JACET Kansai Journal, **14**, 17–28. (2012) © JACET Kansai Chapter ISSN 1880-2281 Printed in JAPAN.

# **Examining the Effects of Presentation-based Instruction on Japanese Engineering Students' Attitudes towards Learning English: A Preliminary Study**

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#### **ABSTRACT**

English has become a necessary tool for Japanese engineering students; however, generally speaking, engineering students do not have much interest in learning English. For a preliminary study of engineering students' motivation to learn English, we used Dörnyei's (2009) second language (L2) motivational self system to examine their attitudes towards learning English and how presentation-based courses might affect their motivation/attitudes. The results showed that presentation activity is effective in reducing students' anxiety towards using English as well as increasing their interest in it. Moreover, students' perceived competence grew significantly, and proved that the English presentation activity is effective in helping engineering students to gain confidence in using English. Thus, we concluded that the presentation activities are effective in helping learners create clearer visions of their future selves using English.

**Key words:** ideal L2 self, motivation, presentation-based instruction

### I. INTRODUCTION

English has become a necessary tool for Japanese engineering students, who intend to work in a rapidly globalizing society. Most Japanese engineering students, however, seem to focus more on studying their major field than learning English, and they are neither confident with their English skills nor motivated to learn English. In Dörnyei's (2005) theory known as the second language (L2) motivational self system, the ideal L2 self and ought-to L2 self are the central concepts. According to Dörnyei (2005, 2009), if individuals' image of how they would like to become or how they believe they should become as L2 users are clear, it would be a powerful motivator to learn English; thus, it is important for learners to imagine situations in which they would need to use English. To successfully motivate Japanese engineering students to learn English, it may be necessary to design English-learning activities based on possible future English-speaking situations so that students can enhance their ideal L2 self and ought-to L2 self, and then clarify their goals for learning English. Therefore, to motivate Japanese engineering students to study English, we believe it is useful to provide activities that can help students experience English-speaking situations that they might encounter in the future, and create a clear and detailed image of a possible English-using

self. For this reason, we decided to introduce English presentation activities in an L2 classroom and ask students to explain some kinds of engineering products. As a preliminary study conducted prior to a larger study on engineering students' motivation to learn English, we administered a survey to examine how engineering students' attitudes and motivation towards learning English would change through a year-long ELT instruction in which learners engage in English presentation activities.

### 1. The L2 motivational self system

According to Dörnyei (2005), the L2 motivational self system consists of three components: The ideal L2 self, ought-to L2 self, and L2 learning experience. They are:

- 1. Ideal L2 self, referring to the L2-specific facet of one's ideal self: If the person we would like to become speaks an L2, the ideal L2 self would be a powerful motivator to learn the L2 because of the desire to reduce the discrepancy between our actual and ideal selves,
- 2. Ought-to L2 self, referring to the attributes that one believes one ought to possess in order to avoid possible negative outcomes, and
- 3. L2 Learning Experience, which concerns situation-specific motives related to the immediate learning environment and experience. (Dörnyei, 2005, pp. 105-106)

Thus, the ideal L2 self refers to a relatively positive image of the future self, while the ought-to L2 self is a more protective and instrumental image.

The concepts of an ideal self and an ought-to self are types of a superordinate concept known as *possible selves*, which are intrinsically future-oriented in contrast to traditional views of the self-conception (Carver, Reynolds, & Scheier, 1994, p. 134). The ideal and ought-to selves are related to individuals' long-term goals and "as-yet unrealized potential" (Carver et al., 1994, p. 134). As Dörnyei (2005, 2009) explained, the self-image of a future self that is drawn as possible selves could function as "future self guides" and motivate learners to start and continue studying so that they can reduce the gap between their vision and reality. His earlier research results and theoretical considerations led Dörnyei to propose the "L2 Motivational Self System" with its components: ideal L2 self, ought-to L2 self and L2 learning experience.

We anticipated that an image of oneself using English in the future as an engineer would affect engineering students' motivation to learn English. Moreover, the concepts of the ideal L2 self and the ought-to L2 self seem to effectively explain Japanese engineering students' motivation to learn English; thus we decided to study and conduct a survey about the attitudes of engineering students towards learning English by using the L2 motivational self system as a conceptual framework.

Recently, some interventional studies were conducted by Japanese researchers (Hiromori, 2006; Nishida & Yashima, 2009; Tanaka & Hiromori, 2007) in which motivational changes through project-based teaching were assessed. These studies indicated that project-based instruction affected students' motivation to learn English when the instruction met the students' interest or needs. Our research is conducted along these lines and examines motivational/attitudinal changes through presentation-based courses by using the L2 motivational self system as a conceptual framework.

### 2. Designing an English presentation-based course

When developing a technical English course for engineering students, we deemed it necessary to design a class that would help students create and activate a plausible and vivid image of using English in their future careers. As many English self-study guides for engineers suggest, people in that field are often required to introduce technology or products they have developed in English (Campbell, 1995; Davis, 2005; Raman & Sharma, 2008). Moreover, many engineering students seem to be aware of the necessity of English presentation skills because they know they might need to give English presentations in their future careers. Thus, the first author decided to assign the students in her English class to give presentations introducing engineering or machinery products in English.

Giving a good presentation requires certain knowledge about a product, research skills for an in-depth examination of that product, and explanation skills for introducing the product clearly and concisely. Therefore, through learning to give speeches, students will understand what kind of English skills they will need to acquire to succeed as engineers. This will help them develop clear and realistic images of their ideal selves. Furthermore, giving a speech in English may train the learners, because (1) developing a script requires English composition skills, (2) presenting a speech forces awareness of pronunciation and prosody, (3) listening to classmates' presentations improves listening comprehension skills, and (4) researching in preparation for presentations requires reading comprehension skills.

In the class, the first author assigned four presentations introducing engineering or machinery products in English in a single academic year. Students were allowed to choose topics related to their interest areas or dreams and asked to give a 5- to 10-minute long speech following each presentation theme. The themes of the presentation were selected, as they would gradually become more and more complicated so that students would extend their speeches and make an in-depth study of their topics. The themes were product introduction, comparison with similar products, manual explanations, and business presentations. The class instruction also followed these themes with the expectation that students would learn and acquire the necessary skills step-by-step. For each presentation, all students evaluated the performance, content, and clarity of their classmates' presentations and gave comments. The evaluation results and comments were all typed out, along with the instructor's scores for performance, content, clarity, structure, and preparation, and given back to each presenter so that students would notice their strengths and weaknesses and use these to improve their performances and speech. The presentation scripts were also evaluated with regard to content, structure, vocabulary choices, language usage, and mechanics to make students be aware of their grammar, presentation structure, and vocabulary choices. After each presentation, students were also given time to ask questions about classmates' presentations in either Japanese or English. For the last presentation, all students had to ask a question about at least one presentation. Furthermore, students were allowed to choose to present either individually or in pairs.

From the perspective of the L2 motivational self system, the authors expected that students

would come to have a clear image of themselves using English, which, in turn, would influence their attitudes towards learning English. At the same time, we believed that they would gain the confidence to learn English through their English presentation activities. Through presentation activities in which they communicated their knowledge to other people, students may feel a sense of accomplishment that would increase their interest in learning and using English.

### II. METHOD

### 1. Objectives

This study examined engineering students' motivation and attitudes towards learning English from the perspective of the L2 motivational self system. The research questions are as follows:

- 1. How would engineering students' motivation and attitudes towards learning English change through a year-long presentation-based English course?
- 2. How would engineering students' perceived English competence change through a year-long presentation-based English course?

### 2. Participants

The participants were second- and third-year students in the mechanical engineering department of a private university in the Tokyo area who were enrolled in the first author's Technical English I (TEI) and Technical English II (TEII) courses. The second-year students were in TEI, and the third-year students were in TEII. Both TEI and TEII classes were elective, but they meet the university's required English credits. In this college, six instructors, including the first author, taught Technical English classes. Each instructor has a different background and is allowed to choose teaching materials and course designs freely. Students have to study with different instructors for TEI and TEII. Consequently, no participants took the fist author's class twice.

### 3. Procedure

Questionnaire surveys were distributed in the first class (April) and the last class (January) of the academic years in 2007 and 2008. In 2007, 29 students enrolled (23 in TEI and 6 in TEII); in 2008, 41 students enrolled (30 in TEI and 11 in TEII). We eliminated the responses of students who marked the same number for all items on a questionnaire, because their answers would have interfered with the reliability of data and analysis. We also eliminated those who participated in only one survey. As a result, 46 students participated in total. We used SPSS 16.0 to analyze the data.

### 4. Questionnaire

The questionnaire consists of two parts; the motivation and attitudes towards learning English and perceived competence.

1. Motivational/Attitudinal questionnaire (20 items, 7-point scale, Ryan, 2009)

Based on Dörnyei's former studies and questionnaires (e.g., Csizér & Dörnyei, 2005; Dörnyei & Clément, 2001), Ryan developed motivational scales called Motivational Factors Questionnaire (MFQ) for his study (published in 2009),<sup>2</sup> which ask for individuals' attitudes and motivation towards learning English and about English speaking cultures. Of the 100 items for measuring 17 variables, we used 20 items within 5 variables directly related to attitudes and motivations for learning English. The five variables were the following (see Appendix A for all the items).

Attitudes towards learning English: Four items assessed the interest individuals had in learning English. An example is "Learning English is really great."

Linguistic self-confidence: Three items reflected how confident individuals are in learning English (e.g., "I am sure I will be able to learn a foreign language").

English classroom anxiety: Two items indexed how much anxiety individuals had when using English in the classroom. An example is "I always feel that my classmates speak English better than I do."

*Ideal L2 self*: Six items served to assess how individuals visualize themselves as future users of English (e.g., "I often imagine myself as someone who is able to speak English," "I can imagine speaking English with international friends").

Ought-to L2 self: Five items reflected the ways in which individuals feel the needs and pressures to learn English. Examples are "For me to become an educated person I should learn English," and "Knowledge of English would make me a better educated person."

### 2. Perceived competence (14 items, 4-point scale)

To measure how students perceive their English skills, we constructed an original can-do list specific to engineering students based on a former open-ended questionnaire survey that asked students what they wanted or thought it was necessary for learning in an English course. We also considered important elements of technical communication, such as the three Cs (clarity, correctness, concision) when making the can-do list. The questionnaire items are as follows:

- I can express what I want to say in English.
- I can understand English documents.
- I can check my English writing using dictionary and textbooks.
- I can give a presentation in English.
- I can have a simple conversation in English.
- I can write English materials for a presentation.
- I can choose an appropriate vocabulary when writing English.
- I know the grammatical rules and different parts of speech.
- I can speak English with the knowledge of correct pronunciation.
- I can research necessary information and present the result.

- I can see the difference between written and spoken English.
- I can make myself understood by everyone.
- I can understand what is spoken in English.
- · I can understand what native English speakers say.

### III. RESULTS

### 1. Motivational variables

Before examining each variable of the L2 motivational self system, we checked the descriptive statistics for each item and found several items showing a ceiling effect: "When I think about my future, it is important that I am able to use English" (variable: Ideal L2 self, April questionnaire), "Learning English is necessary because it is an international language" (variable: Ought-to L2 self, April questionnaire), "I get nervous and confused when I speak in my English class" (variable: English classroom anxiety, April questionnaire), and "If I made the effort, I could learn a foreign language" (variable: Linguistic self-confidence, January questionnaire). Although we included those items for each variable, these results may be important.

To study each variable, we calculated the average number of items for each variable. Table 1 shows the means, standard deviations, and Cronbach's alphas for surveys conducted in April and January, and the results of paired t-tests that examined the growth of each variable from April to January. Since multiple comparisons were made using paired t-tests, we applied Bonferroni's adjustment to maintain the error rate. The statistical significance  $\alpha = .05$  became  $\alpha = .01$  because there were five variables. Therefore, the t-test results would be significant when p < .01. Figure 1 also shows how the means of each variable changed from April to January. According to the results of the paired t-tests, English classroom anxiety lessened significantly. Attitudes towards learning English improved, although this improvement did not appear significant after Bonferroni's adjustment.

Significant positive correlations were found between Ideal L2 self and Attitudes towards learning English (r = .59), between Ideal L2 self and Ought-to L2 self (r = .33), between Ideal L2 self and Linguistic self confidence (r = .46), as well as between Attitudes towards learning English and Linguistic self confidence (r = .65) in April. In January, there were significant positive correlations between Ideal L2 self and Attitudes towards learning English (r = .50), between Ideal L2 self and Linguistic self-confidence (r = .34), and between Attitudes towards learning English and Linguistic self-confidence (r = .64), while a significant negative correlation was found between English classroom anxiety and Linguistic self-confidence (r = .42).

Table 1. Means	. standard deviati	ions, and <i>t</i> -test	results of the m	notivational variables

	April		January				
<i>N</i> = 46	Mean (SD)	α	Mean (SD)	α	t	p	Cohen's d
Attitudes towards learning English	3.84 (1.14)	.80	4.14 (1.08)	.83	-2.16	.036	0.27
Linguistic self-confidence	3.73 (1.25)	.67	3.92 (1.11)	.66	-1.24	.221	0.16
English classroom anxiety	5.61 (1.29)	.71	5.03 (1.47)	.67	2.89*	<u>.006</u>	0.42
Ideal L2 self	4.36 (1.25)	.87	4.43 (1.11)	.82	-0.12	.908	0.06
Ought-to L2 self	5.28 (1.29)	.79	5.45 (1.01)	.64	-1.00	.324	0.15

\**p* < .01

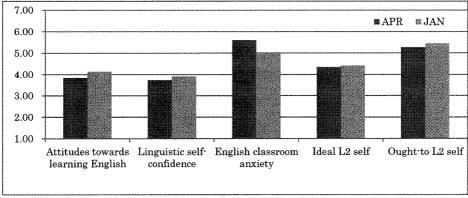


Figure 1. Means of the motivational variables

### 2. Perceived competence

For the perceived competence, we also examined the descriptive statistics first and found two items showing the floor effect: "I can speak English with the knowledge of correct pronunciation" (April questionnaire), and "I can understand what native English speakers say" (April questionnaire).

When making the can-do list, we considered items that would indicate several different skills. Based on the considered skills and results of exploratory factor analysis, we categorized all items into several groups, each of which indicated a different skill. After checking the Cronbach's alphas of these groups, we decided to use a set of four categories that exhibited the highest Cronbach's alphas. The four categories are (1) English writing skills (4 items, e.g., "I can check my English writing using a dictionary and textbooks"), (2) presentation and explanation skills (6 items, e.g., "I can express what I want to say in English"), (3) daily conversation skills (3 items, e.g., "I can make a simple conversation in English."), and (4) reading comprehension skills (1 item, "I can understand English documents"). See Appendix B for the items in each category. Table 2 and Figure 2 show the

means, standard deviations and Cronbach's alphas for these categories and the results of the paired t-tests. For the t-tests, we also applied Bonferroni's adjustment; the significance alpha level was set at .013 (p < .013), because four comparisons were made.

As Figure 2 indicates, each category showed a rather low profile but significant differences between April and January, as in Table2. In particular, there were large increases in writing skills, and presentation and explanation skills. Students also tended to perceive more improvement in their reading comprehension than other areas in both April and January.

Table 2. Means and t-test results of perceived competence of English-using skills

<i>N</i> = 46	April		January				
	Mean (SD)	α	Mean (SD)	α	t	p	Cohen's d
Presentation and explanation	1.84 (0.53)	.76	2.17 (0.42)	.67	-5.60*	.000	0.68
English writing	2.06 (0.55)	.81	2.32 (0.49)	.72	-3.96*	.000	0.50
Daily conversation	2.07 (0.63)	.73	2.24 (0.58)	.78	-2.70*	.010	0.29
Reading comprehension	2.13 (0.78)	-	2.41 (0.72)	-	-2.66*	.011	0.38

p < .013

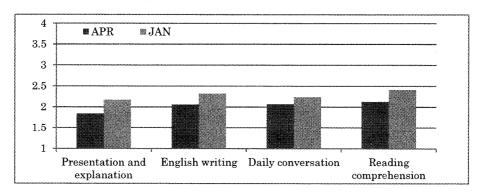


Figure 2. Means of perceived competence

### IV. DISCUSSION

We will discuss the results shown above in relation to each of the two research questions.

# 1. How would engineering students' attitudes and motivation towards learning English change through a year-long presentation-based English course?

In the results presented in Table 1 and Figure 1, the score on English classroom anxiety was the highest, and those on the Ideal L2 self and Ought-to L2 self were already fairly high in April.

On the other hand, Attitudes towards learning English and Linguistic self-confidence showed lower scores. This may mean that engineering students were afraid to speak out in the classroom and had little confidence and interest in learning English when they started taking the technical English courses. However, they were also able to visualize themselves using English as well as feelings of external pressure to learn English.

After taking a one-year presentation-based class, students showed significantly less anxiety and slightly more favorable attitudes towards learning English. This means that the presentation activities helped the students become used to speaking English in a classroom, overcome their anxiety, and gain greater interest and confidence in learning English. Moreover, scores for Ought-to L2 self and Ideal L2 self remained high in January. This may mean that the presentation activity matched the image that the engineering students had of their future as English speakers, and allowed them to experience possible situations in which they had to use it. From the correlations, we could not see direct relations between English classroom anxiety and Ideal L2 self or Ought-to L2 self. However, in January, Ideal L2 self showed a positive significant correlation with Linguistic self-confidence, while English classroom anxiety showed a negative significant correlation with Linguistic self-confidence. This result may mean that students who overcame their anxiety gained confidence and maintained their ideal image of using English.

Therefore, for research question 1, it is possible to say that a presentation-based course helped students overcome the fear of using English in the classroom and made them more interested in learning English.

# 2. How would engineering students' perceived English competence change through a year-long presentation-based English course?

The results on perceived competence suggested several items that showed a floor effect, and the students' scores were not very high in any of the skill categories. Among the four categories, Reading comprehension had the highest score. This may reflect the overall effect of the English education that students had received.

All categories showed significant growth between April and January. This would thus show the answer for research question 2. Since the class was presentation-based, it is natural that students felt an improvement in presentation skills. These results may mean that students perceived that they had also gained English writing skills through the presentation-based courses. Therefore, it is possible to say that the engineering students could feel that the presentation-based course was effective for improving both presentation and writing skills, both of which are necessary in the field of technical communication. Furthermore, some students voluntarily wrote in the class reflections comments such as "I'm glad that I could gain a lot of new knowledge through making presentations," "I could improve my presentation by using classmates' comments, and I'm sure my presentation skills have been improved," and "This class let me learn various things, such as presentation skills and knowledge of the specific fields of my major." The above comments and results suggest presentation-based instruction is satisfying and effective for engineering students.

### V. CONCLUSION

This study found that engineering students had an image of themselves, or their ideal selves using English and that they were aware of the necessity of studying it as a foreign language. We also found that presentation activities helped engineering students hold the image of themselves using English in their future careers. Moreover, from the fact that students could overcome their fear of using English in a classroom and gained interest in learning English through a one-year presentation-based course, it is possible to infer that presentation activities are effective for reducing students' anxieties as speakers, stimulate their interest in learning English, and help motivate them to learn it. The fact that the students' perceived competence grew significantly also proves that the presentation activities are effective in helping engineering students gain confidence as speakers of English. Thus, we may conclude that giving opportunities to present in English is an effective way of motivating engineering students.

One limitation of this study is that the number of participants was not large enough. It may also be necessary to study exactly how the students' English competency developed through presentation-based instruction. However, this study showed satisfying results in that it revealed that presentation-based courses are effective as a method for training students to speak English in a classroom setting. Based on the results of this study, we plan to investigate the processes by which presentation-based courses stimulate the motivation level and affective factors for engineering students. As a preliminary study, we believe that this study has introduced a new perspective on the English curriculum for engineering students.

### **ACKNOWLEDGMENT**

We would like to express our thanks to anonymous reviewers for their useful comments.

### **NOTES**

- 1. Since the Cronbach's alpha of Ought-to self in January was only .36, we removed two items suggested by the data. Then, the Cronbach's alpha became .64 in January and .79 in April. Thus, we decided to use the remaining three items for the ought-to L2 self
- 2. Dr. Ryan was collecting data in 2006, when the first author obtained the scales from him to use it in her study. We wish to express our thanks to him for letting us use them.

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### **APPENDICES**

<Appendix A>

Items and variables for "the motivational/attitudinal questionnaire"

### Attitudes towards learning English

- Learning English is really great.
- I really enjoy learning English.
- I find learning English really interesting.
- I'm always looking forward to my English classes.

### Linguistic self-confidence

- I am sure I will be able to learn a foreign language.
- Learning a foreign language is a difficult task for me.
- If I made the effort, I could learn a foreign language.

### **English classroom anxiety**

- I always feel that my classmates speak English better than I do.
- I get nervous and confused when I am speaking in my English class.

### Ideal L2 self

- The things I want to do in the future require me to speak English.
- Whenever I think of my future career, I imagine myself being able to use English.
- I often imagine myself as someone who is able to speak English.
- I would like to be able to use English to communicate with people from other countries.
- I can imagine speaking English with international friends.
- When I think about my future, it is important that I use English.

### **Ought-to self**

- For me to become an educated person I should learn English.
- Hardly anybody really cares whether I learn English or not.
- A knowledge of English would make me a better educated person.
- For people where I live learning English doesn't really matter that much.
- Learning English is necessary because it is an international language.

### <Appendix B>

Items and categories for "Perceived competence"

### **Concept 1: Accurate English Composition (4 items)**

α: April .76, January .67

- I can check my English writing using a dictionary and textbooks.
- I can write English materials for presentation.
- I can choose an appropriate vocabulary when writing English.
- I know the grammatical rules and the different parts of speech.

### Concept 2: Presentation and Clear Explanation (6 items)

a: April .81, January .72

- I can express what I want to say in English.
- I can make a presentation in English.
- I can speak English with the knowledge of correct pronunciation.
- I can research necessary information and present the results.
- I can see the difference between written and spoken English.
- I can make myself understood by everyone.

### **Concept 3: Daily Conversation (3 items)**

α: April .73, January .78

- I can make a simple conversation in English.
- I can understand what is spoken in English.
- I can understand what native English speakers say.

### **Concept 4: Reading (1 item)**

• I can understand English documents.