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Medical English Education

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Timothy D. Minton

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 Japan Society for
Medical English Education

Official Journal of the Japan Society for Medical English Education (JASMEE)

第 24 回 日本医学英語教育学会 学術集会 開催案内

日本医学英語教育学会は 1998 年に第 1 回医学英語教育研究会が開催され、その後、医学英語に関する研究を推進し、医学英語教育の向上を図る目的で学会として発展して参りました。現在では 400 名以上の会員を有しております。

医学英語教育は卒前・卒後・生涯教育として重要であり、医療の国際化、医師国家試験の英語問題導入や医学英語検定試験など、専門職教育の限られた時間でどのように教育を行うかが課題です。学術集会では例年、医療系の英語教育に係わる教員・研究者・医療関係者が参加し研究・事例を報告します。第 24 回学術集会は下記により開催します。

日本医学教育学会の委員会に起源をもつ本会に是非ご参加いただき、医学英語教育について情報を交換していただければと思います。

第 24 回 日本医学英語教育学会 学術集会
会長 元雄 良治
金沢医科大学 腫瘍内科学

開催概要

学会名：第24回日本医学英語教育学会学術集会

日 時：2021年7月17日（土）～7月18日（日）

会 長：元雄 良治（金沢医科大学 腫瘍内科学）

会 場：金沢市文化ホール（〒920-0864 石川県金沢市高岡町15-1）

演題募集：2021年1月20日（月）～3月22日（月）

<募集テーマ> 英語論文作成・投稿、国際的医学ジャーナルの動向、国際的交流活動、
医療現場と医学英語、USMLE対策、医学英語達成度評価、
医学英語教育における新たな取り組み、JASMEEの今とこれから、その他

*筆頭演者は本学会の会員に限ります。非会員の方は演題提出前に入会してください。

*英語・日本語のどちらでも発表できます。学会ホームページよりご登録ください。

*詳細は学会ホームページをご参照ください。

<https://jasmee.jp/24th-academic-meeting-2021-7-17-18/>

問合せ先

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First Announcement

The 24th Academic Meeting of the Japan Society for Medical English Education

The Japan Society for Medical English Education (JASMEE) held its first meeting as a study group in 1998. Since then, the society's main aims have been to promote research in fields related to medical English, and to support and encourage improvements in medical English education. JASMEE now has more than 400 members.

With the globalization of medicine and such recent developments as the introduction of questions in English in Japan's National Medical Practitioners Qualifying Examination, the challenge of how best to make use of the limited time available for medical English education in university curricula is ever more pressing. JASMEE's annual academic meetings seek to address this challenge with a wide variety of presentations, symposia, and workshops given by experts in the field.

Information about the 24th JASMEE academic meeting is presented below. In consideration of the Tokyo 2020 Olympics, the meeting will be held in mid July, in Kanazawa, Ishikawa. We look forward to welcoming JASMEE members and non-members alike to this meeting, where they will be able to share their experience and expertise with others in the field to the greater benefit of medical English education in Japan and beyond.

Yoshiharu Motoo,

President of the 24th JASMEE academic meeting

Dates: Saturday, July 17 and Sunday, July 18, 2021

Venue: Kanazawa City Culture Hall

15-1, Takaoka-machi, Kanazawa, Ishikawa, 920-0864 Japan

President: Yoshiharu Motoo, MD, PhD, FACP (Kanazawa Medical University)

Call for papers: Proposals for papers on the following subjects (or similar) should be submitted by March 22, 2021.

- Preparation and submission of medical English papers
- Trends in international medical journals
- Medical English in Clinical Settings
- USMLE Preparation
- Evaluation of Proficiency in Medical English
- New Developments in Medical English Teaching
- JASMEE—Now and in the Future

Submissions will only be accepted from JASMEE members in good standing. To submit a proposal, please access the JASMEE homepage below.

<https://jasmee.jp/24th-academic-meeting-2021-7-17-18/>

Inquiries should be addressed to the JASMEE Secretariat (c/o Narunia, Inc. Attn: Ms. Tomidokoro)

TEL 03-3818-6450 FAX 03-3818-0554 E-mail jasmee@narunia.co.jp

Journal of Medical English Education

The official journal of the Japan Society for Medical English Education

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From the editor

When it became clear back in March that many of the teachers on JASMEE's membership list would be doing most of their work online, I initially thought the time saved on commuting might translate into a larger number of submissions to the journal than usual. That was, of course, before I realised that teaching online requires much more time in terms of preparation and dealing with assignments than face-to-face classes! As it turned out, only three contributions arrived in my inbox between March and August. Since the cancellation of our annual Academic Meeting in the summer means we lack the conference proceedings section that usually makes up a significant chunk of the October issue, I am afraid this is a rather slim volume. My thanks, though, to the three intrepid contributors whose writing graces these pages.

The cancellation of the 23rd Academic Meeting planned with such great attention to detail by Dr Jun Takata of Kochi Medical School was, I am sure, a great disappointment to many JASMEE members, although it was only one of the many disruptions we have suffered thanks to the covid-19 pandemic. Well into the second semester of online classes and meetings, I really wonder when we are going to be back to nor-

mal. But now that we are perhaps more used to operating online, I hope many of you will be able to find time to put pen to paper (or preferably fingers to keyboard) with the aim of informing other JASMEE members about your research projects or, perhaps, your experiences of teaching online. I have to report that the secretariat has received only one submission so far for the February issue, but you still have a little over two months (i.e. until mid-December) to get your contributions in!

And having mentioned the JASMEE secretariat, I would like to extend my sincere thanks to the staff of Medical View for their years of dedicated service to JASMEE in general and to me, as editor-in-chief of the journal, in particular. I often wondered how the staff assigned to us could fit the burdens of taking care of JASMEE-related matters in with their regular publishing work. Medical View handed over the reins to Narunia Inc. just a couple of months ago, and we can all now look forward to getting to know and working with their staff over the years to come.

T.D. Minton OBE

Editor-in-Chief

Journal of Medical English Education

Evaluating the comparative effectiveness of medical interpretation knowledge and skill improvement via face-to-face, blended, and online learning

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³ School of Nursing, University of Shizuoka

⁴ Freelance Programmer

Abstract

This paper presents a study in which we tested the comparative effectiveness of a medical interpreter training program utilizing face-to-face, blended, and online learning. Findings were based on participant performance in an intervention program that was developed to improve interpreting knowledge and skills. Interpreter knowledge was evaluated using a paper-based test, while skills were evaluated by counting standardized errors. Pre-tests and post-tests were conducted with 65 participants (12 men and 53 women; average age: 38 years). A one-way analysis of variance was used for comparisons between the groups, while repeated-measure outcomes were analyzed using a two-way analysis of covariance. The results were reported as least squares means with 95% confidence intervals, and were adjusted for TOEIC scores. Regarding the total scores on the paper-based test, a significant difference was observed in the intervention effect (post-pre) between the three groups. The results revealed a significantly greater increase in scores in the blended learning and online groups in comparison to the face-to-face group. The quality of interpretation results also indicated that, for total scores, errors were significantly reduced after all learning types. However, comparisons revealed a significant increase in scores on the paper-based test in the online and blended method groups, and a significant increase in the quality of interpreting in the face-to-face group when compared to the other groups. These results indicate that while all three methods may result in effective learning, the online and blended methods were particularly effective for knowledge accumulation, whereas face-to-face learning was more effective for practical skill learning.

J Med Eng Educ (2020) 19(3): 59-65

Keywords blended learning, e-learning, medical interpreter training, Moodle

1. Introduction

1.1. Background

In Japanese medical settings, there is a growing need for professional interpreters to help overcome language barriers.¹ Gany et al. emphasized the importance of professional interpreters in clinical settings, reporting that they were less likely to make clinical errors than ad hoc interpreters.²

Although some medical interpretation training programs exist, these training programs have not been evaluated to determine the effectiveness of training.

1.2. Learning style of medical interpreting

Training in medical interpreting has been conducted using various learning styles including face-to-face, online and blended learning. Miyaji described online learning as “an environment where you can learn freely regardless of time or place.”³ Blended learning is a learning style that combines face-to-face learning and online learning.⁴ Fujishiro conducted a questionnaire survey after an online learning class, revealing that online learning was effective for accumulating knowledge and improving listening and communication.⁵ However, Iwata et al. reported that blended learning offers

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advantages over both face-to-face learning and e-learning.⁶ Thus, it remains unclear which learning style is most effective for improving knowledge and skills in medical interpreting.

1.3. Previous research on training for medical interpreting

To date, several researchers have conducted research into medical interpretation by examining medical research knowledge. According to our previous study (Ono, 2013) the core competencies in medical interpreting are: (a) skills in maintaining accuracy and completeness; (b) medical terminology and understanding the human body; (c) behaving ethically and making ethical decisions; (d) nonverbal communication skills; and (e) cross-cultural communication skills.⁷ Ono et al. further conducted a review of a clearly formulated questions using systematic and explicit methods to identify and select relevant research, and to collect and analyze data from studies included in the review.^{7,8} The two systematic reviews have investigated the skills necessary for medical interpretation, established an educational program to develop these skills, conducted a medical interpretation training course, evaluated the test results before and after the course using randomized controlled trial methods, and confirmed the effectiveness of the course.^{7,8} A previous study of training programs suggested that the skills necessary for medical interpretation could be developed without face-to-face training.⁹

We developed a blended medical interpreter training program that combines face-to-face and online learning so that students can learn at any time or place.¹⁰ We developed a Moodle-based program (Figure 1) in which a conversational exchange was simulated with a background image showing an interpreter in a hospital. The program supported learning in Japanese and English. Opportunities to practice speaking through engaging in games and reading exercises in online word learning sites were also developed.

1.4. Objectives

The present study aimed to examine the comparative effectiveness of face-to-face, blended, and online learning for medical interpreting training. We conducted face-to-face, blended, and online learning medical interpreting training to answer the following research question:

How effective are face-to-face, blended, and online learning for the training of medical interpreters?

2. Methods

2.1. Recruitment of participants and data collection

Participants were recruited for face-to-face classes in April 2010 via local newspaper advertising in Nagoya and social media (Mixi). For blended classes, we recruited students in medical English classes in 2019, who were third- and fourth-year students at universities in Tokyo. For online classes, we recruited a group of medical interpreters via Facebook in February 2020 who were located throughout Japan and in several other countries. The eligibility criteria were as follows: Japanese ethnicity, age > 20 years, no previous experience taking part in medical interpreting training, and availability to attend all training sessions.

Participants took a pre-test before starting the course. Participants then engaged in classes, or were given a link to web-based training material. The class length and content were the same (20 hours) for all three learning styles. After completing the program, the students took a post-test. If participants were unable to take the pre-test or failed to complete the course, they were excluded from the study.

2.2. Pre-test and post-test

We evaluated participants' interpreting skills using the same test for the pre-test and post-test for all three learning styles (face-to-face, blended and online learning). All participants were asked to take a paper-based test and an inter-

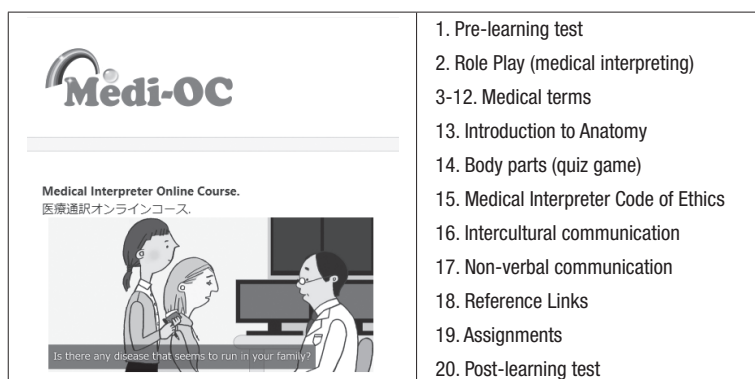


Figure 1. Proposed Moodle-based online learning program "Medi-OC"

preting test developed by Ono et al.⁹ In this test, participants interpreted sample conversations and their performance was recorded. To evaluate interpreting skills, interpreting errors identified by Flores et al. were used to evaluate the main component (quality of interpretation). The quality of interpretation was evaluated by counting errors in the recorded output of the interpreter.¹¹ The five types of errors were as follows: omission (not interpreting a word/phrase uttered by the speaker), substitution (substituting a word/phrase for a different word/phrase uttered by the speaker), addition (adding a word/phrase to the interpretation that was not uttered by the speaker), editorialization (providing their own personal views regarding the interpretation of a word/phrase uttered by the speaker), and false fluency (using an incorrect word/phrase, or a word/phrase that does not exist in that particular language). These indexes were used because they were considered to be appropriate for evaluating the quality of medical interpretation in a quantitative manner.

Participants were asked to interpret a text, and errors were counted. The number of errors counted in the post-test was deducted from that in the pre-test to identify changes in error rates. We incentivized participation by providing reference material about medical interpreting after the post-test. The study was approved by Ethics Committee at Juntendo University.

2.3. Data analysis

For evaluating the interview test, two trained, bilingual research staff members conducted the assessments. One-way analysis of variance (ANOVA) was used for comparisons between groups for subject variables on a continuous scale. Fisher's exact test was used for analyzing variables on a nominal scale. A Bonferroni correction was used to correct for multiplicity. The repeated-measures outcomes (paper-based test scores and maintaining accuracy and completeness scores) were analyzed with a two-way analysis of covariance (ANCOVA) that included the intervention group, dummy variables for time (pre or post), intervention group-by-time interactions (group*time), initial value of the dependent variable, and TOEIC score as covariates. At this time, the mean value (for each group) was substituted for the missing data of TOEIC scores. The results were reported as least squares (LS) means and at 95% confidence intervals (CIs). A *p*-value of <0.05 was considered statistically significant, and all *p*-values were two-sided. All statistical analyses were performed using SPSS version 25 (IBM Japan, Ltd., Tokyo, Japan) software.

3. Results

Table 1 shows the participants' demographic characteristics and test scores at pre-test.

Face-to-face training was conducted in Aichi Prefecture, blended training was conducted in Tokyo, and online training was conducted throughout Japan and in several other countries.

The total number of participants was 65 (12 men and 53 women), with an average age of 38 years. Average age was significantly lower in the blended group compared with the face-to-face and online groups ($p < 0.001$). Because there was a significant difference in average TOEIC score between groups (face-to-face: 855 points, blended: 646 points, online: 864 points), the results were adjusted for TOEIC scores. When comparing the three groups, it was difficult to compare test scores taken from participants with different TOEIC scores. Therefore, the performance results were adjusted for TOEIC scores to investigate the association between training and improvement of pre-post-test scores in those cases where the TOEIC scores were the same. Regarding gender, the online group only contained women. Because the blended learning group only included participants in one age group (20s), age was not adopted as a covariate in ANCOVA.

3.1 Results of paper-based test scores

Table 2 shows the results of the paper-based test scores.

For total scores on the paper-based test in the face-to-face, blended, and online learning groups, the average pre-test scores were 41 points, 30 points, and 53 points, respectively, and the average post-test scores were 44 points, 56 points, 70 points, respectively (the maximum score on the test was 78 points).

A significant difference was observed in the intervention effect (post-pre) between the three groups ($p < 0.001$). The comparison results revealed that a significant increase in scores was observed in the blended learning group and the online learning group compared with the face-to-face group (amount of change: face-to-face, 0.3 [-3.6, 4.2]; blended, 18.4 [3.1, 23.7]; and online, 25.8 [21.2, 30.4]).

Table 2 shows the before-and-after comparison of each item on the paper-based test for each learning type.

Regarding medical terms, there was a significant difference in intervention effect (post-pre) between the three groups ($p < 0.001$). The comparison results revealed that, compared with the face-to-face and blended learning group, there was a significant score increase in the online group (amount of change: face-to-face, LS mean = -2.8 [95% CI: -3.9, -1.7]; blended, -2.5 [-4.2, -0.8]; online, 1.2 [-0.2, 2.6]).

Table 1. Participants' demographic characteristics and test scores at pre-intervention

	Face-to-face (n = 21): 1	Blended (n = 21): 2	Online (n = 23): 3	<i>p</i> -value	<i>p</i> -value (multiple comparisons)		
				for all	1 vs. 2	1 vs. 3	2 vs. 3
Gender, n (%)				0.006	>0.999	0.009	0.056
Male	7 (33.3%)	5 (23.8%)	0 (0.0%)				
Female	14 (66.7%)	16 (76.2%)	23 (100.0%)				
Age, mean (SD)	41.8 (9.8)	21.4 (1.0)	49.8 (12.1)	<0.001	<0.001	0.063	<0.001
TOEIC, mean (SD)	854.5 (80.0)	645.7 (162.2)	863.8 (83.7)	<0.001	<0.001	>0.999	<0.001
Paper-based test score:							
Medical terms	7.1 (2.0)	3.9 (1.4)	9.4 (0.7)	<0.001	<0.001	<0.001	<0.001
Medical expressions	17.2 (1.9)	15.0 (4.4)	19.9 (3.5)	<0.001	0.099	0.012	0.001
Anatomy	8.7 (5.5)	2.0 (2.0)	11.3 (5.7)	<0.001	<0.001	0.397	<0.001
Non-verbal communication	0.0 (0.0)	1.0 (0.9)	1.2 (1.5)	0.001	<0.001	0.002	>0.999
Code of ethics	8.4 (2.9)	8.4 (3.9)	10.9 (1.1)	0.005	>0.999	0.001	0.017
Total score	41.5 (7.8)	30.4 (8.0)	52.7 (9.3)	<0.001	<0.001	<0.001	<0.001
Maintaining accuracy:							
Omission	1.9 (1.3)	17.1 (4.3)	6.6 (3.8)	<0.001	<0.001	<0.001	<0.001
Substitution	1.7 (1.2)	3.0 (2.0)	1.9 (1.6)	0.033	0.069	>0.999	0.141
Addition	0.6 (0.7)	1.5 (1.1)	2.2 (1.3)	<0.001	0.009	<0.001	0.191
Editorialization	0.4 (0.5)	1.7 (1.3)	0.8 (1.0)	0.001	0.001	0.525	0.052
False fluency	1.2 (1.0)	1.1 (1.6)	1.1 (1.0)	0.942			
Total score	5.8 (2.2)	24.4 (3.6)	12.5 (5.6)	<0.001	<0.001	<0.001	<0.001

#: One-way analysis of variance (ANOVA) was used for comparisons between groups for subject variables on a continuous scale. Fisher's exact test was used for the nominal scale.

n, %; mean (standard deviation [SD]).

Table 2. Results of paper-based test score

Score change (post-pre) #	Face-to-face: 1	Blend: 2	Online: 3	<i>p</i> -value: TOEIC adjusted			
				group*time	1 vs. 2	1 vs. 3	2 vs. 3
Medical terms	-2.8 [-3.9, -1.7]	-2.5 [-4.2, -0.8]	1.2 [-0.2, 2.6]	<0.001	>0.999	<0.001	0.028
Medical expressions	-0.6 [-2.1, 0.8]	4.9 [3.2, 6.6]	5.5 [4.0, 6.9]	<0.001	<0.001	<0.001	>0.999
Anatomy	2.1 [-0.3, 4.5]	7.4 [4.2, 10.6]	13.2 [10.6, 15.7]	<0.001	0.056	<0.001	0.060
Non-verbal communication	3.3 [1.7, 4.8]	7.7 [6.0, 9.4]	4.9 [3.5, 6.3]	0.006	0.004	0.337	0.074
Code of ethics	-1.2 [-2.1, -0.3]	2.0 [0.9, 3.1]	-0.3 [-1.3, 0.6]	<0.001	<0.001	0.501	0.021
Total score	0.3 [-3.6, 4.2]	18.4 [13.1, 23.7]	25.8 [21.2, 30.4]	<0.001	<0.001	<0.001	0.252

#: The changes between pre and post were reported as least squares (LS) means and 95% confidence intervals (CIs) in ANCOVA.

Medical expression exhibited a significant difference in the intervention effect (post-pre) between the three groups ($p < 0.001$). A significant increase in score was observed in the blended learning group and the online group compared with the face-to-face group (amount of change: face-to-face, -0.6 [-2.1, 0.8] [scores decreased after intervention]; blended, 4.9 [3.2, 6.6] [score improved by 4.9 points after intervention]; online, 5.5 [4.0, 6.9] [score improved by 5.5 points after intervention]).

Anatomy exhibited a significant difference in the intervention effect (post-pre) between the three groups ($p < 0.001$). A significant increase in scores was observed in the online group compared with the face-to-face group (amount of

change: face-to-face, LS mean = 2.1 [-0.3, 4.5]; blended, 7.4 [4.2, 10.6]; online, 13.2 [10.6, 15.7]).

Nonverbal communication showed a significant difference in the intervention effect (post-pre) between the three groups ($p < 0.001$). A significant increase in scores was observed in the blended group compared with the face-to-face group (amount of change: 3.3 [1.7, 4.8]; blended, 7.7 [6.0, 9.4]; online, 4.9 [3.5, 6.3]).

Code of ethics exhibited a significant difference in the intervention effect (post-pre) between the three groups under TOEIC score correction ($p < 0.001$). A significant increase in scores was observed in the blended learning group compared with the face-to-face group and the online

Table 3. Results of maintaining accuracy and completeness: quality of interpretation

Score change (post-pre) #	Face-to-face: 1	Blend: 2	Online: 3	<i>p</i> -value: TOEIC adjusted			
				group*time	1 vs. 2	1 vs. 3	2 vs. 3
Omission	-7.3 [-8.3, -6.2]	-7.7 [-8.9, -6.5]	-6.4 [-7.1, -5.7]	0.078	>0.999	0.443	0.326
Substitution	-1.5 [-2.3, -0.8]	0.4 [-0.4, 1.3]	0.0 [-0.7, 0.7]	0.001	0.007	0.006	>0.999
Addition	-1.5 [-1.8, -1.1]	-0.7 [-1.1, -0.4]	-0.5 [-0.8, -0.2]	0.001	0.024	0.001	>0.999
Editorialization	-0.4 [-0.9, 0.0]	-0.7 [-1.2, -0.2]	0.0 [-0.3, 0.4]	0.070	>0.999	0.216	0.163
False fluency	-0.1 [-0.5, 0.4]	-0.7 [-1.2, -0.2]	-0.5 [-0.9, 0.0]	0.188	0.276	0.568	>0.999
Total score	-9.9 [-11.9, -8.0]	-10.2 [-12.3, -8.1]	-7.2 [-8.5, -6.0]	0.002	>0.999	0.034	0.089

#: The changes between pre and post were reported as least squares (LS) means and 95% confidence intervals (CIs) in ANCOVA.

group (amount of change: face-to-face, -1.2 [-2.1, -0.3]; blended, 2.0 [0.9, 3.1]; online, -0.3 [-1.3, 0.6]).

3.2. Results of quality of interpretation

Table 3 shows the results of the quality of interpretation analysis.

For total scores, errors were reduced in all learning types. The rates of decrease in the face-to-face, online, and blended learning groups were -9.9 (-11.9, -8.0), -10.2 (-12.3, -8.1), and -67.2 (-8.5, -6.0), respectively. This comparison reveals that errors decreased significantly more in the face-to-face group compared with the online group.

For substitution, a significant difference was observed in the intervention effect (post-pre) between the three groups ($p = 0.001$). A significantly greater decrease in errors was observed in the face-to-face group compared with the blended group and the online group (amount of change: face-to-face, -1.5 [-2.3, -0.8]; blended, 0.4 [-0.4, 1.3]; online, 0.0 [-0.7, 0.7]).

For addition errors, a significant difference was observed in the intervention effect (post-pre) between the three groups ($p = 0.001$). A significantly greater decrease in errors was observed in the face-to-face group compared with the blended learning group and the online group (amount of change: face-to-face, -1.5 [-1.8, -1.1]; blended, -0.7 [-1.1, -0.4]; online, -0.5 [-0.8, -0.2]).

For omission errors ($p = 0.078$), editorialization errors ($p = 0.070$) and false fluency errors ($p = 0.188$), there were no significant differences in the intervention effect (post-pre) between the three groups.

4. Discussion

4.1. Summary of the findings

Our study evaluated the relative effectiveness of medical interpretation knowledge and skill improvement via face-to-face, blended, and online learning.

Three main findings emerged from the current study.

First, paper-based test scores increased significantly after training in the blended and online learning groups. This may be because in face-to-face learning, all students are taught at the same pace. In contrast, in blended and online learning, students can learn at their own pace, in accordance with their individual needs. Thus, blended and online learning are likely to be more effective for some individuals, and less effective for others. The current results suggest that online learning, which enables students to learn at their own pace, was more suitable for knowledge-accumulation than other types of learning. This finding is in accord with previous research which suggests that online learning is particularly useful for accumulating knowledge¹².

Our second main finding was that performance improvements differed between items on the paper-based test in the blended and online learning groups. Some items, such as anatomy, showed a large improvement in the online learning group, whereas interpreting performance (which is difficult to acquire by lectures alone), non-verbal communication, and code of ethics (both of which require instructor-led demonstrations and case presentations), showed more positive learning outcomes in learning groups that included face-to-face learning.

Finally, regarding the quality of interpretation, decreases in errors were observed in all three learning styles, with the face-to-face learning group showing the greatest decrease in substitution and addition errors. In addition, the current findings also suggest that face-to-face learning was more effective for teaching practical skills than the online and blended learning methods.

4.2. Practical implications and relevance of the study

The results of our study suggest that online learning, in which the pace of learning can be adapted to individual needs, may be particularly suitable for the type of knowledge-accumulation learning required for written examinations. While in face-to-face classes, all students are taught at

the same pace, in blended learning and online learning, students can learn at their own pace according to their individual needs. This type of learning style appeared to be particularly effective for knowledge-accumulation learning. In this study, the results suggested that these items may be suitable for knowledge-accumulation learning due to the high scores on medical terms and introductory anatomy items.

Online learning may be considered to be particularly effective in situations where people are not aware of others, where a singular focus is required, and where students benefit from repeating information at their own pace. The current findings hold several implications for educating future medical interpreters. First, the practice of pronunciation and memorization of medical terms and expressions, and the accumulation of knowledge in fields such as anatomy, can be carried out effectively by online learning, whereas role playing of practical techniques involving translation can be carried out more effectively in face-to-face learning. A mixture of online and face-to-face learning methods thus may be effective in reducing the number of in-person gatherings and the corresponding risk of disease transmission, as well as reducing the effort and time required.

In April 2020, the Japanese government declared a state of emergency in response to the COVID-19 pandemic. According to the Ministry of Education, Culture, Sports, Science and Technology, as of May 12, 2020, more than 96% of the 1070 universities in Japan were considering introducing or considering online classes, including 708 universities and 326 universities reporting that they were considering online classes instead of regular classes.¹³ However, many universities did not have sufficient time to prepare, and there have been many subsequent concerns about the burden on teaching staff, resulting in a number of problematic issues, such as servers failing, as well as the need to devise online classes and provide technical support to students. Under these circumstances, interactive classes (which are similar to face-to-face lessons) and pre-recorded classes are not differentiated, and few teachers recognize which type of teaching is most effective for learning.

The results of our study revealed that learning about non-verbal communication and codes of ethics (which require interpreting performance, instructor-led demonstrations, and case presentations) showed better outcomes with face-to-face learning, compared to online and blended learning. Face-to-face learning seems particularly effective for peer interpreting performance. Moreover, face-to-face classes would appear to be more effective when participants frequently require help and related feedback from instructors and peers.

These findings suggest that face-to-face learning is effective for active learning, in which individuals can correct and review their thoughts, particularly in a learning environment in which case presentations or other formalized real-time speech events are performed.

The findings of the current study may be considered useful to teachers developing online curricula for medical interpretation, allowing them to make more informed decisions about which options are best for their students in particular courses.

4.3. Limitations and significance of the study

Our study contained several limitations that should be considered. First, we did not conduct a randomized-controlled experiment. Second, it was difficult to determine the baseline performance for some items. For example, if participants are already working in a medical profession, they would know more medical terminology. Third, there was a long interval between data collection points (face-to-face class data were collected in 2010, blended class data were collected in 2019, and online class data were collected in 2020). This gap may have affected the validity of the current findings, as both the education system and related student experiences went through major changes between 2010 and 2020, with the continued development of social media and smartphones transforming the digital landscape. Fourth, there were differences in the levels of expertise and types of expertise between the three groups, which may have impacted our findings.

Despite these limitations, to the best of our knowledge, our study is the first to evaluate and compare the effects of face-to-face, blended, and online learning on medical interpretation knowledge and skill improvement.

5. Conclusion

In our study, we explored how face-to-face, blended, and online learning can all contribute to the effective learning of medical interpreters. The findings indicated that all three methods resulted in effective learning. However, the online and blended methods were more effective for knowledge accumulation, whereas face-to-face learning was more effective for practical skill learning.

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On the motivational effects of choice on ESL learners: Changes in English language proficiency during the second year at a medical school

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Background/Objectives The freshmen English program at a medical school in Japan has consistently succeeded in improving proficiency by approximately 30 points on the TOEFL ITP® test. This study analyzes how the students' language proficiency progresses during their second year.

Methods Participants were second-year students at a Japanese medical university who could enroll in an elective course, and participation in this course served as the treatment in this study. Participation was voluntary for the 2017 class students (n=102) but was actively encouraged through linkage with advancement criteria for the 2018 class students (n=98). Collected data was analyzed using a mixed-design ANOVA, with time (TOEFL scores at start, and end of year 2) as a within-subjects factor and elective course attendance (< 60 lessons, ≥ 60 lessons) as a between-subjects factor.

Results The analysis revealed no main effect of time on test scores for the 2017 class; the predicted interaction between time and attendance was significant ($F(1, 99) = 15, p < .001, \eta p2 = .133$). For the 2018 class, the analysis revealed a main effect of time on test scores ($F(1, 95) = 38, p < .001, \eta p2 = .283$); the predicted interaction between time and attendance was also significant ($F(1, 95) = 6, p < .05, \eta p2 = 0.061$).

Conclusion The results indicate that, when free to choose, better performing students tend to attend more elective lessons, while poor performers opt to skip these and see no change in scores. By contrast, when actively encouraged to participate in an elective class, both types of learners improve their listening scores.

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Keywords foreign language attrition, TOEFL ITP, learner motivation, learner autonomy

1. Introduction

1.1. Background

The effectiveness of language teaching at universities tends to be evaluated at the course level using a before/after

(1-semester or 1-year) framework of analysis. This is perhaps inevitable in a context in which such an evaluation is mostly carried out by the teachers themselves, who have only a narrow window of opportunity to measure changes in proficiency. Except for those rare cases where the curriculum makes it mandatory to reach a certain target (as is the case at Akita International University¹ where students need to spend one year abroad in their third academic year), few language educators can grasp how their learners progress as a cohort once they have obtained the required course credits.

This study takes advantage of the special circumstances at the institution in which the study's experiment took place, where a language proficiency test is administered annually to every student, regardless of their matriculation year or their enrollment in an English language course. This context

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allows teachers to observe changes in the students' mastery of English not only in those students who come to class, but also in students who opt to study English on their own, as well as in students who choose to focus their efforts in other non-language learning directions. This preliminary study looks at what happens to the students' English language proficiency in the year immediately following a year of intensive language study.

The English language program for first year students at the International University of Health and Welfare School of Medicine (henceforth, IUHW-SoM) has established a track record of boosting freshmen TOEFL ITP® total scores by an average of more than 30 points each year since it was founded in 2017. Similarly, TOEFL ITP® listening scores have been improving by an average of more than 4 points, accounting for nearly half of the total score gains. Paired sample t-tests revealed that both total score as well as listening score differences between April (when a placement TOEFL ITP® test is administered) and January (of the following year) were significant ($p < .001$) for all 3 student cohorts.

We have reported in previous studies that the IUHW-SoM English language program for first-year students does not seem to bring about these gains by teaching test-taking strategies in its elective course component or by allowing students to practice autonomously using an online test-preparation course.^{2,3}

The IUHW-SoM English language curriculum for second-year students consists of a 120-hour mandatory course titled "Medical English" (henceforth, "ME") and a 180-hour elective course titled "English Communication" (henceforth "EC"). ME is a medical subject taught in English whose main focus is to enable students to acquire medical communication skills. As such, it is not a language course per se and it is not expected to significantly contribute to developing English proficiency skills, except in the narrow sense of leading to a greater familiarity with medical English as a register or sublanguage of the English language in general.⁴ By contrast, EC serves as a general English course aimed primarily at providing students with as many chances as possible to communicate in English on a wide variety of topics, ranging from their favorite movies to discussing current events in US politics. The course is taught by a team of teachers, each of whom is free to design his/her lessons in a way best suited to their students' needs. This is in line with the widely held assumption that having more hours of instruction leads to higher score gains and each EC lesson-hour is counted as one more step towards reaching the distant target of 2200 class hours.⁵

The second-year curriculum provided a flexible framework in which we were able to compare the following approaches

in order to assess how these influence student choices and what impact they have on TOEFL ITP® scores:

- A. a 'non-interference' approach in the academic year (henceforth, "AY") 2018 when students were only encouraged to attend EC lessons with no penalties or rewards;
- B. a 'controlled' approach in AY2019 whereby achieving CEFR B2 (total and listening scores) at the end of the second year was set as a requirement for receiving credit in ME for anyone opting out of attending EC on a regular basis. Under this approach, participation in an EC class was counted on a points-based system with roughly 1 point awarded for each lesson attended. Accumulating 90 points in the EC course and reaching CEFR B1 (total and listening scores) at the end of the second year was considered equivalent to reaching CEFR B2 (total and listening scores).

The learning paths and milestones for each student cohort are presented schematically in **Figure 1** below.

Given the significance of reaching the CEFR B2 (advanced independent user) target for any English language program, this study focuses on the retention (or attrition) of recently improved listening skills critical for a cohort of students who are required to undertake a lengthy clinical clerkship program overseas in their sixth year.

1.2. Literature review

The process of language attrition is defined as "the loss of a first, second or foreign language or a portion of that language over a certain incubation time at the individual level".⁶ Given the context of IUHW-SoM students learning English in Japan, this study is considering foreign language attrition as it relates to a school/university learned language.⁷ There are a number of theories formulated as hypotheses which attempt to explain the phenomenon of second language (L2) and foreign language (FL) attrition: the regression hypothesis, the critical threshold hypothesis, the inverse hypothesis, and the interference hypothesis. Most of these have been derived from studies of first language (L1) attrition.⁸

One of the most comprehensive reviews of research on second language attrition suggests that education supports retention and cites a study which found that a group of returnee adult learners who attended lessons outperformed those who did not.⁹ This was also seen with university students who retained their listening skills when given an intensive listening homework in contrast with a group of their peers who received no homework.¹⁰

It has been pointed out that the body of research into FL attrition is much more limited than is the case for L1 or L2

attrition.⁷ The main difference is that research for the latter establishes a baseline of native or near-native proficiency from which a decline is expected to be observed (such as with expatriates or returnees), while studies investigating FL attrition tend to look at what happens when instruction stops (such as during summer holidays in a school setting).¹¹ Thus there is a time-frame difference between the target groups, with L1 and L2 attrition research looking at what happens over several years or even decades, and FL attrition examining shorter time intervals (months to a couple of years). Recently, there has been renewed interest in FL attrition due to the increasingly globalized world we live in, which places high value on the ability to speak a foreign language, and to continue being able to speak it after leaving an educational institution where money, time and effort were invested to acquire such skills.⁷

1.3. Research questions

If we accept the widely held assumption that having more hours of instruction leads to higher score gains and that the IUHW-SoM English language program is boosting student scores mostly by virtue of the sheer number of lesson-hours, the following research questions present themselves to educators whose students achieve significant score gains in a manner similar to what we have observed with our first-year students:

1. Are these score gains long-lasting, or do they represent a likely-to-fade acute effect of participating in an intensive language program?¹²
2. Can a follow-up elective course make a difference in pre-

serving (or even improving) test score gains made during the first year into the second year?

2. Methods

The unique educational context at IUHW-SoM allows us to consider participation in the elective course (EC) as the treatment in this study. As mentioned previously, participation was entirely up to students in the first cohort (class of 2017, who became second-year students in AY2018; n=102), but actively encouraged through linkage with advancement criteria for the mandatory course (ME) for students in the second cohort (class of 2018, who became second-year students in AY2019; n=98). International students and Japanese students with high English proficiency (defined as CEFR B2 and CEFR C1 on the initial TOEFL ITP® placement test) are not included in this analysis.

Data was collected and analyzed using a mixed-design ANOVA, with time (TOEFL ITP® test scores at start, and end of year 2) as a within-subjects factor and attendance in the elective course EC (less than 60 lessons, and greater than or equal to 60 lessons) as a between-subjects factor. A cutoff number of 60 lessons was set by considering 2 lessons per week as an ideal minimum of contact-time and multiplying this by the rough number of weeks between April and January (excluding the summer and winter holidays).

When discussing changes in TOEFL ITP® scores, this study focuses on changes in listening scores because, in the context of the IUHW-SoM English program, improvements in total scores seem to be largely a result of improvements in listen-

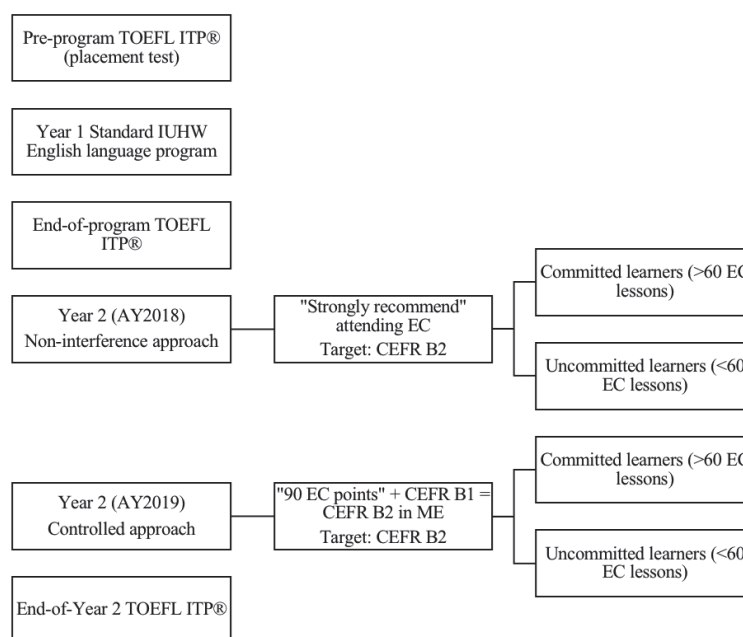


Figure 1. Learning paths and milestones for second-year IUHW-SoM students (AY2018 – AY2019)

ing scores. The rough formula for calculating TOEFL ITP total scores is as follows: (Section 1 Listening score + Section 2 Structure and Written Expression score + Section 3 Reading score)*10/3.¹³ So if student A scores 51 in Listening, 53 in Structure and Written Expression, and 51 in Reading, then he would get $(51+53+51)*10/3 = 523$ Total score. All things being equal, a gain of 3 points in listening score translates to $3*10/3 = a 10\text{-point gain in total score}$ which is what can be observed for the 2018 class in their second year of studies.

3. Results

Under the non-interference approach in AY2018, only a small minority of them (roughly 1 in 10) attended 60 or more EC lessons; moreover, roughly 4 out of every 5 students attended less than 20 EC lessons (see **Figure 2** below for the detailed breakdown). By contrast, under the controlled approach in AY2019, nearly half of all students (46 percent) attended 60 or more EC lessons; if we combine this number with those attending between 41 and 59 lessons, we observe

that 9 out of every 10 students attended more than 40 EC lessons (see **Figure 3** below for the detailed breakdown).

In absolute numbers, this meant that only 12 students were counted as ‘committed learners’ (versus 90 ‘uncommitted learners’) in AY2018, while the numbers were more balanced in AY 2019 (45 committed learners versus 53 uncommitted learners). Note that the adjectives ‘committed’ and ‘uncommitted’ as used in this paper refer exclusively to commitment to attend elective lessons and do not imply the lack of commitment to studying English in general; in fact, it has been our experience that there are a few extremely motivated students among the uncommitted learners who prefer to learn on their own and who achieve significant gains in test scores.

Figures 4 and 5 below illustrate changes in TOEFL ITP® total scores and listening scores by cohort (class of 2017 versus class of 2018) and by learner type (uncommitted learners versus committed learners).

A mixed ANOVA analysis revealed no main effect of time on test scores for the 2017 class, which, on average, remained

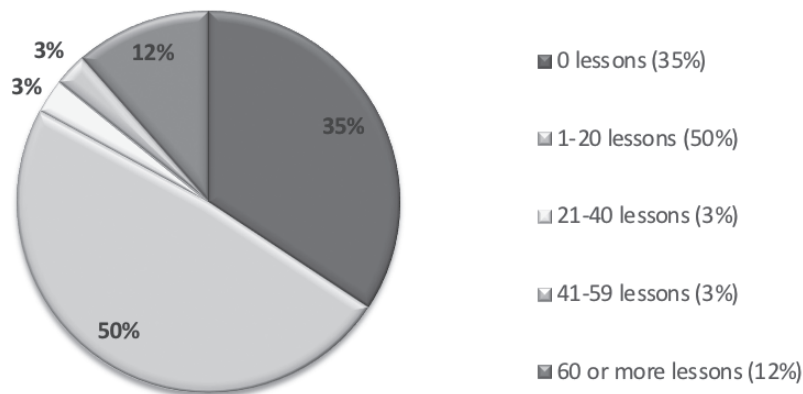


Figure 2. EC attendance for second-year IUHW-SoM students (AY2018)

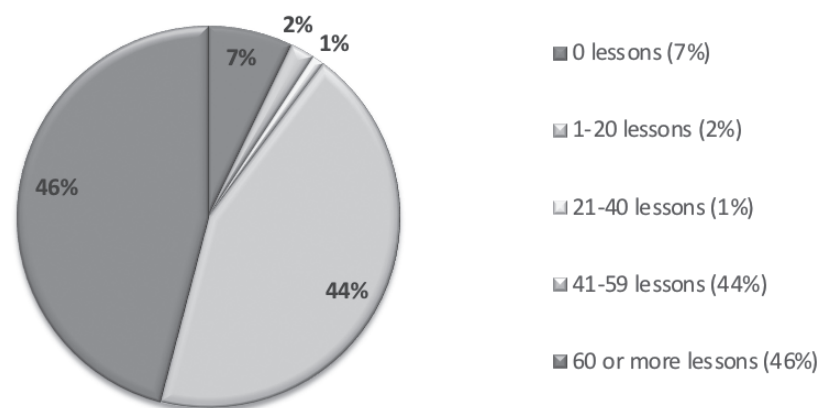


Figure 3. EC attendance for second-year IUHW-SoM students (AY2019)

constant in the second year (listening score: ≈52; total score: ≈531). The predicted interaction between time and EC attendance was significant for each test section score as well as for the total score, with listening score constituting the most important main effect ($F(1, 99) = 15, p < .001, \eta^2 = .133$).

By contrast, for the 2018 class, the analysis revealed a main effect of time on listening scores ($F(1, 95) = 38, p < .001, \eta^2 = .283$), which improved by roughly 3 points for students in their second year. The predicted interaction between time and EC attendance was found to be significant for the listening score but the main effect was half that seen in the previous year ($F(1, 95) = 6, p < .05, \eta^2 = 0.061$).

4. Discussion

The data reveal that, in the 2017 class, higher scoring students at the end of Year 1 were more likely to be committed learners during Year 2 and to see a small gain at the end of that year. For the great majority of students in the 2017 class, however, the lack of any pressure to participate in the EC resulted in low attendance, especially by those performing poorly on the language proficiency test. The cumulative

result was that test scores followed a flat trajectory and spending 1 year in an environment where medical subjects were taught in English was not sufficient for this cohort to attain, on average, the CEFR B2 level at the end of Year 2, despite being only 2 points (listening score) from reaching this threshold.

Two observations can be made when we look at the results for the class of 2018 and contrast these with the previous year's data. First, despite starting off their second year with significantly lower scores than their seniors, the 2018 class students managed to not only close the gap but to nearly replicate the gains made in the first year (when each class improved on average by 4 points) and to come within half a point of their target of reaching CEFR B2. The second observation concerns the lack of contrast between committed and uncommitted learners, as each group improved by roughly the same amount (approximately 3 points).

Whether or not these score gains are long-lasting, or represent a likely-to-fade acute effect of participating in an intensive language program (RQ 1), with the caveat that each individual will present a different picture when considered in isolation, the above results point to long-lasting listening

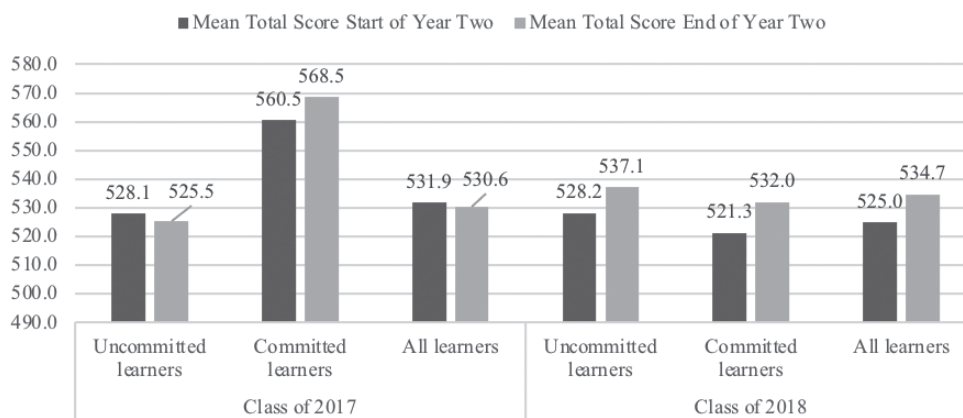


Figure 4. Changes in TOEFL ITP® total scores during Year 2 at IUHW-SoM

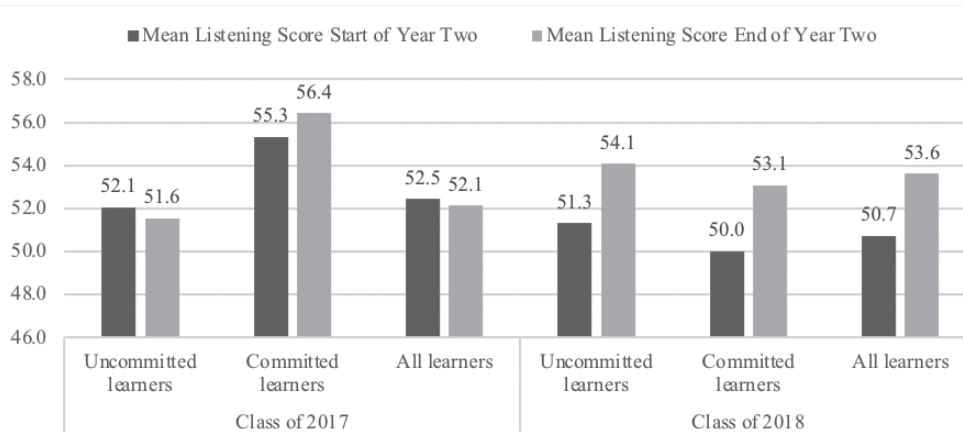


Figure 5. Changes in TOEFL ITP® listening scores during Year 2 at IUHW-SoM

score gains which can be maintained for a period of time even with no further English language instruction, as evidenced by the uncommitted learners in the 2017 class.

Moreover, when given a strong incentive to further improve their test scores, it seems that score gains made in the first year can function as a basis upon which further significant gains can be made even by those who eschew attending an elective course that provides further contact-time with the target language, as evidenced by students in the 2018 class.

Whether or not a follow-up elective course makes a difference in preserving (or even improving) test score gains made during the first year into the second year (RQ 2) appears to hinge on how the maintenance course is presented to, and perceived by the students.

An elective course where students perceive no concrete rewards or penalties (as was the case in AY2018) seems to bring about a split into autonomous learners (who take advantage of this opportunity to work on and improve their English language skills), and the rest (who may include some autonomous learners using other means of improving their English language skills, but who, as a group, see no changes in their test scores).¹⁴ It is possible that a self-selection bias is operating here and that more motivated and proficient language learners tend to be more aware of the inherent value of maintaining a certain number of language-contact hours; as we have pointed out in a previous study,³ research has found a positive correlation between learner autonomy and language proficiency.^{15,16}

By contrast, an elective course paired with a specific linguistic achievement target (such as attaining a certain CEFR proficiency level) appears to have yielded positive results for all involved. Uncommitted learners felt enough pressure to work towards reaching the set target (CEFR B2) even though they didn't attend as many lessons as the faculty members had deemed ideal; similarly, committed learners, who were more likely to collect sufficient points from attending EC lessons to be exempt from the requirement of reaching CEFR B2, still felt sufficient pressure to reach (or keep) a proficiency level of CEFR B1 in order to meet the advancement criteria. As a result, both groups made significant gains of roughly 3 points from their respective baselines; when we add the significant improvement (approximately 4 points) achieved like all other cohorts in the preceding year, it is clear that the class of 2018 was in a better position to further enhance their language proficiency as a result of this change in English language curriculum.

5. Conclusions and Limitations

The results indicate that, when free to choose, better performing students tend to attend more elective lessons and improve their test scores even further, while poor performers opt to skip these lessons and see no change in scores. By contrast, when actively encouraged to participate in the elective class, both learner types improve their listening scores.

In terms of language attrition theory, our research supports previous studies which concluded that receptive skills (such as listening, reading and vocabulary recognition) are less affected by this phenomenon.^{7,8} While a significant decline for the uncommitted learner group in terms of listening scores was not observed in this study, educators need to be cognizant of findings from language attrition research which suggest that productive skills such as speaking, writing and vocabulary recall are more likely to be affected by attrition than receptive skills.⁷

The results reported in this study should be interpreted cautiously due to several limitations. Firstly, there have been studies which found evidence of a critical threshold, defined as a point which, once exceeded, renders the learner's language proficiency relatively impervious to the effects of time.⁸ It is therefore possible that the participants in this study reached a level of proficiency at the end of their first year which prevented attrition from occurring during the second year.

Secondly, this experiment was conducted at a relatively new educational institution at which the quality of lessons is constantly improving as teachers become more attuned to students' needs, and how these can best be met. Even if this happens on a subconscious level, it is likely that, as teachers gained more experience, they became better at adjusting their methods of instruction to motivate more learners (and not just those who are autonomous learners) and this contributed to a higher attendance for the 2018 class. Consequently, this may have contributed to significant score gains for the 2018 class, but not for their seniors.

Finally, the change in course requirements making it semi-mandatory to reach CEFR B2 (for uncommitted learners) and CEFR B1 (for committed learners) constitutes a significant influencing factor that was not present to influence the behavior of students in the 2017 class to the same degree. Fortunately, this policy will be maintained for the foreseeable future at the institution in question, making investigations of whether the results for the class of 2018 can be replicated possible. In addition to the positive results reported in this paper, there has been a realization of the value of setting concrete and measurable goals for students in terms of enhanc-

ing their motivation to improve their English language proficiency, both inside and outside the classroom.¹⁷

While the findings presented in this study may not come as a surprise to language educators at the tertiary level in Japan, they provide objective, quantifiable data that can inform curriculum planning, and offer clear evidence on the benefits of maintaining a minimum amount of contact-time (roughly more than 1 hour/week of instruction time). A great body of research is devoted to evaluating the effectiveness of language programs by looking at before/after changes in proficiency, but there are few incentives (and indeed opportunities) to follow up on how students fare once they leave the English classroom, whether by choice (as ‘uncommitted learners’) or because they have obtained the number of required language credits. The model presented here can be easily replicated at other institutions where standardized proficiency tests are administered yearly to see how proficiency levels change between periods of intensive instruction and periods when students have little or no English language instruction. Such research may contribute to greater transparency as well as accountability in the field of language teaching and learning by providing a clear illustration on how the responsibility of mastering a language is shared in the classroom.¹⁸

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Effective teaching through the LINE video medical interview technique and a self-check evaluation form

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Abstract

This paper discusses an original medical interview method designed by the author and proposes a new model for the medical field. The lessons include creating a manuscript of a simulated conversation between a doctor and patient; this occurs through pairwork role-plays via speaking drills, using LINE video, and an authentic self-check evaluation form. The author named this instructional approach the “LINE video and evaluation form teaching method” shortened to LVM. The main research question was whether LVM works well as a tool for teaching medical communications. The data were collected at Jikei Medical School in Tokyo in 2018 and 2019. The sample size was 34 pairs (68 individuals). The results showed that because of LVM, the number of mistakes dramatically decreased in the pair-wise interview and the students’ fluency also improved. In sum, the author confirmed that LVM is a well-structured, interactive technique that encourages students to study hard and helps them acquire various skills to conduct strong medical interviews.

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Keywords medical interview skills, LINE video, self-check evaluation form, pair work

1. Introduction

Various studies have found that it is possible to provide medical students with authentic, effective medical interview skills in the classroom.^{1,2,3} A medical interview is a formal meeting in which both the doctor and patient communicate with each other and determine what illness the patient has, or what the cause of the ailment is, after conducting a series of tests. To go through this process, doctors need to have a high level of communication skills.

Searching for keywords such as *doctor, communication skills, or medical interview* uncovers a plethora of articles, books, and websites that discuss numerous models for communication for doctors.^{4,5} For example, Novack and colleagues describe a first-year medical course that successfully teaches basic interview skills.⁶ This course emphasizes learning in small groups, and provides an interview checklist that highlights specific skills, as well as a template for teaching, prac-

tice, and feedback. The students in the first-year medical course had many opportunities for practice through role-play with mock patients followed by self, peer, and tutor feedback.

There are myriad examples of doctors talking to patients on YouTube showing how to conduct a good medical interview. Nonetheless, these scenarios are generally not demonstrated for academic purposes. The above examples display the technical strategies and bedside manner designed to improve doctors’ communication skills. These include conversations in environments ranging from a general outpatient setting to that of a patient with terminal cancer. These scenarios may necessitate different levels of understanding between the doctor and the patient, and may require creative strategies to elicit subtle interaction patterns between the two. Interestingly, the patient’s social, physical, and psychological context have come to be viewed with the same importance as the patient’s biomedical information. However, are medical students’ communication skills considered to be as critical as those of doctors in the abovementioned settings? Novack and other scholars highlighted the importance of medical interview and interpersonal skills that people use every day to interact with others, both individually and in groups, and have been taught in many courses at their

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schools.⁷ Lipin, Quill, and Napadano enhanced an internist's skills through a broad range of interactions with patients.⁸

Having clarified some problems and difficulties in teaching medical interviews, the author attempted to design a dynamic medical interview teaching model that suits the Japanese cultural context and helps Japanese students to become more student-centered and independent through current information technology. This paper discusses the resulting original, autonomous medical interview method, and proposes a new model for the medical education field. The lessons involve creating a manuscript of a simulated conversation between a doctor and patient; this occurs through pairwork role-play via a speaking drill, using LINE video technology, and an authentic self-check evaluation form (see **Appendix 1**). The author named this teaching approach the "LINE video and evaluation form teaching method" (LVM). Chapter 2 describes more details of the lessons involved.

The research questions were:

- Q1. Does LVM work well?
- Q2. In what way is the method effective in improving students' medical interview skills?
- Q3. What is LINE video learning, along with the self-check evaluation form?

Although its focus on a teaching method specifically designed for medical students places this paper in the field of English for specific purposes (ESP), it also includes a range of perspectives from the field of teaching English as a second language (TESOL).

2. Method

2.1. Teaching method

This section covers the author's authentic teaching method for medical interview skills, explains how to teach LVM from a TESOL standpoint, and delineates how it is possible to replicate this approach. First, the teaching tools of the LINE video and the self-check evaluation form are described.

2.1.1. Teaching instruments

A video recording—a powerful data source—is useful for judging how a student performs a medical interview. It allows the viewer (usually the teacher) to see the student's performance in an objective way, and to witness how the student develops the skills involved in a series of medical interviews.

LINE was chosen because it is the most popular form of social media in Japan, even compared to Twitter and Instagram (<https://www.travelvoice.jp/20190219-125609>). LINE is a convenient and practical smartphone application that

can be used anytime, anywhere, and many people can use it to simultaneously exchange information. The data in LINE video can easily be saved; thus, the sender and receiver can watch it repeatedly as many times as they wish.

The self-check evaluation form lets the student independently become aware of the *a priori* "key" points of a medical interview (as shown in **Appendix 1**) before actually conducting one. It gives students guidelines on how to play both doctor and patient roles in an interactive way. It is also meant to nurture the viewpoint of the interlocutor. Students are recommended to use plain, easy English, to empathize with each other, and to encourage a good bedside manner in creating a friendly atmosphere. The form encourages a holistic view, suggesting that the doctor should see the patient as "a whole person"—not merely as an entity whose disease must be diagnosed. Thus, the combination of the LINE video and the self-check evaluation form provides an innovative tool for medical interviews.

The teacher might need to clarify the meanings and implications of some items on the self-check evaluation form due to students' English level and their lack of knowledge regarding the experiences of doctors and patients. Some students may occasionally be unable to adequately express items on the self-check evaluation form and implement them in the interview dialogue. Hence, the teacher might need to support the students in terms of understanding the logic, nuances, and implicit meanings of some items, and correct the English in their dialogue manuscripts.

2.1.2. Teaching procedure

Figure 1 illustrates the flow of the lesson to show its overall structure. The two distinctive aspects are (1) the use of the LINE video and (2) the use of a self-check evaluation form, which allows students to work autonomously on their tasks.

Objective perceptions are needed to create a good, authentic medical interview. In doing so, the procedure of LVM, as depicted in **Figure 1**, serves as a useful guideline in terms of influencing perceptions and ensuring a reliable medical interview.

A topic for the medical interview is given each week. Except for the first class, the classes last for 90 minutes. Steps 1–11 require 85 minutes. Step 12, where the teacher provides the students with feedback on the topic from the previous week, requires 5 minutes. The second lesson starts with Step 12.

One goal of this study was to judge whether LVM works well. The lessons start with "input" where students learn new vocabulary and phrases used by both doctors and

Step	Brief	Description
Step 1. Input	Guidance	The students study vocabulary and phrases that both the doctor and patient can use from "Professional English in Use: Medicine." ⁹ They also learn the importance of medical interviews based on material from "The Medical Interview." ¹⁰ (Time scale: 25 mins)
Step 2. Procedure	<i>A priori</i> assumptions	The students try to understand the context of the self-check evaluation form (Appendix 1) as criteria for conducting an effective medical interview, which may help them to learn the variety of aspects expected. (Time scale: 5 mins)
Step 3. Procedure	Theme given	The teacher gives the students the daily topic/illness, which is common and easy to understand (e.g., diabetes, hay fever, anemia, etc.). (Time scale: 1 min)
Step 4. Task	Data gathering	The students collect information about the illness from textbooks, websites, and medical dictionaries (e.g., the "Medical Dictionary" smartphone application by Farlex, 2003–2020). If necessary, the teacher helps them. (Time scale: 1 min)
Step 5. Task	Writing a dialogue	In pairs, the students start writing a dialogue between the doctor and the patient. If necessary, the teacher helps them. (Time scale: 20 mins)
Step 6. Task	Preliminary video of the speaking drill (pair work)	The students participate in a speaking drill in which they read their dialogue aloud, paying attention to fluency and pronunciation. They record the conversation using the LINE video. If necessary, the teacher helps them. (Time scale: 5 mins)
Step 7. Output	Preliminary vocabulary correction	By watching the LINE video, the teacher checks the words and phrases. (Time scale: 5 mins)
Step 8. Task	Preliminary behavior modification	After watching the LINE video, the teacher makes suggestions to improve medicine-related behavior, body language, and facial expressions. (Time scale: 2 mins)
Step 9. Output	Final take of the LINE video	The students record their conversation using the LINE video for the second time. (Time scale: 2 mins)
Step 10..Task	Self-check evaluation form	The students watch the video for the second time and judge the interactions they see on the self-check evaluation form. (Time scale: 2 mins)
Step 11. End product	Submission	The students submit their written conversation by hand and send the video though LINE to the teacher. (Time scale: 2 mins)
Step 12. Grade	Teacher's comments	The teacher gives the students feedback (Nassaji and Kartchava, 1988, Bitch & Ferris, 2012, Bitchener and Storch, 2016) and writes comments in longhand on the dialogue and behavior seen in the video, then gives it back to the students one week after submission. (Time scale: 5 mins)

Figure 1. Procedure of LVM

patients (Step 1). They also learn about interview factors such as clinical skills, respect, genuineness, and empathy, which seem to be somewhat lacking in previous teaching models (Steps 1–2).

The lessons require creating a manuscript of a simulated conversation between the doctor and the patient; this occurs through pairwork and involves a given topic (Steps 3–5). Afterward, the students practice several times through speaking drills in which they read their dialogue aloud (Step 6). In this way, they improve their pronunciation and fluency. Next, the students are asked to record their conversation using LINE video for the first time, which is shared with everyone in the class. Students then receive feedback from other students and the teacher (Step 7). The dialogues are recorded so the students can view their performance in an objective way (Step 8). Their dialogues are recorded twice, according to LVM Step 9, so that they can be compared. In this way, students are able to have critical, reliable perspectives, which the author believes may improve their English level. After watching the conversations, the students assess the interactions using the self-check evaluation form (Step 10). The author adopted this form because the author believes that effective lessons have to be student-centered, rather than teacher-centered.^{11, 12} Hence, students can be autonomous and take responsibility for learning English. The author expects students to be independent and motivated.^{13, 14} In this role-playing exercise, the students have to answer 13 questions (see **Appendix 1**), depending on whether they were role-playing the doctor or the patient. These questions are based on the principles of two books: *The Medical Interview—Mastering Skills for Clinical Practice* by Coulehan and Block, and *The Medical Interview—The Three Function Approach* by Cole and Bird.^{15, 16} The questions are adjusted according to the theme of the conversation. The teacher collects the students' written dialogues (written by hand and video recorded through LINE) (Step 11) and corrects mistakes in terms of spelling, grammar, and use of phrases (Step 12). The teacher explains the reasons for correcting these mistakes both verbally and in written form, specifically

addressing why certain errors are inappropriate for the context of medical culture. The teacher also gives some hints to improve the students' writing.

2.2. The research method

The author chose to use a case study due to the nature of the data, and gathered data from April 2019 to January 2020. The total number of participants was 68; about half were second-year students, while the others were third-year students. They studied at Jikei Medical School (in the Kanto region of Japan), and their level of English was upper intermediate. The author treated them as 34 pairs, and they had 6 lessons. At the outset, they did not seem to have much knowledge of clinical practice. This study used a variety of raw data, such as written texts, video content, the self-check evaluation form, and a questionnaire (see **Appendix 2**). Five statistics were utilized for analysis:

(1) T-test was performed to gauge improvement in the students' written conversation, and to count the number of mistakes in their texts.

(2) Wilcoxon matched-pairs signed-ranks test was used to determine the degree to which the students' fluency improved, as well as their ability to write sentences considered easy to understand.

(3) A binomial test was utilized to judge whether the students copied sentences verbatim from the textbook or from the Internet.

(4) Partial order scale analysis (POSA) and its associated mapping sentences were used to search for weaknesses in the students' character when role-playing the doctor or patient.

(5) An ethnographic, narrative format questionnaire was employed to detect general and tacit ideas about doctors' communication skills and the benefits of LVM.

Table 1 shows the criteria and scoring points for mistakes in writing the dialogue. By using this point system, the writing mistakes are legitimately quantified.

To clarify some weaknesses in the role of the doctor and the patient, POSA (see **Figures 2** and **3**) was employed to

Table 1. Point system for mistakes in the dialogue

Point added	Type of mistake
+1 point	Grammatical error
+1 point	Spelling mistake
+1 point	Insufficient amount of words
+1 point	A word is not collocated
+1 point	Does not make sense as an English sentence
+ 1 point	Punctuation
+ 4 points	A whole sentence was copied verbatim from a textbook, website, or dictionary
+20 points	All of the content or many parts of it were copied verbatim from a textbook, website, or dictionary

Table 2. Mapping out sentences for difficult skills as the doctor

Because a student (x) is not likely to use English as a doctor,	
Facet A	
logic	
Q8. s/he cannot create logical sentence(s) (0. no),	(1. yes) and
Facet B	
advice	
Q13. s/he cannot give at least one good piece of advice (0. no),	(1. yes), and
Facet C	
comfort	
Q 10. s/he cannot create a comfortable/relaxed atmosphere (0. no),	(1. yes)
mapping	
Does this kind of student exist? _____ (0. does not exist)	_____ (1. exists).

x is a Japanese student who learned English for medical interviews.	

Table 3. Mapping out sentences for difficult skills as the patient

Because a student (x) is not likely to use English as a patient,	
Facet D	
daily life	
Q9. s/he cannot ask about the patient's daily life (0. no),	(1. yes) and
Facet E	
treatment and medicine	
Q5. s/he cannot ask questions about the treatment and medicine well (0. no),	(1. yes), and
Facet F	
stable relationship	
Q7. s/he cannot build a stable relationship (0. no),	(1. yes)
mapping	
Does this kind of student exist? _____ (0. does not exist)	_____ (1. exists).

x is a Japanese student who learned English for medical interviews.	

visually demonstrate a multivariate categorization.^{17, 18, 19} POSA is a unique multidimensional scaling approach; it attempts to geometrically show a classification of people based on the characteristics of the chosen variables. To run POSA, a mapping sentence is required. A mapping sentence is an *a priori* hypothetical resume of research themes (see **Tables 2** and **3**). If the reproducibility of the stress value is more than 95%, the POSA is considered acceptable.

3. Results

Results of the t-test revealed that the last lesson was far better than the first one regarding the number of mistakes in the dialogues ($t=2.694$, $df=33$, $p<.05$). The number of errors decreased because for each submitted dialogue, the teacher corrected grammatical mistakes, made edits, and recommended more appropriate words and phrases. The teacher explained the feedback, such as why some sentences did not make sense in English. In those cases, the teacher suggested better alternatives. Subsequently, in a face-to-face meeting and spending a few minutes with each pair, the teacher confirmed whether the students fully understood all of the corrections. In doing so, both the students and the teacher were able to have an open discussion about the mistakes.

Results of the Wilcoxon matched-pairs signed-ranks test showed that the last lesson was significantly better than the first one in terms of sentences that were both “easy to understand” ($Z=-3.376$, $N=22$, $P<.0005$ one-tailed test) and “fluent” ($Z=-3.814$, $N=24$, $P<.00007$, one-tailed test). On the self-check evaluation form (see **Appendix 1**), there was a section

in which students were asked to assess seven conversational English skills. The two items of “easy to understand” and “fluency” were chosen because they comprise the basis of “plain English.” In fact, “easy to understand” and “fluency” were the two most progressive skills.²⁰ One key reason why these two items improved may be that the students were told that patients would need to easily understand their vocabulary. Hence, they would rather use simple words or phrases instead of difficult ones. As a result, their fluency improved in terms of speaking simple English.

The binominal tests were conducted to examine whether, in the last lesson, the students were still tending to copy words verbatim from the materials given (i.e., dictionaries and websites) in comparison to the first lesson ($Z= -5.66$, $N=34$, $P<.00003$, one-tailed test). Students’ tendency to copy sentences verbatim from textbooks and the Internet was measured. In comparing the first and last lessons, many students initially copied sentences from the resources, but, by the last lesson, were eventually able to create original sentences. One reason for the reduction in copying could be that their paraphrasing ability was developed over the course of the lessons. Another reason could be that the teacher warned them that copying sentences was discouraged.

The self-check evaluation form is useful for identifying weaknesses in students’ English when role-playing the doctor or the patient. The author went through the evaluation form and identified the three most difficult skills in either role. In the role of the doctor, several students were not confident about the following three skills: Q8. Can you create logical sentences?; Q13. Can you give at least one good piece

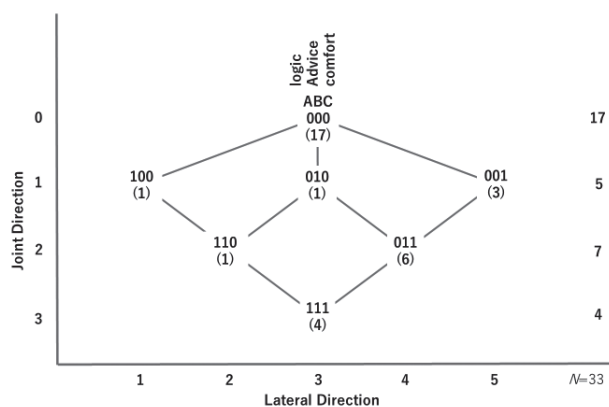


Figure 2. Diamond scalogram portraying challenging areas in the role of the doctor

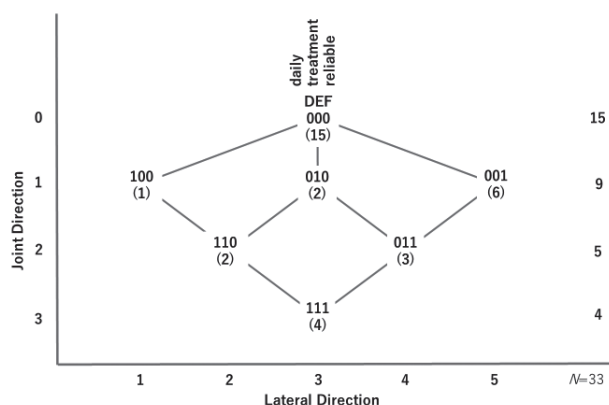


Figure 3. Diamond scalogram portraying challenging areas in the role of the patient

of advice to the patient?; and Q10. Can you create a comfortable, relaxed atmosphere? **Table 2** summarizes these questions. The reproducibility of POSA, as shown in **Figure 2**, was 97%. POSA (see **Figure 2**) shows that the majority of students (17 students) (000) had no problem communicating with patients. However, 6 students (011) confessed that they had difficulty implementing Q13 (advice) and Q10 (comfort).

In the role of the patient, several students were not confident about the following three skills: Q9. Can you ask the patient about his/her daily life?; Q5. Can you effectively ask questions about treatment and medication?; and Q7. Can you build a stable relationship? **Table 3** summarizes these three questions. The reproducibility of POSA in **Figure 3** was 97%. POSA (see **Figure 3**) indicates that the majority of students (15 students) (000) had no problem communicating with the doctor. However, 6 students (001) confessed that carrying out Q7. (a stable relationship) was difficult.

A common denominator between the role of the doctor and the patient seems to be a lack of displays of empathy, which is essential for fostering a comfortable (Q10. for doctors) and stable (Q7. for patient) relationship between the two parties.

The next section addresses students' opinions from the

questionnaire, whereby they tried to answer the research questions in their own words. Their opinions are laid out in an ethnographic fashion because it provides a qualitative account of the research.

Q16. What did you learn from the recording?

"I only made slight eye contact with my patient. I wish I had been calmer and more composed during the interview...in terms of turning my eyes toward him.

In the real medical world, we are required to have a spontaneous reaction.

I need more practice." (Student A)

"I realized that I need more practice to improve my pronunciations; because the conversation was recorded, I found some errors."(Student B)

"I noticed that my statements didn't flow naturally. My facial expression was not appropriate. I looked so serious. I should have smiled a bit more." (Student C)

For Student A, watching their own reactions on video allowed them to become aware of their own behavior and ways of speaking, as well as to judge their attitude and manner towards the patient in terms of non-verbal communication. For Student B, the benefit of recording the dialogue was that students could listen to their pronunciation anywhere and as many times as they wished. This repeatability and convenience of video recording seemed to increase opportunities for practicing pronunciation drills.

Concerning Student C, in Chapter 3, Section b, it was argued that students felt their level of fluency had increased. It appears that video recording gave them an auditory verdict regarding the naturalness of their flow. Thus, audio evidence seems to have added to the review of the dialogue.

Some students' accounts were extracted in an ethnographic fashion from the questionnaire (see **Appendix 2**) because they offered meaningful insight for the discussion.

Q14. Was the self-check evaluation form useful, and if so, how?

"Yes, it was useful. Looking at each question carefully, I could imagine what types of actions or questions would be important. Because of this, I believe my performance improved."(Student D)

"It was good because I could see myself objectively. As the form includes very detailed information, I found some satisfactory points and some negative points. which I have to study more."(Student E)

"The form was very clear, so I could understand what response was expected. The points expected from us were written on paper, so I never forgot them. I thought the form was much more effective than oral feedback because we could always refer back to it." (Student F)

Student D implied that the form raised awareness of standards in advance of the role-play interviews. Student E felt the evaluation form gave him detailed information. The form was able to guide students on how to put the suggested methods into action. For example, seeing questions on the form became a guideline for the students in delineating how to proceed. Therefore, the form seemed to foster an autonomous attitude towards the study.

The author believes that objective understanding is needed to ensure a good conversation. A strong interview would be one where everyone understands the content well. In doing so, having an objective or critical mindset should be encouraged. With regard to Student F's comments, the lessons focused on student-centered teaching.²¹ Therefore, materials (including the evaluation form) were made to be easy to follow, with important cues and clues. In this way, the students completed the procedures without much assistance from the teacher.

4. Discussion

Although the students' medical interviews through the LINE video and self-check evaluation form proved to be effective in many ways, the medical students need to brush up on their general English. To begin with, they seemed to lack knowledge of small talk between doctors and patients. On top of this, they made errors in basic English in terms of words and phrases, grammar, logic, and some explanatory capacity between and the doctor and the patient, which was revealed by proofreading the students' dialogues. Hence, for medical interviews through LVM and in general, English should be taught as part of the curriculum.

Second- and third-year students were taught through LVM; the author verified that the technique was successful. However, the author suggests that senior medical students, such as those in their fourth and fifth years, are best suited to the LVM. Junior medical students in their second and third years often lack medical knowledge, and experience difficulties in terms of fostering empathy between the doctor and the patient. They sometimes seem immature in terms of understanding patient care and support.

With regard to the corrective feedback of the data through the teacher's comments, some students tended to translate directly. That is, they were likely to write unsophisticated, Japanese-oriented English in the dialogues. The teacher needed a lot of time and effort to improve their errors and to help them acquire an English-speaking frame of mind. Thus, it may be useful for the teacher to have corrective guidelines based on the POSA findings for quicker, smoother proofread-

ing.

4.1. Limitations

One limitation of the study seemed to be the duration of the series of lessons. This study was conducted over 6 months (one term) and was confirmed to be significant. However, a longitudinal study of at least 12 months (2 terms) would allow for a clearer picture of the developmental process regarding students' grasp of the medical interview, which would allow the teacher to give them richer, deeper feedback.

Another limitation is that some students overestimated their performance as compared to the teacher's unbiased scores. The teacher may need to let the students become more objective and scientific in their evaluation of their medical interview. In doing so, the teacher might need to tell students to carefully read the items on the self-check evaluation form from the viewpoint of a third party. The teacher also needs to explain the associative meanings of the rating scores from 1 to 5.

5. Conclusion

The stepwise model of the LVM process was effective. Through LVM, the students improved their written conversation. The students enhanced their fluency and ability to write plain English via LVM and tended to write and speak original English instead of copying from the textbook and the Internet. POSA revealed difficult skills for both the doctor and patient improved through a developmental path.

The ethnographic approach, through the self-evaluation form and the questionnaire, provided insight into medical attitudes towards patients, better pronunciation, and facial expressions. The ethnographic account provided clues to nurture objectivity in medical interviews. The self-evaluation form, along with the instructions, provided an *a priori* model as an overall interview structure. Taken together, the various evaluations of LVM presented here prove this method to be a powerful tool that can help Japanese medical students to become autonomous learners through the use of popular media.

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Appendix 1

医者と患者の会話作成

これから医者と患者の問診会話を作成してもらいます。今日のテーマ（病気・症状等）は木村先生が伝えます。

- ① まず、5分から10分の時間を与えますので、ペアになり、googleや教材から必要な情報をメモして下さい。わからない単語やフレーズは調べておいてください。また、Self-check-evaluation formを読んで、どのような点に注意を向けたいかを確認してください。
- ② Conversation作成が完成したら、その会話を声に出して数回練習してください。
- ③ スマホ（又はタブレット）のLINEのビデオを用意して下さい。スマホの場合は横にして、2人の顔が録画できるようなところに置いて、セットしてください。
- ④ スマホのビデオをONにし、1回目の会話を録音して下さい。その後、それをグループラインで送って下さい。先生がチェックします。
- ⑤ 1回目に録画したものと、作成した会話文をもう一度読み返し、会話と動きの改善を5分ぐらいで行って下さい。それを終えたところで、2回目の録音に入ります。1回目よりも上を目指して、会話の録画をしてください。
- ⑥ 会話の録画が終わったら、これもラインで送ってください。
- ⑦ 最後にSelf-check evaluation formで会話のできを自己採点してください。会話文とFormを提出します。
- ⑧ 次のレッスンでは、会話文に対しての点数とコメントがあります。また、ビデオに対しても点数とコメントが来るので、必ず良く読み、内容を確認してください。コメントや点数に対して質問があれば先生に聞いて下さい。

注意：これらのデータは研究に使用される確率が高いです。しかし、個人情報等はいっさい公開しません。

では、作業を始めて下さい。質問がある人は木村先生に聞いて下さい。

会話の録画後のタスク：評価表：Self-check evaluation form

日付： 年 月 日 限	日付： 年 月 日 限
医者側の氏名：	患者側の氏名：

各々の役側の質問に○か×を入れる。

医者側の質問	1-5	患者側の質問	1-5
Q1. 話は患者に伝わった		Q1. 症状を良く伝えられた	
Q2. 適切な質問ができた		Q2. 混乱せずに順序良く話せた	
Q3. 患者に優しく対応できた		Q3. 情報をシェアできるように話した	
Q4. 適切な処置ができた		Q4. 質問に対してスムーズに答えられた	
Q5. 症状の説明は分かりやすくてできた		Q5. 治療や薬のことは、聞きたいだけ聞いた	
Q6. コミュニケーションがスムーズにできた		Q6. コミュニケーションがスムーズにできた	
Q7. 適切な診断ができた		Q7. 信頼関係ができた気がした	
Q8. ロジックに説明ができた		Q8. 気楽に話せた	
Q9. 冷静に話す内容の判断ができた		Q9. 日常生活の話も伝えられた	
Q10. 安心感を与えられた		Q10. 積極的に話した	
Q11. 患者の痛みなどを理解しているように振舞えた		Q11. ロジックに説明ができた	
Q12. 表情は優しい感じだった		Q12. 適切な言葉を選択できた	
Q13. 良いアドバイスを一つでも与えることができた		Q13. 私の話は筋が通っていて納得のできる話し方だった	

英語に関する評価（1=poor, 5=excellent）2人で相談して評価して下さい

医者側の英語	1から5の評価	患者側の英語	1から5の評価
Fluent	1. 2. 3. 4. 5	Fluent	1. 2. 3. 4. 5
Accurate	1. 2. 3. 4. 5	Accurate	1. 2. 3. 4. 5
Using right words & phrases	1. 2. 3. 4. 5	Using right words & phrases	1. 2. 3. 4. 5
Easy to understand	1. 2. 3. 4. 5	Easy to understand	1. 2. 3. 4. 5
logical	1. 2. 3. 4. 5	logical	1. 2. 3. 4. 5
No long pausing	1. 2. 3. 4. 5	No long pausing	1. 2. 3. 4. 5
Active listening	1. 2. 3. 4. 5	Active listening	1. 2. 3. 4. 5

Appendix 2 質問紙（自由記述）医学部 学生の意識調査

- Q1. 多数の英語の論文で「医者のcommunication skillの向上」がここ数年取り上げられていますが、あなたはこの問題が重要な問題であるという意識はありますか？
- Q2. 医師の問診技術のどのようなスキルをもっと、伸ばす必要があると思いますか？
- Q3. それは何故でしょうか？
- Q4. 一般的な問診の順番、挨拶☐現在の状況把握☐診察☐治療方法。これを英語で全て行えましたか？
- Q5. 上の質問で「行いづらい」箇所はどこでしたか？
- Q6. それは何故ですか？
- Q7. 英語でのcommunication skillsの練習は足りていますか？
- Q8. もし、足りないとしたらtraining, または、コース等に参加したいと思いますか？
- Q9. この「問診英語」の科目では、問診の練習が毎週行われましたが、参考になりましたか？
- Q10. 授業に対してhappyに参加できましたか？
- Q11. 授業の何が1番役に立ちましたか？
- Q12. 貴方なら患者さんのどのようなcommunicationを取りたいですか？例を1つ書いてみてください。
- Q13. 評価表（self-check evaluation form）は役に立ちましたか？
- Q14. もし、評価表が「役に立った」としたら、どのような点が役に立ちましたか？
- Q15. 撮影から自己の「何かが足りていない」のかという気づきはありましたか？
- Q16. 録音したものから何を学びましたか？
- Q17. この「問診英語」の教科を受ける前と比較して、問診英語は上達したと思いますか？

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