

# 医療通訳ブレンド型学習プログラムの開発

## Development of a Blended Learning Program for Training Medical Interpreters

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### ABSTRACT

本稿では、オンライン学習と対面学習の混合型学習プログラムであるブレンド型学習プログラムの高等教育における導入状況を、文献検索を実施することにより考察し、医療通訳教育へのブレンド型学習の導入可能性を検討する。2016年に開発したオンライン医療通訳学習プログラムを土台に、プログラム内容を「最適モデル」(Jung et al. 2008)を使用して検証、改良の指針を示し、検証した内容をもとに医療通訳ブレンド型学習プログラムのシラバスを作成した。作成したシラバスには、最適モデルに照らして不足していたマイクロデザインの要素であるインストラクショナルデザイン、教材設計、視聴覚教材の適切性検討が盛り込まれ、最終的なLMSへの統合の指針となった。本モデルを実践し、評価し、普及させることは、今後の外国人医療の質改善に向けて有用な役割を果たすものと考えられる。

Higher education institutions such as universities have increasingly started to use e-learning for teaching and learning. Few courses for medical interpreters in Japan have used blended learning although e-learning and blended learning are very popular in other countries. The goal of this study was to further develop the e-learning program into a blended learning program, that is the blend of face-to-face lectures and e-learning using the OPTIMAL model. A blended learning program for medical interpreters using the OPTIMAL model was developed based on an e-learning program developed in 2016. The OPTIMAL model consists of macro and micro design aspects. Macro design covers the ‘big picture’ such as objectives of the program, and prototyping of it. Micro design focuses on individual learning materials and an interactive system for using it. All of these factors ultimately lead to LMS Integration. The results were integrated into a syllabus. Our study suggests that the developed blended learning program could be useful in improving students’ knowledge and abilities in the field of medical interpreting; however, further research is necessary to determine the most effective type of medical interpreter training. The blended learning program developed in the current study could be a powerful tool for future research towards devising more effective medical interpreter training programs that can help to overcome common language and cultural barriers between medical professionals and patients.

## 1. Introduction

### 1.1 Blended learning of English for medical purposes and training of medical interpreters in Japan

Blended learning, defined as a combination of face-to-face lectures and online learning, is used as a study style in many places. However, there are few studies examining its application to training of medical interpreters. Some previous research has applied blended learning to English classes. Adachi (2007) conducted a blended learning class and its management. Before the class, students were provided with documentation and taught to read through it beforehand. After attending the face-to-face class, they were asked to take a review quiz. Thus, in class, face-to-face lectures and online learning was combined depending on the objectives of each class. In classes of English for medical purposes, there are many blended learning programs. Iwata, Tamaki, Wang, and Clayton (2013) started a blended learning program by using lectures and Net Academy (medical English course hosted by ALC) and Moodle. Student responses regarding the class were reported. Items which

gained high scores in the evaluation were: how to handle the class, their proactive involvement in the class, and motivation for learning. Kobayashi, Nakita, Itaya, Tanaka, and Waterbury (2006) also conducted blended learning in their English for medical purposes class and evaluated its effectiveness. The evaluation showed a positive response to the blended learning style especially from students with high grades, suggesting the effectiveness of the program.

Few courses for medical interpreters in Japan have conducted blended learning although e-learning and blended learning are very popular in other countries. For example, the Tokyo Academy for Interpreters provides a blended learning course for medical interpreters with a paper textbook, distance education via email, and some lessons via Skype. The effectiveness of these blended learning classes has not been investigated because most of the institutions using this approach are private schools, not participating in research; blended learning conducted in NGOs and universities has recently begun and there is insufficient data for evaluating its effectiveness (Ono, 2013).

## 1.2 Media

Learning Management System (LMS), including Moodle, is a widely used platform for blended learning. This system allows an administrator to upload documentation and videos, prepare and score tests, grade, and check their use in a secure environment online. LMS also includes some interactive activities including a bulletin board and chat. Various media can be uploaded onto the platform: PowerPoint (with and without voice), documentation, bulletin board, chat and Pukiwiki. With these media students can communicate not only with their teacher but also with peers, enabling participation and cooperation with other students to conduct tasks.

## 1.3 Introduction of e-learning/blended learning to train medical interpreters

Ono (2013) conducted a literature review to identify learning content and core competencies for medical interpreters by using PubMed, PsycINFO, Cochrane Library, and Google Scholar. Selected papers were investigated to find core competencies in medical interpreting. Eleven papers were selected for final inclusion in the literature review. Core competencies in medical interpreting showed consistency with previous research while the content of the programs varied in domestic and international training programs. Results of the systematic review indicated five core competencies: (a) 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. Ono and Nojima (2014) analyzed standards of practice in several countries, with the focus on medical interpreting. Five documents regarding standards of practice for medical interpreters in English and Japanese were reviewed, all of which included accuracy, confidentiality, and impartiality as key standards. Other standards of

practice include professionalism, role boundary, and recognition of cultural diversity. These key standards can be studied by reading documents through e-learning, while how to ensure these standards are upheld in a clinical setting can be learned by face-to-face role-playing, which could also comprise part of a blended learning program.

At Osaka University blended learning for court interpreters was developed to maintain accuracy and completeness. Scenarios with frequently used expressions were developed and uploaded online, allowing learners the opportunity for self-study. Medical terminology and understanding the human body can also be studied online because there are many useful online resources and online testing is also available to probe one's knowledge. Blended learning is also available for developing nonverbal communication skills. Students can first learn online about basic nonverbal communication skills; then practice through role-play to observe and evaluate effective and problematic nonverbal communication. Cross-cultural communication skills can also be studied online. Healthcare systems and customs for different countries can be learnt online, but case studies and discussion should be face-to-face, although interaction using Skype or another online meeting system would also be available. Recently, a US training system for medical interpreters, the Cross Cultural Health Care Program (CCHCP), developed an e-learning program to study ethical behavior and ethical decision-making. Documentation about behaving ethically and making ethical decisions is provided, followed by a quiz to confirm student understanding. Then, a case designed to highlight ethical conflict is presented. After some questions, students write reports explaining the ethical challenges of the case and describing an appropriate attitude and response from the medical interpreter. Role-plays are conducted and recorded for evaluation. The recorded voices are available

both for students and teachers. In any e-learning and blended learning program, there are test opportunities after lectures and practical training. This is usually conducted online, but some qualitative aspects such as attitude to patient and nonverbal communication could be evaluated face-to-face.

Currently, the use of e-learning/blended learning to train medical interpreters is not nationally consistent, with each course setting their own objectives. IT literacy of students also varies widely with some students having little experience of online learning and being unsure about how to use the course. Older generations, especially people over 60, are not always skilled at using computers. When blended learning courses are developed for medical interpreters, a simple user interface is key for success.

#### 1.4 Previous studies regarding e-learning/blended learning for medical interpreters

Previous studies regarding training systems for medical interpreters were conducted using medical study methods. Ono (2013) developed a 20-hour face-to-face training program for medical interpreters to acquire the competencies needed. The program was implemented in Nagoya in 2010, and its effectiveness assessed using a randomized control trial. Pre- and post-test assessments were conducted and the effectiveness of the training system was confirmed. Some participants commuted from remote areas with very expensive transportation, e.g. taking the bullet train or taking several hours to commute. At that time, training programs for medical interpreters were all face-to-face style, and the city venue disadvantaged those who live in remote areas. The researchers considered these problems and opted to provide some of the content of the program online (Ono, 2015). We assumed the design of a virtual environment allows for the execution of

complementary experimental exercises for learners of medical interpreting and an introduction to the theoretical background of medical interpreting. We also assumed the e-learning system would allow remote access, enabling students to perform experiments at their own place, without needing to be physically present in the laboratory. The web-based virtual environment could empower students by granting them access to laboratories during their free time.

We designed an e-learning training program based on the six-step approach presented by Kern, Thomas, Howard, and Bass (1998). The approach consisted of a general needs assessment (step 1); a targeted needs assessment (step 2); goal setting (step 3); educational strategies (step 4); implementation of the intervention (step 5); and, evaluation of the intervention (step 6). In practical training for interpreting in-hospital conversation, the participants experienced a typical conversation in a hospital. They were asked to attempt to translate doctor-patient speech. If the participant could not do so, a model translation was given and then practiced by repetition. A webinar about incompetent vs. competent cultural care provided examples regarding customs of specific ethnic groups and the potential for misunderstandings, followed by examples of competent cultural care. Based on the e-learning program developed, we started to develop a blended learning program.

#### 1.5 Instructional design

Kemp, Morrison, and Ross (1994) define instructional design as a systematic method of using the teaching curriculum to plan, develop, and operate effectively, ultimately helping learners develop their competency. Jung, Tat, and Belawati (2013) indicate that a focus on instructional design and pedagogy is an important factor for successful design and quality assurance in an e-learning program.

Skinner and Holland (1961) described six important factors for instruction design when developing a program: 1) Small step (starting from simple and gradually presenting more difficult challenges); 2) Fading (first invasive and supportive, but gradually reducing support); 3) Immediate feedback (giving immediate feedback to a learner's response); 4) Proactive response (course design which promotes active participation); 5) Self-control (allowing learners to study at their own pace); and, 6) Review by learner (learner can confirm how close they came towards achieving the objective). These factors were used as a basis for the instructional design of our program.

### 1.6 OPTIMAL Model

Jung, Kubota, and Suzuki (2008) suggested the OPTIMAL model, a systematic model for instructional design of blended learning (Figure 1) [Insert Figure 1 here]. Since the model was especially created for LMS, each item in the model does not follow a step-by-step approach. The advantage of the OPTIMAL model is that it is a simple, quick, practical and task-oriented procedure moving from planning to implementation. OPTIMAL stands for Objective, Prototyping, Testing, Interaction Design, Material Design, Audio-Visual Design, and LMS Integration. The OPTIMAL model consists of macro and micro design aspects. Macro design covers the big picture such as objectives of the program, and prototyping of it. Micro design focuses on individual learning materials and an interactive system for using it. The design is more concrete. In the model, Objective, Prototyping, and Testing are macro elements, and Interaction Design, Material Design, and Audio-Visual Design comprise micro design. All of these factors ultimately lead to LMS Integration.

### 1.7 Objective

The goal of this study was to further develop the

e-learning program into a blended learning program, which is the blend of face-to-face lectures and e-learning, using the OPTIMAL model.

### 1.8 Research Question

RQ1: Is it possible to apply blended learning in training medical interpreters?

RQ2: Is the OPTIMAL model helpful for the development of a blended learning program for training medical interpreters?

We chose the OPTIMAL model because of its characteristics as "practical, task-oriented, rapid, and simple" (Jung et al., 2008, p.42). The model is flexible so that we can apply ID (instructional design) on a selective basis, not necessarily following the procedure in sequence and it is simple for developers to apply the model. Existing e-learning programs for training medical interpreters were not based on ID and we considered that application of the OPTIMAL model to developing a blended learning program could be a solution for improving the program.

## 2. Methods

To answer RQ1, we chose an existing e-learning program aiming to revise the program by applying blended learning for training medical interpreters. Ono, Kato, and Kurihara (2016) developed an e-learning program, which partly covered macro design (Objective, Prototyping, Testing) of the OPTIMAL model.

To respond to RQ2 we had to review the e-learning program regarding items not covered, and revise it to include the whole design of OPTIMAL model. A face-to-face training program was added to the developed e-learning program to cover micro design (Interaction Design, Material Design, Audio-Visual Design). The program was integrated into LMS and a syllabus was created. Prospective learners were university students, adult

students, and interpreters. The eligibility criteria for the blended learning program were as follows: age 18–60 years, TOEIC test score of 650 or above, no previous experience of taking part in a medical interpreter training course, and availability to attend all 20 hours of the study.

### 3. Results

#### 3.1 Macro design

##### 3.1.1 Macro design: Objective

Table 1 shows the results of the systematic review which indicated five core competencies: (a) 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. [Insert Table 1 here] These competencies were broken down into a ‘can do’ list. To achieve these abilities, tasks and materials were devised and structured to create a pilot of the e-learning program.

##### 3.1.2 Macro design: Prototyping

Table 2 shows the developed prototype learning program. Bold characters in the table indicate items not covered to achieve learning objectives; these items were then added to the blended learning program. [Insert Table 2 here]

##### 3.1.3 Macro design: Testing

Using a prototype of the program, an intervention was developed and implemented to improve interpreting and cross-cultural communication skills. Interpreting skills were evaluated by counting errors, and cross-cultural communication skills were evaluated via scores on a written test. Pre- and post-tests were conducted with participants aged 20–22 years (n=10). Results of the tests showed a significant improvement in interpreting skills in the post-test compared with

the pre-test, and the number of errors in interpreting significantly decreased in the categories of omission and false fluency. The reason for this could be the extensive input of frequently used expressions in the medical settings of the program. The average percentage of correct answers on the written test on cross-cultural communication also increased from 60% (pre-test) to 95% (post-test). Video viewing before the post-test could also have accounted for the increase. The post-test assessment showed that the developed training system could be useful in improving knowledge of cultural competency and quality in medical interpreting.

#### 3.2 Micro design

##### 3.2.1 Micro design: Interaction design

Interaction design refers to any activity that requires interactive communication, such as group discussion and informal communication, interviewing experts, questions and feedback (Jung et al., 2008, p.49). The tools used for interaction design varied, including bulletin board, email, chat, and videoconference. Quizzes and reports are also interactive tools. The e-learning program only included an email system to ask the administrator questions, so for the blended learning program a bulletin board was added to promote student interaction.

##### 3.2.2 Micro design: Material and audio-visual design

Material design refers to the selection of content for online materials and their design, creation and editing. At this stage, developers can also decide what kind of media will be used (audio or video), and how much they will be used given the type of course and audience. Content of the e-learning course was found to be enough for a 20-hour blended learning course, but there was room for improvement regarding structure. Presenting a list of objectives and a list of completed courses and

tests on the main menu would be helpful for learners to realize how close they were to accomplish their goals. The visual design of the interface for some of the role-play systems was reviewed and found to require improvement.

### 3.2.3 Micro design: LMS integration

Table 3 shows the syllabus of the blended learning program using the OPTIMAL model. [Insert Table 3 here] The program was originally 20 hours long, but including pre and post-test, the total program duration now became 22.5 hours. This provides an overview of the ‘big picture’ that will be integrated into LMS (Moodle).

## 4. Discussion

The goal of this study was to develop the e-learning program into a blended learning program by using the OPTIMAL model. The literature review showed that there are some studies focused on application of blended learning for English for medical purposes but few studies into application of training for medical interpreters. Moreover, no courses were based on specific instruction design.

In response to RQ1, it was possible to apply blended learning in training medical interpreters because some training for medical interpreters requires role-playing and this could be conducted more effectively by adding face-to-face training. The result also answers RQ2. The OPTIMAL model was helpful for the development of a blended learning program for training medical interpreters in that the revised syllabus included some additional aspects of instructional design, material design, and audio material which were lacking in light of the OPTIMAL model. Thus the contents of the program were enriched to become closer to a complete program using LMS.

A blended learning program for medical interpreters using the OPTIMAL model was

developed based on an e-learning program developed in 2016. A previous study (Ono et al., 2016) covered several steps of macro design from the OPTIMAL model (objective, prototyping, testing), and in this study we covered further steps of micro design from the model (interaction, material and audio-visual design). The e-learning program developed in 2016 was further developed and improved into a blended learning program. The results were then integrated into a syllabus.

Regarding micro design, as for interaction design, communication of participants through the bulletin board achieves immediate feedback (factor 3), and presenting their steps on a main display supports review by learner (factor 6). Therefore the present study partly coincides with previous work. We also added some content (quiz, report, group work), which enhanced interaction of the students compared with the e-learning program.

In future, we aim to further develop the following aspects of our work. First, it is difficult to motivate learners because in some cases it is not mandatory to complete the course. We need to create a system that motivates learners continuously. Second, individual goal setting depending on the learner’s level and needs should also be considered. Hospital workers in a specific department who need to communicate with patients urgently require a tailor-made program, while college students need to develop general knowledge and skills regarding medical interpreting. The blended learning course should have some flexibility in its curriculum and testing system. Third, cost (budget, human resources, and development time) should be reviewed and realistic goal setting for development is required. Our future study will solve these problems and the developed blended learning program will be pilot tested with a range of different audiences.

## 5. Conclusion

Our study suggests that the developed blended learning program could be useful in improving students' knowledge and abilities in the field of medical interpreting; however, further research is necessary to determine the most effective type of medical interpreter training. The blended learning program developed in the current study could be a powerful tool for future research towards devising more effective medical interpreter training programs that can help to overcome language and cultural barriers between medical professionals and patients.

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