Relationships Among Self-Efficacy, Willingness, and Writing Performance in an Academic Writing Program[*]

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1. Introduction

In the field of foreign language education, a greater emphasis on improving writing skills is increasing. For most students, it is essential to be able to read and write advanced levels of text as well as compose academic papers. The same need applies to the medical writing education (Nwogu 1997). However, the process of writing can be stressful for Japanese EFL learners because their degree of language proficiency can be relatively limited. In this respect, writing instruction in the EFL classroom can help learners promote better organization, creativity and self-expression skills in a target language. In response, an academic writing program at Saitama Medical University (SMU) was designed and implemented for first-year students to motivate them to become more proficient writers.

In this paper, we aim to: (1) present an overview of SMU's academic writing program for EFL learners and its learning outcomes, and (2) present our data analysis results, showing the relationships among improved writing performance, deeper self-efficacy, and a willingness to write. Notably, we analyzed how students improved self-efficacy, which is one of the most important factors for autonomous learners who have academic achievement (Bandura, 1977, 1993; Zimmerman 2011), and how they improved their writing performance, and which aspects of writing performance correlated with self-efficacy. These results are examined through an analysis of student questionnaires, coursework, and TOEFL scores.

2. Medical English Curriculum at SMU

Teaching English as a foreign language deserves careful attention to establish a comprehensive teaching curriculum; in particular, higher education facilities should take various types of English into consideration (Swales 1990, 2004). The representative classification is generally presented in two types based on the purposes of teaching: English for General Purposes (EGP) and English for Specific Purposes (ESP). The latter can be classified into subcategories, English for Academic Purposes (EAP) and English for Occupational Purposes (EOP) (Dudle-Evans & St John, 1998). At SMU, the following class scheme was implemented in 2016.

Table 1. The SMU Medical English Curriculum (2016)

Year	Medical Science Reading	Presentation/ Oral Communication	(Extensive) Reading	Academic Writing
1st	EAP (12 classes)	EGP (44 classes)	EGP (22 classes)	EGP (24 classes)
2nd	EAP (16 classes)	EGP (16 classes)		
3rd	EOP (8 classes)	EGP (8 classes)		
4th		EOP (14 classes)		

To facilitate students' learning in the context of medicine, our university has added a slight modification to the EGP, EAP, and EOP programs. The education of Medical English for General Purposes (MEGP) is based on texts from newspapers or articles on medical topics containing medical terms that educated people in the general public can understand. Therefore, the class of Medical English for Academic Purposes (MEAP) is conducted through the textbooks of basic sciences or medical sciences and reading materials with basic medical terms. Medical English for Occupational Purposes (MEOP) uses texts from recent medical journals describing clinical research or clinical situations. As shown in Table 1, these variations are introduced in order from general to specific.

3. Academic Writing Program at SMU

Having concise writing skills is significant for doctors in Japan, since it is necessary to read and write various medical papers and to edit large-scale medical databases. Linked to this point, the instructional goals of SMU's academic writing program include the following 3 objectives:

- to motivate learners to learn and enjoy writing
- to promote confidence in learners in regards to writing
- to guide learners to write consistent and coherent passages.

Our academic writing program was originally created for first-year students at SMU in 2013, but has been modified every year since then. The current program has been carried out for the past two years, and consists of eight sessions, each of which has its own instructional purposes and goals, including how to organize ideas in accordance with topics and write texts consistently and coherently. Approximately one hundred and thirty students are divided into six classes, and are instructed by one Japanese teacher and two native English teachers through team teaching. Classes are every other week, with one class lasting one hundred and thirty minutes. The format of each lesson involves instructing about key points (such as logic

and expressions), brainstorming and structuring, writing a first draft, sharing peer feedback, and receiving teacher feedback. Then each student revises their draft and submits a final draft during the lesson. While writing their drafts, students can consult a dictionary, native teachers and online sources. Papers, scored with a writing assessment rubric, are returned to students the following lesson, along with verbal and written feedback from the Japanese teacher.

When it comes to the writing theme and educational focus, the instructional contents of each lesson are different. The first term includes process and procedure, and comparison and contrast, with the focus placed on the quantity (two hundred words or more). The second term explores cause and effect, and definition and classification. The main focus for this term is vocabulary and using a variety of expressions. The third term addresses summary and paraphrase, and problem and solution. During this term the emphasis is put on accuracy by centering on mechanics, quotations, citations, and references. At the end of each term, a term exam is conducted. A summary of classes for 2016 is shown below:

Table 2.   The Schedule & Teaching Procedure at SMU (2016)

Date	Theme
5/20	Whole Class Instruction #1
5/27, 6/10	Theme #1 Process & Procedure
6/17, 24	Theme #2 Comparison & Contrast
7/1	Term-End Exam #1
9/30, 10/14	Theme #3 Cause & Effect
10/21, 28	Theme #4 Definition & Classification
11/4	Term-End Exam #2
11/25	Whole Class Instruction #2
12/2, 9	Theme #5 Summary & Paraphrase
12/16	Whole Class Instruction #3
1/13, 20	Theme #6 Problem & Solution
1/27	Term-End Exam #3

Procedure

Instruction (20 min)
- theme, important expressions

Brainstorming (20 min)
- mind-mapping $\Rightarrow$ structuring

Draft writing (30 min)
- writing draft, consulting professional sources (e.g., dictionary)

Teacher/Peer feedback (40 min)
- corrections, comments from teachers and/or peers
- rewriting draft

Final draft & Submission (20 min)

As for the writing assessment, we have authored our own rubric, which is aligned with our teaching and learning objectives. The score is calculated from six criteria, each of which has a value ranging from two to five points. Thus, the maximum score for a student's paper is thirty while the minimum is twelve. The rubric's criteria include thesis and content,

organization, grammar and mechanics, vocabulary, tone, and length. In scoring a draft, an extra point can be added to exceptional elements of the student's writing (see Appendix 1). This rubric is utilized by both Japanese and native teachers, and, on average, drafts can be scored in five to ten minutes.

4. The Background of the Study

There are a variety of aspects in teaching foreign languages that can be explored, especially in terms of writing. Among them, this paper focuses on writing activities that promote quality and independence. It is because writing activities can offer learners rich opportunities to organize and express their ideas consistently and coherently in higher education. The educational goals at SMU are designed for medical students, and the skill to improve writing is definitely of practical value for their roles as medical professionals in the future. At the same time, we have focused on self-efficacy. It is stated that learners' motivation increases while they regulate their own learning guided by metacognition, and by having choices and creativity in their learning environments (Zimmerman & Shunk 2001). Similarly, the assumption that self-efficacy is important for learning motivation is widely accepted (Schunk 1991; Schunk & Zimmerman 2008). From these reasons, our study puts a strong emphasis on both writing and self-efficacy.

5. Research Questions

Our research questions in relation to academic writing include:

1) How does the program improve students' self-efficacy and willingness to write, and writing performance?
2) How do self-efficacy, willingness to write, writing performance, and English proficiency correlate?

6. Analysis

6.1 Data

The following data were employed for analyses and to answer our research questions.

(1) Questionnaires
Pre- and post-questionnaires (with a 5-point scale) were given at the start and the end of the course to explore the changes in self-efficacy and willingness to write (see Appendix 2).

(2) Writing Term Tests
A 40-minute term test with a writing prompt was given at the end of each term. The test was scored with the same rubric as used for the coursework (see Appendix 1).

(3) Pre- and Post-Writing Assignments

A 15-minute writing about "The Ideal Doctor" was completed at the start and the end of the course. Students with low self-efficacy (showing less than 2 out of 5 points on the pre-questionnaire) were chosen as sampled students and their scripts were analyzed based on appropriate objective measurements of accuracy, fluency, and complexity (Malvern, Richards, Chipere, & Duran 2004; Wolfe-Quintero, Inagaki, & Kim 1998) as follows:

Accuracy: error-free clauses/ total clauses

Fluency: total words, total clauses, and total T-units

Complexity:

- Syntactic Complexity: words/ total clauses, words/ total T-units
- Lexical Complexity: MSTTR 30 (Mean Segmental Type Token Ratio every 30 words)

(4) TOEFL Scores

The scores of a TOEFL ITP (TOEFL Institutional Testing Program) test, which was given as a general English proficiency test at the end of the course, were also used for correlation analysis.

6.2 Results of Data Analyses

To confirm how our students improved in regards to self-efficacy, willingness to write, and writing performance, and which aspects of writing performance correlate among one another, we analyzed pre- and post-questionnaires and test scores.

6.2.1 Analysis (1): Changes in Self-Efficacy and Willingness to Write

Table 3 shows the changes in self-efficacy in writing and willingness to write through our writing program. Each of the data, collected over 3 years, showed some variation. The scores for self-efficacy increased significantly, but willingness to write did not necessarily show a substantial increase although its raw scores showed a positive change.[1]

Table 3. Means (SDs) of Pre- and Post-questionnaires and TOEFL ITP Scores

Data	Pre-Efficacy	Post-Efficacy	Pre-Willingness	Post-Willingness	TOEFL Score
2013 (*N*=115)	2.83 (0.79)	**3.59 (0.54)****	3.24 (1.09)	3.46 (1.09)*	458 (32.7)
2015 (*N*=129)	3.10 (0.85)	**3.73 (0.57)****	3.38 (1.20)	3.41 (1.09)	455 (39.5)
2016 (*N*=127)	2.94 (0.94)	**3.56 (0.64)****	3.31 (1.20)	3.35 (1.07)	456 (37.6)

*$p< .05$. **$p<.01$.

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[1] The data of 2014 were eliminated from this analysis due to a shortage of participants for the questionnaire.

6.2.2 Analyses (2): Correlation Among Self-Efficacy, Willingness, and Test Scores

Tables 4, 5, and 6 show how self-efficacy is correlated with other factors such as willingness to write and test scores (term test scores[2] and TOEFL test scores). As shown, all data demonstrate there is a moderate correlation between self-efficacy and willingness to write. However, self-efficacy is not necessarily correlated with test scores, though the data of 2013 and 2016 show there were weak correlations.

Table 4. Pearson's Correlation Coefficient
Among Self-Efficacy, Willingness, and Test Scores for First-year Students (2013)

2013(*N*=115)	Self-Efficacy	Willingness	Writing Test	TOEFL
Self-Efficacy	1.000			
Willingness	**.476****	1.000		
Writing Test	.058	.101	1.000	
TOEFL	.199*	**.280****	**.254****	1.000

*p< .05. **p<.01.

Table 5. Pearson's Correlation Coefficient
Among Self-Efficacy, Willingness, and Test Scores for First-year Students (2015)

2015 (*N*=129)	Self-Efficacy	Willingness	TOEFL
Self-Efficacy	1.000		
Willingness	**.458****	1.000	
TOEFL	.169	.167	1.000

**p<.01.

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[2] The term-end writing tests in 2015 were excluded from this analysis because a similar topic was dealt with in the coursework.

Table 6. Pearson's Correlation Coefficient
Among Self-Efficacy, Willingness, and Test Scores for First-year Students (2016)

2016 (*N*=127)	Self-Efficacy	Willingness	Writing Test	TOEFL
Self-Efficacy	1.000			
Willingness	**.478****	1.000		
Writing Test	.171	.096	1.000	
TOEFL	**.239****	**.264****	**.244****	1.000

**p<.01.

6.2.3 Analyses (3): Correlation Between Self-Efficacy and Objective Indicators

As shown in Analyses (1) and (2), self-efficacy improved throughout the program, and the results showed a moderate correlation with a willingness to write but not with test scores. Therefore, we analyzed what factors in writing performance can affect the improvement of self-efficacy, employing objective measures of accuracy, fluency, and complexity (lexical and syntactic).

Table 7 shows changes in accuracy, fluency, and syntactic and lexical complexity. We can see that fluency and lexical complexity significantly improved, but accuracy and syntactic complexity did not. In addition, Table 8 shows that among accuracy, fluency, and complexity, only fluency was weakly correlated with self-efficacy, and this data was also correlated with TOEFL test scores.

Table 7. Pre- and Post- Accuracy, Fluency, and Complexity

	Accuracy	Fluency				Syntactic Complexity	Lexical Complexity
2015	Error-Free Clauses	Total Words	Total Clauses	Total T-units	Words / Clauses	Words / T-units	MSTTR30
Pre *(SD)* *n*=27	.67 (0.20)	45.56 (17.87)	6.59 (2.85)	4.30 (2.05)	7.23 (2.22)	11.54 (4.26)	11.89 (2.52)
Post *(SD)* *n*=27	.60 (0.16)	88.33 (27.58)	12.52 (3.87)	8.63 (3.24)	7.11 (1.23)	10.66 (3.07)	13.72 (1.85)
t -values	1.85	9.66**	9.07**	7.47**	.29	1.11	3.23**

*p< .05. **p<.01.

Table 8. Correlation Among Self-Efficacy, Fluency, and TOEFL Scores (2015)

	Willingness	Self-Efficacy	Fluency	TOEFL
Willingness	1.00			
Self-Efficacy	.39*	1.00		
Fluency	.11	.38*	1.00	
TOEFL	.35	.55**	.38*	1.00

*$p< .05$. **$p<.01$.

7. Discussion and Pedagogical Implications

The results of the analyses (1) to (3) can be summarized with the following two points: First, through this program, self-efficacy in writing is shown to have significantly improved, and it was moderately correlated with the willingness to write, but not as much with test scores. Secondly, self-efficacy was correlated with fluency, but not with accuracy and complexity. Fluency was moderately correlated with TOEFL scores as well.

These results have pedagogical implications for EFL educators. When learners perceive their improvements (for instance, in fluency in our study) and raise their self-efficacy, they can increase their motivation to learn more. However, it might take more time before they show improvement in test scores. Therefore, to promote learners' willingness in order to help them keep learning, we should encourage them to write more in a given amount of time at the beginning stages of the writing program, because fluency can be attained more easily than accuracy or complexity. Then, later on, we should encourage them to use more expressions and a larger variety of languages, that is, lexical and syntactic complexity, and appropriateness and correctness in the usage of words or grammatical structures that relate to accuracy.

8. Conclusion and Further Research

In this present paper, we explained SMU's EFL academic writing program and its implications for learning outcomes by examining the relationships among several learning factors such as self-efficacy, willingness to learn, writing performance, and English proficiency. We suggest that self-efficacy especially plays a very important role in motivating students to be autonomous and better learners, and that it needs to be carefully considered when designing a program. In addition, we can apply our program's development to other programs, and integrating these skills with subjects such as reading, speaking or listening.

However, further research remains to be explored. For example, we confirmed the improvement in self-efficacy through our program and its relationship with fluency, analysing in terms of accuracy, fluency, and complexity. In this respect, we did not examine overall

improvement in academic writing skills, which are composed of many other important elements such as organization or consistency. Therefore, in the future, we need to analyze students' papers in greater detail to assist them in improving their writing and becoming more proficient academic writers.

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Appendix 1. Writing Rubric

Academic Writing Rubric
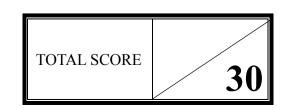
Number _____ Name _____

	6 Exceptional	5 Skilled	4 Proficient	3 Developing	2 Inadequate
Thesis & Content	・An exceptional thesis/claim that responds to the assignment ・Exceptional supporting ideas/evidence ・Details are relevant and accurate	・A strong thesis/claim that responds to the assignment ・Effective supporting ideas/evidence ・Details are, for the most part, relevant and accurate	・A fair thesis/claim that responds to the assignment ・Supporting ideas/evidence that lack complexity	・A weak thesis/claim that responds to the assignment ・Supporting ideas/evidence that are unclear ・Some information may be irrelevant and/or inaccurate	・No thesis/claim ・Either very few or no supporting ideas/evidence ・Information is irrelevant, inaccurate and/or confusing
Organization	・Distinct introduction, body and conclusion ・Effective paragraph structure ・Smooth transitions between paragraphs and ideas ・Logical and appropriate sequencing	・Appropriate introduction, body and conclusion ・Effective paragraph structure ・Standard transitions between paragraphs and ideas, with few lapses in unity and coherence	・Organization of introduction, body and conclusion is imprecise ・Paragraph structure is sometimes inconsistent and/or ineffective ・Some transitions between paragraphs and ideas have lapses that affect unity and coherence	・Introduction, body and/or conclusion is missing ・Paragraphs are constructed randomly and/or incorrectly ・Few transitions, and they can affect unity and coherence	・No Organization
Grammar & Mechanics*[1]	・Superior understanding of grammar ・Few or no mechanical errors	・Good understanding of grammar ・Some mechanical errors, but they do not interfere with understanding	・Basic understanding of grammar ・Multiple errors in mechanics, and some may interfere with understanding	・Poor understanding of grammar ・Multiple errors in mechanics seriously interfere with understanding	・No understanding of grammar ・A large number of mechanical errors, writing is difficult and/or impossible to understand
Vocabulary	・Exceptionally rich and sophisticated vocabulary that matches the complexity of the topic	・Appropriate vocabulary that matches the complexity of the topic	・Mostly appropriate vocabulary that matches the complexity of the topic ・Some word/phrase repetitions	・Limited vocabulary choices ・Many word/phrase repetitions	・Poor vocabulary choices ・Too many word/phrase repetitions
Tone*[2]	・Writing displays a rich tone appropriate to the purpose, content, situation and formality	・Tone is appropriate to the purpose, content, situation and formality, and is consistent throughout the writing	・Tone is mostly consistent throughout the writing ・Sometimes informal	・Tone is not evident/consistent ・Writing doesn't match the formality of the assignment	・Unawareness of tone for the formality of the assignment
Length	・300+ words ・No obvious repetitions ・No irrelevant sentences	・250-299 words	・200-249 words	・150-199 words	・149 words or less

*[1] capitalization, punctuation, word usage, spelling, sentence structure etc.

*[2] The writer's attitude about the subject of the writing (e.g. academic, casual, serious, humorous, sarcastic

Minus Point

・Incorrect number of words (-1)

TOTAL SCORE	/ **30**

Appendix 2. Pre- and Post-Questionnaires

(1) I can write consistent and well structured texts, in an appropriate style and a logical structure from certain and significant perspectives.

(2) I can develop an argument, giving reasons in support or against, and explain with advantages or disadvantages.

(3) I can write texts with relevant and subsidiary points as well as main and significant points.

(4) I can organize paragraphs, considering introduction, development, and conclusion.

(5) I can write summaries and reviews in my own words about topics or discussions I research.

(6) I can write connected texts, using simple conjunctions.

(7) I can write simple texts on topics which are familiar or of personal interest in a well organized structure.

(8) I can write texts on a certain topic, giving facts and comments respectively.

(9) I can write what I want to express with a dictionary.

(10) I can write simple texts on my personal information.

<div align="right">(Adapted from Council of Europe, 2001)</div>