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## Poster Presentation

# Training First-Year Science Students for Basic Writing Skills: A Field Report

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Learning how to write paragraphs in correct formats and structures is critical for all ESP students. Science and Technology major students are no exception. Once they learn how to write a single paragraph, they can easily move on to writing multiple paragraphs. But how should we instruct them effectively? This paper presents one example: class exercises that would help students acquire basic writing skills. This example is based on the author's experience in the science and engineering /technology departments of two universities.

With the growing demand that Japanese universities should adjust to globalization, all Japanese students—ESP students—need to learn ways to write in English. Students of science and engineering are no exception, and their first-year training is crucial for their further development in foreign language skills. Once these first-year students properly learn how to write a single paragraph, they can easily move on to writing multiple paragraphs—eventually to writing a full-fledged essay in due course. But how should we instruct them effectively?

This paper presents one example: class exercises that would help students acquire basic writing skills. This example is based on the author's experience in the science and engineering/technology departments of two Japanese universities.<sup>1</sup> In other words, the paper presents a field report.

In these departments, students majoring in science and engineering/technology are required to acquire basic writing skills in their first-year mandatory English class. Within a limited time frame, they learn how to write a paragraph (in the spring term) and an essay/multiple paragraphs (in the fall term). The rationale for sequencing these training stages derives from Kamimura

and Oi's *A Handbook for Writers of Essay and Research Papers* (2004).

A typical class exercise, which consists of three stages, can be summarized as follows. The first stage involves a single paragraph writing exercise. Students write on the topic, "A scientist/engineer/physicist I respect." In the second stage, students write five or so paragraphs in an essay style on the topic, "An ideal robot." Finally, before submitting their final assignments, students make presentations in a group setting where they get comments from their peers.

The paper will elaborate each stage with some student writing samples. It will then conclude with some reflections.

## **Three Stages of Writing Training**

### **Stage One**

**Step 1:** Formatting and paragraph structure (spring term)

Students learn the basic of formatting (Zemach & Rumisek, 2011) first, and then they learn paragraph structure (CELESE (ALC1)2).

It is essential to master format and structure first, so that students will be able to learn the knack of writing well-organized paragraphs. It is an efficient way to learn a system of writing. Figure 1 identifies the function of each category (topic sentence, supporting sentences and concluding sentence). By following this template, they can produce their own paragraph.

A visual image helps them to remember the correct format and structure at a first glance. Therefore, they can use it for their writing assignment without fail.

**Step 2:** A sample paragraph

The following paragraph (Figure 2) shows an example of how the template above is applied. As an exercise, students read this kind of one paragraph summary of an academic lecture on a science topic (Dunkel & Lim, 2006). To identify the functions of the topic sentence, supporting sentences, transitions and concluding sentence, they are bolded or underlined.

A good writing sample paragraph helps students to write their own paragraph, as it allows them to follow an explicit model. They are reassured about the pattern and structure of a proper paragraph. Through the sample paragraph, the students could logically explore a topic and build persuasive arguments in



students learn to logically connect sentences with transitional expressions. The following (Figure 3) are some useful transitions:

It is effective for students to learn various types of transitional expressions intensively. Students are then willing to include appropriate transitions in order to discuss their points of view more effectively.

**Step 4:** Writing a paragraph – Practice

At this stage, they understand what to write in what order with transitional expressions (e.g., first, second, finally). They also understand the function of the topic sentence and supporting sentences (e.g., details/ reasons/ examples). In regards to prewriting activities, they learn brainstorming: listing, word-mapping, and free-writing. So, before they start writing, they practice brainstorming. This facilitates organizing their ideas and thoughts. Finally, students start writing their own paragraph by referring to the template in Step 1 and the sample paragraph in Step 2. They write a paragraph (in the spring term) with the title of “A Scientist/Physicist/Engineer I admire.” A science-oriented topic motivates students to write in English, as it relates to their field of study. Figure 4 is an example of student writing.

The previous preparations enable students to write their own paragraph with 1) formats and structures, 2) a sample paragraph, and 3) transitional expressions in minds.

**Stage Two**

**Step 5:** Essay structure (the fall term)

<p><b>Sequence</b> --first, second, third, next, finally, etc.</p> <p><b>Addition</b> --and, then, also, too, moreover, besides, furthermore, in addition, etc.</p> <p><b>Contrast</b> -- but, yet, however, nevertheless, on the one hand, on the other hand, in contrast, while, whereas, etc.</p> <p><b>Result</b> --so, therefore, thus, as a result, so that, etc.</p> <p><b>Reason</b> -- because, for, as, due to, owing to, etc.</p> <p><b>Example</b> --for example, for instance, in other words, etc.</p>
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*Figure 3.* Useful transition types and expressions. Source: CELESE (ALC1), 2013<sup>2</sup>.

## A Scientist I Admire

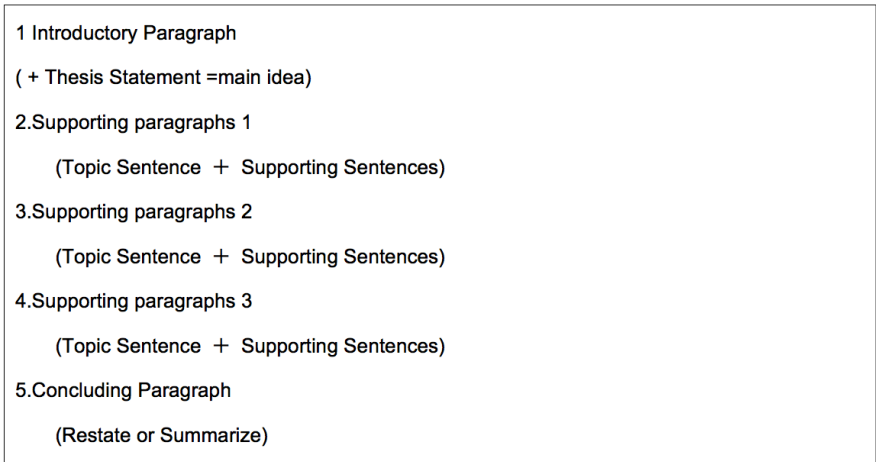
(Topic Sentence→) I admire Professor Shinya Yamanaka. (Supporting sentence→) He was awarded <as> the Nobel Prize winner for Physiology or Medicine. Then <At that time>, he was fifty years old. He was so young to have been awarded <as> the Nobel Prize winner. Professor Shinya Yamanaka belongs to Kyoto University, and he developed induced pluripotent stem cells (iPS cells). Skin cells turn into most kinds of cells with iPS cells. He began to research iPS cells with three staffs at first. They were faced <a> big problem that was lack of funds. He raised <a> contribution on condition that he finished the Kyoto Marathon. The <As a> result that, he got the contribution of ten million <yen, and>. And he resumed to research iPS cells. At last, he finished to research iPS cells and completed <them> iPS-cells. In the future, this study <will help> helps many people who have different types of diseases. (Concluding sentence→) So I respect Professor Shinya Yamanaka, and I expect that iPS cells <will help> helps many people.

Figure 4. Sample paragraph of student work.

Students learn a fundamental structure pattern for multiple paragraphs in the fall term. Based on paragraph writing they have mastered in the spring term, students go a step further. The present author reminds them in a handout (Figure 5) that knowing this structure pattern is very important for writing an essay.

Learning this structure clarifies the organizational pattern of essay style. Such a template helps students to write their own essay. Having mastered paragraph writing thoroughly, it is easy for them to expand a paragraph to multiple paragraphs.

Additionally, a paragraph and multiple paragraphs are systematically compared on the board so that the students fully understand the similarities and differences between them. It is essential to have students understand that while the topic sentence is the main idea of a paragraph (see the diagram in Step 1), the thesis statement is the main idea of an essay (see the diagram in Step 5).



*Figure 5.* Outline of a five-paragraph structure. Source: CELESE (ALC2), 2013<sup>3</sup>.

### **Step 6:** Sample Essay (in the fall term)

Students are given a sample essay which has the same formats and structures as the template in Step 5 (This sample is omitted here due to the limitation of words). It gives them a good idea as to the complete and concrete form of writing when they have to write their own.

By referring to the sample essay, they can easily write their own essay. It means that all the students have a map to go to their destination. Giving clear examples are the most effective way to teach any kind of subject. This surely applies to writing a long essay.

### **Step 7:** Writing an essay – Practice.

Students are assigned to write multiple paragraphs with the title of “An ideal robot” (in the fall term). Again, a science-related topic is chosen to attract students’ interests in their fields. In this writing exercise, they should create their own invention (i.e., a robot) by following the paragraph structure pattern they have learned in Step 5 and by referring to the sample in Step 6. They are to write up the features and functions of their imagined robots in detail. See an example of a student’s work below (Figure 6).

This type of assignment inspires students to write multiple paragraphs and arouses their interest due to its familiar topic. In terms of correctness, minor

### An Automatic Translator

(Introductory Paragraph) There are more than 5,000 languages in the world. Our communication is now <becoming> turning more and more difficult via the Internet. It is very important for us to know each other. Accordingly, my ideal robot is an automatic translator robot. (Thesis Statement)

First, an automatic translator robot can keep a secret of an important situation.

(Topic Sentence - 1<sup>st</sup> supporting paragraph) Nowadays, some conversations between speakers of different languages are spoken through a human translator. <Even if> If they want to keep the conversation a secret, a human translator can <find out> understand the secret. For example, they don't want to let a third party know if they talk about diplomatic issues, tactics of the World Cup's cup's match and unknown inventions. An automatic translator never unveils <such secrets> a secret.

Second, oversea tourists can take a journey in safety. (Topic Sentence - 2<sup>nd</sup>

supporting paragraph) When they don't understand each other in a foreign country, they sometimes face danger. If they have an automatic translator, it is easy to get tickets to ride a bus or <a> train<.> <In> in addition<,> they can get in touch with the police.

Finally, an automatic translator broadens people's outlook. (Topic Sentence- 3<sup>rd</sup>

supporting paragraph) A useful piece of information on the Internet and books is written in various languages, so people can't read all of them. <However, if> If they overcome language barrier, they can get a lot of information. They may know facts and truth that have been hidden until then. That is, they use an automatic translator, and they can <get> touch information all over the world.

In conclusion, if an automatic translator, my ideal robot, can keep the secret of an important situations, enables overseas tourists to have a safe trip, and broadens people's viewpoint. (Summary) If such an invention is realized, it will not only make our life better, but also contribute to the advancement of future science and technology. (Concluding Paragraph)

Figure 6. Sample of a student's multiple paragraph essay.

mistakes are not meticulously corrected. One reason is that students are expected to write comprehensible English sentences at this point. Another reason is that many corrections in writing could discourage a beginner's motivation for writing. In other words, the structure and content (discussion and logical flow) are regarded as more important than correct grammar and choice of words in the first year.

### **Stage Three**

Presentation and discussion will follow after they write their assignments in order for them to practice presentation and receive feedback from peers. The students make a mini-presentation based on the writing assignment in a group setting before submitting their writing. First, they explain their imagined robots while showing the visuals they have drawn. Next, other students ask questions or make comments on each presenter so that they can clarify the points that the presenter wants to convey. With positive comments received, presenters get encouraged, and even after receiving critical comments, they can find areas for improvement for their future performance. Instead of reading sentence by sentence, they are supposed to speak in their own words so that they can practice presenting in constructive manners. This group work helps create a rapport in class. As Nakanishi (2006) indicated, linguistic and social benefits are gained through interactive peer feedback. Such interactive exercises are rewarding for both improving their performance and rapport in class.

### **Summary**

The above mentioned step-by-step procedures seem effective for science/engineering/technology major students to learn writing paragraphs and essays at the basic level. On the basis of my personal teaching experiences, the following points are worth noting.

1. Giving a template and a sample makes it possible for students to successfully complete their paragraph/essay writing.
2. Instruction time is limited, so important points should be emphasized, and the instructor should constantly check if students understand the organization and functions of the paragraph and essays. For example,



students need to understand that the topic sentence comes at the beginning of the paragraph (see the sample in Step 4), whereas thesis statement usually comes at the end of introductory paragraph (see the sample in Step 6) (Kamimura & Oi, 2004).

3. Students are motivated to write autonomously by mastering the systematic way of writing. In fact, they became confident about writing after going through the three stages explained above. Many of the students commented that they feel more comfortable to write English sentences after the lessons.
4. Peer feedback is effective for improving their performance as they learn from each other objectively and interactively. Asking a question and/or giving a comment is not so easy, since they have to understand the presenter's perspective well. However, this process encourages their involvement to the cooperative group work and the development of their critical thinking.

## Future Prospects

Students will learn more advanced writing in their second and/or third year, and they can also learn more technical writing skills in elective courses. These writing exercises are probably more challenging and complicated, and they will need to write longer paragraphs. Therefore, mastering fundamentals of writing in the first year is critical for their further studies. In the future, the present author plans to use topics involving their extensive research. This must include quotations, citations, and references in their writing. In order to carry out this practice, a certain time should be spared for instruction. In such a case, teaching will be conducted in the classroom, but research and writing will be assigned as a final project that requires students to submit research papers. It will be a valuable training experience for them to develop their research skills.

## Notes

1. These are Keio and Waseda Universities. They were selected by the Ministry of Education, Culture, Sports, Science and Technology (MEXT)

for the 2014 Top Global University Project. MEXT's Web site (2014) explains this project as follows: "The Top Global University Project is a funding project that aims to enhance the international compatibility and competitiveness of higher education in Japan. It provides prioritized support for the world-class and innovative universities that lead the internationalization of Japanese universities. Selected universities are expected to press forward with comprehensive internationalization and university reform." In this project, Japan's top universities are providing a world-class level of research and education.

2. CELESE Basics of Paragraph Writing (ALC1). Internal material only, April 4, 2013. <http://www.celese.sci.waseda.ac.jp/>
3. CELESE Writing Multiple-Paragraph-Long Passages (ALC2). Internal material only, September 26, 2013. <http://www.celese.sci.waseda.ac.jp/>

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Received: December 22, 2014

Accepted: February 2, 2015