Effects of Multiple Viewing of Captions and Subtitles on English Proficiency

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Abstract— **English as a Foreign Language (EFL) teachers and researchers in Japan have been seeking an effective way to determine how mobile learning can be best integrated in language learning. There are also some others who have been searching the best way to use captions and subtitles of the English videos to enhance effective language learning. They often investigate the effects of using computers. They generally agree that the use of captions or subtitles is helpful to acquire the target language, and English captions are found to be more effective than Japanese subtitles to enhance English proficiency. However, there is a gap between the state of the art and actual classroom situations. Students spend more time with smartphones than computers. They watch the same video a few times combining English captions and Japanese subtitles, not only English captions. Thus, the purpose of this study was to find out the immediate effects of both captions and subtitles on EFL proficiency after viewing the same English video multiple times, using a smartphone. The results showed that the group who used both Japanese subtitles and English captions performed better on the vocabulary section and had a higher total score compared to the group who only used English captions.**

Keywords-subtitles; captions; EFL; ESL; mobile learning.

I. INTRODUCTION

Online videos have been flourishing and getting much attention from language teachers using Computer Assisted Language Learning (CALL) because of their excellent educational contents [1]. Massive Open Online Courses, MOOCs and Technology Entertainment Design (TED) Talks are good examples. MOOCs consist of video lectures, an online community, and exams, while TED Talks are speeches promoted as "ideas worth spreading." What they have in common is that they use English as a global language, and captions and subtitles are of significant benefit to English as a Foreign Language (EFL), and English as a Second Language (ESL) learners [1]-[3].

The rest of the paper is structured as follows. In Section 2, we introduce the literature review. In Section 3, we describe the methods used in this study. In Section 4, we provide the results of our study. In Section 5, we provide discussion, and finally, in Section 6, we present our conclusions.

II. LITERATURE REVIEW

Ample research supports that captions and subtitles have positive effects on language acquisition [4]-[11]. In Table 1, we show studies related to subtitles and captions in English learning.

In the laboratory experimental settings, many studies have investigated the effects on the target language after viewing the edited video once. However, there have not been many studies on the effects of captions and subtitles after viewing the same video multiple times, though this is what is often happening in actual EFL/ESL classrooms, since the students cannot understand everything in the video after viewing it once. In addition, smartphones were not often used in the previous studies, though this is the device that the students carry all the time. Thus, what is missing are the effects of multiple viewings of both captions and subtitles together on EFL learners, when they use smartphones.

TABLE 1. STUDIES RELATED TO SUBTITLES AND CAPTIONS IN ENGLISH LEARNING

Author(s)	Year	Environment	Findings
T. Kikuchi [4]	1996	classroom	The study examined the potential of using English-captioned movies in the areas of rapid reading and listening comprehension. The results showed that the group who used English sound and captions made statistically much more progress than other groups who used captions, pictures and English sound, or English sound only.
S. Yoshino, E. Nojima, & K. Akahori [5]	1997	laboratory	English captions are more effective than Japanese subtitles to enhance English listening.
S. Yoshino [6]	2003	laboratory	The study examined the timing of the captions, and found that more information was recalled when L2, second language, captions were presented before the corresponding L2 audio.
K. Tomita [7]	2008	laboratory	Immediately after the experiment, the group who watched the news video with superimposed caption performed significantly higher than the group who studied without the caption. However, there was no

			significant difference after three months.
Y. Anzai [3]	2016	online class	Subtitles and captions support Japanese and international participants to MOOCs to learn the subject matter.
E. Peters, E. E. Heynes, & E. Puimege [8]	2016	classroom	Incidental vocabulary acquisition while watching a short video is possible and captions have more potential than subtitles for this purpose. Moreover, learners' vocabulary size and an item's frequency of occurrence in the video clip have positive correlation with vocabulary acquisition.
K. Hosogoshi [9]	2016	classroom	The Japanese subtitles group performed better in the use of imaginary and summarizing strategies throughout the listening.
M. P. H. Rodgers and S. Webb [10]	2017	classroom	The results revealed that captions on television programs are likely to aid comprehension when episodes are most difficult.
H. S. Mahdi [11]	2017	classroom	Studying the effect of keywords videos captioning on vocabulary acquisition using mobile devices. The study found that keyword captioning is a useful mode to improve learners' pronunciation.

Considering what was missing in the literature and its importance, this study was conducted in a laboratory setting. This approach was chosen not to be conducted in a classroom to eliminate confounding variables as much as possible while investigating the effects of captions and subtitles. In addition, the theory of instructional design was taken into consideration to decide the order in which captions and subtitles were presented to participants when watching the English video. Reigeluth states that "instructional design is concerned with understanding, improving, and applying methods of instruction" (p.7) [12]. The theory recommends designing instructions to allow learners to understand the framework before looking at the details of what they want to understand. Thus, since all the participants were Japanese, this study of the treatment group was first shown a video with Japanese subtitles to set them the framework of the video, and then they looked at the English subtitles to learn more details about English expressions.

Under the current educational context, the purpose of this study was to find out the immediate effects of captions and subtitles on EFL proficiency after viewing the same English video multiple times, using a smartphone. Captioning refers to "L2, second language, subtitled video," whereas subtitles refer to "L1, first language, subtitled video" of L2 aural input. The statistical design used was a series of two-way analysis of variance (ANOVA). The independent variable was Group (a control group vs the treatment group), and

English proficiency (high vs low) was measured using the Oxford Placement Test. The dependent variables were the scores taken from the English tests about the video.

The hypothesis of this research was:
Using smartphones, the treatment group with Japanese captions and English subtitles would perform better in English tests than the control group who only had English subtitles.

III. METHODS

The study was conducted in a university laboratory setting in September 2016 in Tokyo, Japan. The number of Japanese students was 60. The length of the video was 1 minute 30 seconds, in English, with English captions and Japanese subtitles added. Both groups viewed the same video three times (Figure 1). The control group used English captions three times, while the treatment group used Japanese subtitles twice and then, English captions once (Figure 2).

Figure 1.
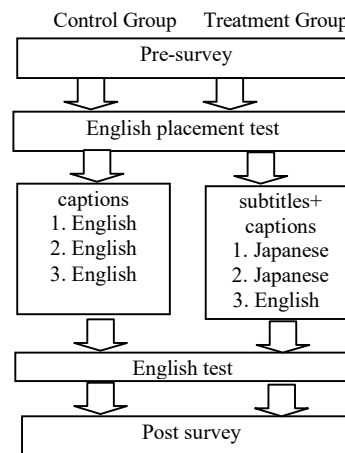Investigating the effects of the video with Japanese/English subtitles

Figure 2. The process of the study

The effects were measured with a test that consisted of 1) vocabulary, 2) content comprehension, 3) summary, and 4) listening proficiency. In the first section, vocabulary, the students were asked to translate English words or phrases into Japanese. Examples of the tested vocabulary include "Confucius" and "evolution." In the second section, content

and comprehension, they were asked to choose True or False questions based on the video. An example of the questions is "We are living in an age of Web2.0." In the third section, they were asked to summarize the English video in Japanese. In the fourth section, listening proficiency, they were asked to fill in the blanks while listening to the video. An example includes "Spring time in education for all of us, with the various new (3) of learning."

IV. RESULTS

We compared the control group who watched English captions three times with the treatment group who had Japanese subtitles twice followed by English captions once. The results showed that there was no significant interaction between the two groups. Regarding Group, the treatment group ($M = 13.39$, $SD = 5.22$) tended to perform better than the control group ($M = 11.50$, $SD = 4.67$). As for the other independent variable, English proficiency (high vs low), there was no significant difference between the two groups.

When we examined each section of the English test, we found no interaction, but there was a significant difference between the wo groups ($F(1, 56) = 22.02$, $p < .001$. The treatment group ($M = 3.40$, $SD = 1.35$) performed better than the control group ($M = 2.00$, $SD = .98$) on the vocabulary section, where they were able to translate English words into Japanese better. In other words, the students were able to process the two languages at the same time, and picked up the corresponding words in the other language quickly using the subtitles, and memorized them. There were no significant statistical differences between the two groups in the other parts of the English test.

V. DISCUSSION

This study revealed that the use of L1 subtitles does not necessarily hinder acquiring L2. That is, overall, a combination of L1 subtitles and L2 caption is more advantageous than using only L2 captions. Using L1 subtitles to grasp the whole picture before looking at the details in L2 is one approach to enhance learning.

In addition, as a result of this study, it is found that the group who used subtitles and captions tended to perform better than the group with only captions on the total score of the English test. According to Yoshino, Nojima, and Akahori [5], English captions are more effective than Japanese subtitles to enhance English listening. Thus, it may lead to the assumption that the effectiveness of the use of captions and subtitles may go in the order of Japanese subtitles with English captions, secondly English captions, and thirdly Japanese subtitles.

The results of this study would be useful to design English language learning using online videos, such as MOOCs or TED Talks, equipped with captions and subtitles. Learners should be flexible to choose when they use L1 and L2 in their language learning.

VI. CONCLUSION

In summary, this study aimed to find out the immediate effects of both captions and subtitles on EFL proficiency after viewing the same English video multiple times. Smartphones were used as a learning device for this experiment. The results showed that the group who watched both Japanese subtitles and English captions tended to perform better in the total score, and particularly on the vocabulary section, than the group who used only English captions.

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