectly connected with another idea is vitally important. In other words, knowing how to form a coherent argument is really important

in academic writing. Any academic paper that fails to show how the writer's thoughts are correctly connected is likely to be unsatisfactory.

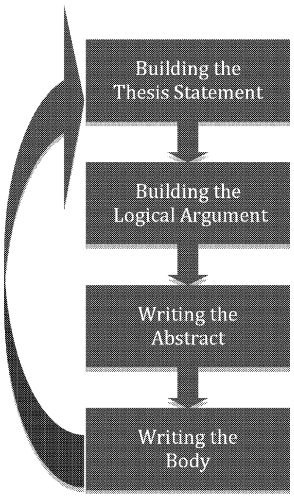

Figure 1

3. Logical Thinking And Academic Writing

Based on what is really important in academic writing, we have developed a new approach to teach how to write academic papers, which primarily aims to improve the students' logical thinking skills rather than merely language skills.

This approach is basically composed of a logical writing process cycle that involves four stages (see Figure 1). They are: (i) building the thesis statement, (ii) building the logical argument, (iii) writing the abstract, (iv) writing the body. Let us look at them in turn.

3.1. Building The Thesis Statement

The thesis statement of an academic paper is the central idea of the paper. Unless it is clearly written in the paper, its writer is not clear about what the paper is essentially about. The training on building the thesis statement is the training on how to crystallize an academic paper's central idea.

Usually, the building of a thesis statement cannot be fully completed until the entire paper is completed, for it may have to be modified whenever some new information is discovered in the process of writing. However, if one did not begin writing a paper with a reasonably clear thesis statement, one would not be able to proceed with a clear direction.

Normally, if a writer is reasonably clear about the thesis statement, he or she should be able to write it in just one sentence. But this certainly does not mean that the writer only needs to know how to properly construct a sentence in a grammatical sense. For example, the sentence, "The bank is located in central London", is grammatically correct but not clearly specified. The meaning of the word, "bank", is tainted with what logicians call *the lexical ambiguity*,[2] since it can refer to either a financial institution or a river bank (e. g. the bank of Thames river). Thus knowing how to clarify the thesis statement involves knowing how to eliminate various kinds of ambiguities tainted with the statement, which is basically a training in thinking.

In relation to the training on how to eliminate ambiguity, the writers are also required to learn how to eliminate vagueness of the statement. For example, the sentence, "Smoking is hazardous to health", is correct in grammar but vague in meaning. Readers of this sentence would not be able to grasp the exact meaning of "hazardous". It would be more specific —— and hence suggestive - if the sentence were changed into, for example, "Smoking is likely to cause heart disease".

The most important part in training how to build the thesis statement is learning how to transform a central research idea into a statement that is objectively verifiable. In other words,

2 See the website, "Introduction to Logic", by Oxford University. http://logic.philosophy.ox.ac.uk

the thesis statement must be either true or false, in virtue of being a representation of some factual events in the world. If the thesis statement expresses something that could hardly be verified or accessed independently from a third-person point of view, then, *ipso facto*, it would not be effectively conveyed to its reader. For example, it would not be very effective to convey the meaning of the sentence, "The painting is beautiful", as the term, "beautiful", conveys some sentimental value that could hardly be verified from a third-person point of view. As far as the communication with the readers is concerned, it would be more effective if the sentence were changed into, for example, "The painting is composed of such and such colors, and it has such and such shapes, etc."

3.2. Building The Logical Argument

Having built a reasonably clear thesis statement, the next stage of logical writing training is learning how to support the thesis statement through building a logical argument.

Building a logical argument for the thesis statement is the most important part of writing an academic paper, as a successful argument would enable the paper's readers to understand why and how the thesis statement is derived. Whether the readers are convinced or unconvinced by the thesis statement is purely dependent upon the power of the logical argument. Thus building the argument is building the connection between the thesis statement and its supporting evidence.

The training on how to build a logical argument is essentially a training on how to make logical connections. The knowledge to be taught here goes far beyond the knowledge about how the words are connected together to form a sentence. The students would have to learn how to make a direct logical connection between A and B. As we have demonstrated in section 2, the failure to make a direct logical connection is the most serious problem in academic writing. Many students do not understand the conditions for A to be directly connected with B. To solve this problem, special care is given to the training on how to distinguish the factors that support the connection from the factors that do not. The students would also have to learn to pay attention to the factors that are not immediately obvious, such as the hidden premises. These are done through some group exercises on solving the logical puzzles. For example, the following is a typical logical puzzle that would train the students' ability to distinguish between relevant and irrelevant factors in making a logical connection.

> *Alonzo, Kurt, Rudolf, and Willard are four creative artists of great talent. One is a dancer, one is a painter, one is a singer, and one is a writer, though not necessarily in that order.*
>
> *Hints:*
>
> *(1) Alonzo and Rudolf were in the audience the night the singer made his debut on the concert stage.*
> *(2) Both Kurt and the writer have had their portraits painted from life by the painter.*
> *(3) The writer, whose biography of Willard was a best-seller, is planning to write a biography of Alonzo.*
> *(4) Alonzo has never heard of Rudolf.*

What is each man's artistic field?

[*Example used in Copi, I, Introduction to Logic, p. 60*]

Apart from the group exercises on logical puzzles, many examples of logical fallacies are also presented to the students to strengthen their sensitiveness to the logical connections. For example, the students were presented with the fallacies, such as "hasty generalizations", "post hoc reasoning", "non-sequitur", etc, and were asked to discuss why they are logical mistakes, and how to correct them.

Another important training on making logical connections is on how to make counterarguments. Since the way to make a strong logical connection from A to B is to eliminate all the other possible connections tainted in the connection between A and B, it is therefore important to consider all the alternative premises that could reach the same conclusion as well as all the alternative conclusions that could be reached by the same set of premises. In this way, the original argument can be strengthened through the elimination of all the possible counterarguments.

No doubt, learning how to properly build a logical argument can be very time consuming, and we have very limited time to teach. For this reason, we spent most of the training sections on helping the students build the arguments for their own researches. Our approach thus differs from the conventional approach of teaching Formal Logic. Although the study of logical forms is very crucial to a clear understanding of logical connections, it focuses on the training of a conceptual understanding rather than practical application. Thus students often find it difficult to apply what they learnt to what they are actually doing.

Through plenty of practical and fun exercises on how to solve logical puzzles and correct logical mistakes, with an emphasis on how to build a logical argument for their own researches, the student will find it not only interesting and motivated to learn how to think logically, but more importantly, useful to apply the thinking skills to their academic writing.

3.3. Writing The Abstract

Having learnt how to build a clear thesis statement and a logical argument for the thesis statement, the next stage is to write the abstract for the paper.

Writing the abstract is rather straightforward if the thesis statement and its logical argument are already present. All the writers are required to do is to arrange the necessary information in a particular order.

Although the specific publication requirements are likely to differ among different fields of research, most of the scientific journals require the writers to present the following information on the abstract: (i) background information or why the research was carried out, (ii) thesis statement or what the research is about, (iii) research method or how the research was carried out.

The training on how to write the abstract is to train the students on how to transform the thesis statement and logical argument into the information requisite for making the abstract intelligible.

3.4. Writing The Body

The last stage of the logical writing process is actually writing the body. This stage is mainly carried out by the students themselves.

4. Results So Far

Since April 2009 until October 2009, 20% of the students who took our Academic Writing course published papers at an international level. 90% of the students who evaluated our course commented that logical thinking is important for academic writing.

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