DIGITAL TECHNOLOGIES IN ONLINE ENGLISH CLASS FOR RAILWAY MECHANICAL STUDENTS DURING COVID19 OUTBREAK

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Abstract

Online learning has opened many innovations and opportunities in developing digital technologies in classroom, especially in language learning. However, *in* English for Specific Purpose (ESP) like in Railway Mechanical Technology study program, the development of online applications is still limited. Therefore, there is an urgency to conduct study about digital technologies in English class for Railway Mechanical Technology. This study is aimed to describe instructional design of general English course for Railway Mechanical Technology and investigate the learning outcomes of general English course utilizing digital technologies. The data were collected during 2nd semester of 2020/2021 academic year (March – August) in Railway Mechanical Technology study program. There were 24 students participated in this study (91.67% male and 8.33% female). The data were analyzed using Paired-sample t-test, Pearson *r* correlation, and Spearman *rho* correlation. The results showed the significant improvement in online English class for Railway Mechanical Technology. Despite the correlation showed linier direction between pretest and posttest, the degree of correlation was low with weak entailment.These results shed light on course design utilizing digital technologies in general English course for Railway Mechanical Technology study program.

Keyword: Technologies, Railway, Mechanics

A. INTRODUCTION

One of the current topics during Covid19 outbreak is about online learning which has brought many new stimuli and open questions to the field of educational research (Velichová et al., 2020). The impact of digital technologies on the educational system has been broadly examined in recent years in terms of intensive implementation of digital technologies into education and support of online teaching and learning process due to increasing digital literacies both teachers and students. Specifically in English language learning, many empirical studies have signified growing interest of digital technologies in students response system (SRS) and gamified English language learning application (Waluyo & Bucol, 2021). However, there is still limited studies about online learning in English for Railway Mechanical students.

Previous study about using digital technology in English for Railway Mechanical technology have been done in TOEFL Preparation Course – an English intensive program held by Politeknik Perkeretaapian Indonesia Madiun for the third-grade students before taking TOEFL. Despite the implementation of various e-learning technologies such as *Quizizz, Kahoot!, Socrative* and *Google Form*, the study was focus on TOEFL part 2 – structure and written expression. It investigated the implementation of multiple e-learning technologies in practicing TOEFL structure and written expression and the effectiveness of using the applications in drilling the students. The results showed that the application was effective in improving students' scores in TOEFL structure and written expression and the students regarded the digital tools as interesting application in drilling TOEFL part 2.

Another study in English for Railway Mechanical technology was investigating

digital vocabulary class which specifically examined students' learning achievement and their feedback (Pratiwi & Ubaedillah, 2021). It was a quasi-experiment research for freshmen of Railway Mechanical Technology students. After analyzing pretest and posttest scores, the results revealed that digital vocabulary class was significantly effective in improving students' scores. The questionnaire results also showed that the students gave positive feedback to the digital vocabulary applications used, those were *Kahoot!* and *Socrative* as drilling application during online vocabulary class. Despite it was students' first experience in learning through digital vocabulary class, they recommended the class design to be implemented in regular classes.

Both previous studies were examined the specific skills in English for Railway Mechanical Technology. There is a need for investigating the implementation of digital technology in general English of Railway Mechanical Technology. A study in Thai university context of general English course for freshmen showed that integrating the concept of smart classrooms and multiple e-learning technologies showed that the integrated course was largely improved students' learning outcomes in total scores, listening, grammar and writing skills (Waluyo, 2020). Yet, in vocabulary and reading skills, the improvement was in medium effect. It was suggested that general English curriculum and course design considers the concepts of smart classroom and active learning. The course design is as figure 1.

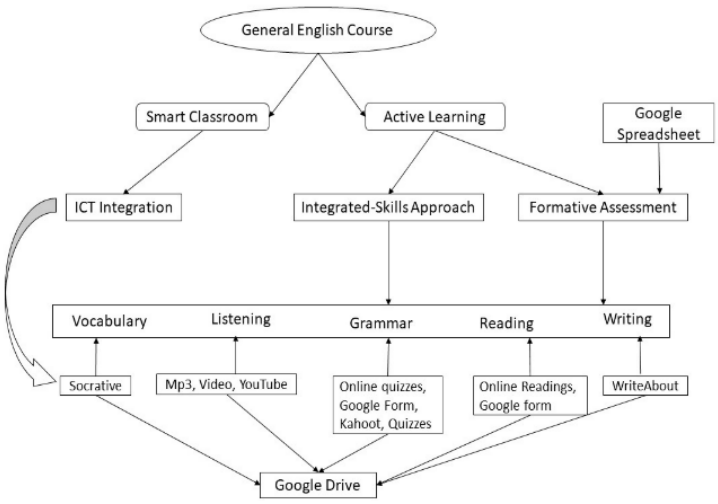


Figure 1. Course Design of Smart Classroom and Active Learning (Waluyo, 2020)

Digital Technologies in Online English Class

Computer-Assisted Language Learning (CALL) has been used in language learning since 1960 in Teaching English as Second and Foreign Language (TESOL and TEFL). Before Covid19 outbreak, the implementation of digital technologies in English as Foreign Language (EFL) countries are still rare and limited. Nonetheless, the utilization of digital application in EFL classes have been widespread recently since all classes have to go online (Ubaedillah et al., 2021). The use of CALL and MALL (Mobile-Assisted Language Learning) is increased as more people, teachers and students, concern in online education. They tend to find effective and efficient tools and applications which satisfied used by fulfilling the purposes of using CALL and MALL (Hidayat-ur-Rehman et al., 2021).

There are several CALL and MALL applications which can be utilized in English

classroom. SRS application such as *Kahoot!*, *Socrative*, *Quizizz*, *Quizlet*, and *Google Form* have proven to be effective in increasing students' learning outcomes as well as receiving positive feedback from the students (Mork, 2014; Platzer, 2020; Reynolds & Taylor, 2020; Rofiah & Waluyo, 2020; Yanmei et al., 2018; Zakaria & Hashim, 2020). *Kahoot!* ang *Google Form* application are quite familiar for teachers and students in Indonesia, while the rests are still rare to be used especially in language classrooms. Therefore this study focuses on describing the implementation of *Kahoot!*, *Google Form*, *Socrative* and *Quizizz* in general English course of Railway Mechanical Technology study program.

Research Questions

Weighing upon the background issues earlier, the present study developed an instructional design for a general English course that involved digital technologies in an online learning environment due to the COVID-19 outbreak. It investigated quantitatively how the incorporation of digital technologies affects students' learning outcomes on their English scores. The following research questions were addressed:

1. How do digital technologies implement in online English class for Railway Mechanical Technology?
2. How do learners' outcomes differ before and after learning in the online English class utilizing digital technologies?

B. METHOD

Research Design and Participants

This study employed a quasi-experimental research design. The participants 1st-year students of Railway Mechanical Technology study program in Politeknik Perkeretaapian Indonesia (PPI) Madiun (N = 24, male = 22, female = 2). They were at the age of 19 – 22 years old. They took general English course of *Bahasa Inggris II* after they passed *Bahasa Inggris I* in the 1st semester. The 2nd semester of 2020/2021 academic year lasted from March-August 2021. They were chosen through a purposive sampling to find convenience sample for the study.

Table 1. English for Railway Mechanical Technology Design

Meeting	Skills Learned	Digital Technologies
	Pretest	Google Form
1	Speaking- Introduction Ourselves	Zoom
2	Reading – Journal Article	Kahoot!
3	Reading – Journal Article	Quizizz
4	Reading – Journal Article	Socrative
5	Presentation – Review of Journal Article	Zoom
6	Presentation – Review of Journal Article	Zoom
7	Presentation – Review of Journal Article	Zoom
8	Presentation – Review of Journal Article	Zoom
9	Listening Part 1	Socrative
10	Listening Part 2	Quizizz
11	Listening Part 3	Kahoot!
12	Structure / Grammar	Quizizz
13	Written Expression	Kahoot!
14	Review	Socrative
	Posttest	Google Form

Course Design

One of the goals of this study is to highlight the implementation of digital technologies in online English class for Railway Mechanical Technology during Covid19 outbreak. The design is adapted from course design of smart classroom and active learning presented in figure 1. However, the adaptation is limited in terms of utilization of digital technologies in English classroom. The formative assessment is eliminated due to the vocational school requirement in PPI Madiun which has to enlarge practice (60%) than the theory (40%). Thus, the English assessment is not in formative assessment, but practicing the skills along the course was the concerned of the course. The course description is presented on table 1.

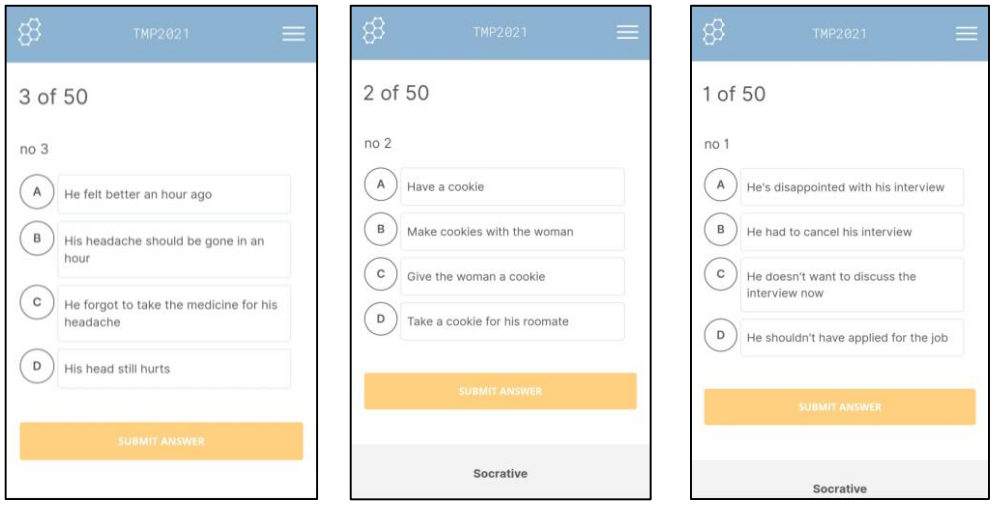


Figure 2. Example of Socrative Exercise

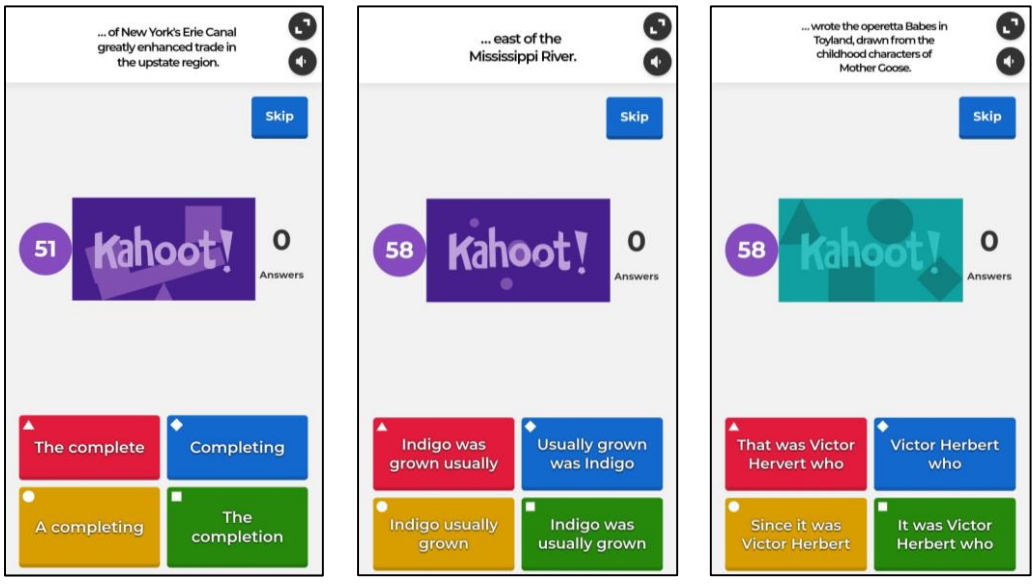
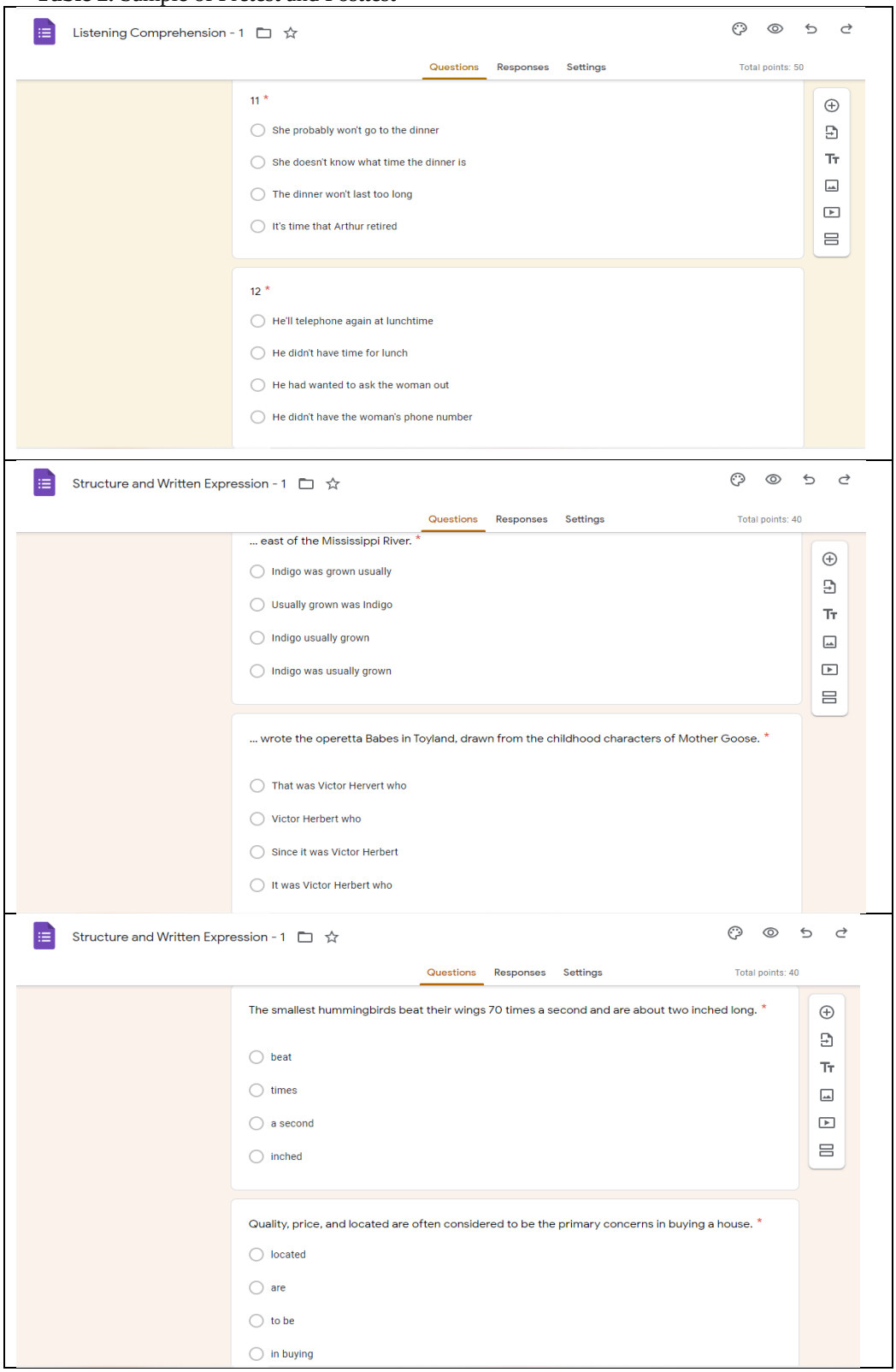


Figure 3. Example of Kahoot! Exercise

Table 2. Sample of Pretest and Posttest



Data Collection

The data used in this study is the results of pretest and posttest. The data collection followed the procedures below:

1. The questions for the pretest and posttest were designed.

2. The pretest was conducted prior to the 1st week.
3. Teaching and learning took place for 14 weeks.
4. The posttest was conducted after the course was concluded.
5. Students' scores from the pretest and posttests were computed into SPSS for data analysis.

Data Analysis

As this study focused on an instructional design for a general English course that involved digital technologies in an online learning environment due to the COVID-19 outbreak, the following statistical techniques were employed:

1. Paired samples t-test was run to find the impacts of the course design on the progress of student learning from the pretest to the posttest periods. This technique is to confirm if the course design has impacts on student achievement.
2. Pearson *r* correlation was calculated to find out the correlation between posttest and pretest.
3. Spearman *rho* coefficient was calculated to know the effect size of the digital technologies in an online learning environment of English for Railway Mechanical Technology.

C. RESULTS AND DISCUSSION

Utilizing Digital Technologies in English for Railway Mechanical Technology

The course was started by conducting pretest to know the students' prior knowledge of their English proficiency. The pretest was the adaptation of TOEFL as it was a standardized that would be used to assess students' English competency before they graduated. The first meeting was about introduction as well as learning speaking skills. The students were asked to introduced themselves one by one in zoom meeting. The 2nd, 3rd and 4th meeting were used to learned reading skills. The materials were taken from academic field, i.e. journal articles. The topic of the articles was about Railway Mechanical Technology in order to support their knowledge in their specific study program. On these stages, the students were drilled through three different platforms in each week – Kahoot!, Socrative and Quizizz, instead of having zoom meeting.

After they acquired reading comprehension skills, the students learned to criticize the article by reviewing the articles discussed on the previous meetings. During four meetings (5th, 6th, 7th and 8th), the students had to present the results of their activities of reviewing articles by having them individual presentation. There were 6 students presented their works each week with the allocation time was 10 – 15 minutes per students. The activities were done through zoom meeting. At this point, the learning objectives were to develop and advance students' understanding of academic texts in specific context, that was Railway Mechanical Technology.

The next three meetings discussed about listening comprehension. The materials were adapted from TOEFL listening which was divided into three parts. Each part was discussed every week utilizing Socrative, Quizizz, and Kahoot!. The last material was structure and written expression which were discussed on 12th and 13th meeting. This was taken from TOEFL material like listening comprehension. Quizizz and Kahoot! were used during these meetings accordingly. On the last meeting, 14th meeting, there was a review of the material. Despite having discussion about all material presented during the semester, there was a practice on Socrative as a review session. Then, a posttest was administered by the academic unit. The results of the pretest were analyzed altogether with the pretest results.

Table 4. Paired Samples Test

	Paired Differences							
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pretest-Posttest	-3.25000	4.91006	1.00226	-5.32334	-1.17666	-3.243	23	.004

Test Analysis

Descriptive comparison was conducted on students' scores in the pre- and post- tests. In total, the means of students' scores (N = 24) indicated an increase from 77.25 (SD = 1.42) to 80.50 (SD = 4.97). The data were normally distributed based on the values of skewness and kurtosis between -2 and + 2 (Skewness = .58 and Kurtosis = .72), which permitted the data to be examined in the paired-samples t-test. See table 3.

Table 3. Descriptive Statistics

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
VAR00001	24	77.2500	1.42188	-.384	.472	-.538	.918
VAR00002	24	80.5000	4.97821	-.586	.472	-.726	.918

A paired-samples t-test was conducted to compare the means of students' scores before and after taking English for Railway Mechanical Technology in Politeknik Perkeretaapian Indonesia Madiun. There was significant difference in students' scores compared from pretest to posttest (M = 21.20, SD = 4.91; t(23) = -3.243, p = > .001 (table 4). These results indicate that the course design of English for Railway Mechanical Technology utilizing digital technologies in online classroom setting significantly impacts students' learning outcomes.

Pearson r correlation was calculated to know the correlation between pretest and posttest. The results showed that the effect size was modest with insignificant correlation (r = .20; sig. = >.05). The Spearman *rho* correlation resulted the same with Pearson r correlation – modest effect size and linier direction with insignificant correlation (*rho* = .248; sig. - >.05)

Table 5. Correlation Results

	Pearson *r*	Sig	Spearman	Sig
Pretest-Posttest	.20	.155	.248	.077

Discussion

The aim of the present study is to describe the implementation of digital technologies in an online English class for Railway Mechanical Technology students. The process of course design implementation has described clearly on the findings of the study. The test analysis showed that the students' learning outcomes improved significantly from pretest to posttest. This supported the idea that e-learning technologies significantly improved students' total scores in learning English (Soliman, 2016; Waluyo, 2020). Contrasting with the results of the previous studies conducted in Politeknik Perkeretaapian Indonesia Madiun which had strong correlation between pretest and posttest (Pratiwi, Atmaja, et al., 2021; Pratiwi, Zulkarnain, et al., 2021; Pratiwi & Ubaedillah, 2021), this present study had no significant correlation between pretest and posttest result. The correlation was in modest way with linier direction between pretest and posttest.

This finding is inline with previous studies in another Indonesian context which

showed that significant improvement in pretest and posttest does not correlate with the effect size of pretest and posttest (Mulyadi et al., 2021). The students' learning outcomes improvement is about the platform effectiveness – in the present study are digital technologies, which may not have any correlation with effect size in pretest and posttest. An effective platform can bring beneficial both for teachers and students, yet having low effect size on test results (Fithriani, 2021). Nonetheless, digital technologies apply in online English class for Railway Mechanical Technology have brought beneficiary for students in improving their scores.

Despite several digital platforms which have proven to be effective in language learning class (Bailey & Lee, 2020; Basuki & Hidayati, 2019; Shaban, 2017), other factors such as course design, learning material, students' motivation had effects on the present study. As this course was designed to follow the regular class which consisted of 14 meetings, this may bring boredom to the students which affects their motivation in learning. The learning material which should have practice proportion bigger than the theory (60% - 40%) may also effects on the teaching and learning process (Pratiwi, Astuti, et al., 2021; Putera & Shofiah, 2021; Slamet, 2011). The last but not least, the requirement regarding TOEFL which needs to be included in the learning materials and tests may have to be considered as crucial factors affecting the findings of the present study.

D. CONCLUSION

This study highlighted the implementation of digital technologies in online English classroom for Railway Mechanical Technology during Covid19 outbreak. The course design and several steps implementation have been described in comprehensive way to answer the first research question. The pretest and posttest analysis have been calculated and revealed that the digital platform significantly improved students' scores, yet it was not inline with the effect size. Other factors which may affect during teaching and learning process had to be taken into account for further research to get deeper understanding and comprehensive results about conducting online learning in English language classrooms especially in Railway Mechanical Technology study program. The generality of this study is on the implementation of the digital platforms which adds empirical evidence about the effectiveness of utilizing digital technologies.

There are some limitations of the present study which have to be admitted. This study only focuses on general English skills, there is no detail explanation on each skill of the English competencies. The research design employed quasi-experimental research due to the university regulation that all students have to get equal treatment during teaching and learning process. Then, the data analysis uses simple analysis – paired-sample t-test and two correlation coefficients (Pearson *r* and Spearman *rho*). It may have led to a deeper understanding if the study can be done in true-experimental study with various data analysis.

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