REDESIGNING AN ARTIFICIAL INTELLIGENCE ELEARNING APPLICATION TO IMPROVE JAPANESE STUDENTS' ENGLISH CONVERSATIONAL SKILLS: A CASE STUDY OF A VOCATIONAL INSTITUTE IN TOKYO, JAPAN

Researcher: Yukimi Takahashi; **Advisors:** Asst. Prof. Dr. Poonsri Vate-U-Lan, Ed.D.
Degree: Doctor of Philosophy in eLearning Methodology;
Graduate School of Advanced Technology Management, Assumption University of Thailand, 2020.

ABSTRACT

The objective of this research was to redesign an Artificial Intelligence (AI) eLearning application to support the improvement of Japanese students' English conversational proficiency. Thus, two specific objectives were set: 1) to explore problems of using the AI eLearning application V1 by users; and 2) to investigate the AI eLearning application V2 in terms of increasing students' scores in the English conversational test.

This research employed a mixed method of qualitative and quantitative research. A total of 1,229 freshmen at the vocational institute in Tokyo, Japan took part. The majority of them were Japanese students who had been raised in an English as a Foreign Language environment. For the qualitative research, 20 students and five teachers were chosen using a purposive sampling method. A focus group interview was employed to understand the problems in improving the AI eLearning application V1. The interview results were analyzed to categorize each of the issues for discussion with a team of engineers. The quantitative part of the research employed a purposive and judgmental sampling method, and there were 198 students in the sample. To confirm the redesigned V2 by comparing the English conversational test scores of the pre-test and post-test, a one-group pre-test-post-test design was employed. The research instruments were the English conversational test, which was created by the institute and has been used for the English Foundation Course. IOC and Cronbach's Alpha confirmed the internal consistency within the items. The pre-test and post-test data were analyzed using a paired samples t-test.

The qualitative part of the research findings provided insights for people in non-technical roles regarding what AI does and how it works when redesigning. As for the quantitative part of the study, a paired samples t-test score confirmed that there was a significant statistical increase in English conversational skills from the pre-test ($\bar{X}$= 14.41, SD = 5.762) to the post-test ($\bar{X}$=22.57, SD = 1.973), t (197) = -21.015, p < .001. These results indicated that the redesigned AI eLearning application provides a great opportunity to foster Japanese students' English conversational skills. By increasing their engagement with English, students became accustomed to speaking the language.

Keywords:

Artificial Intelligence, eLearning application, redesign, Japanese students, English conversational skills