

The Effect of an Authentic Learning Experience on Low-Performing EFL Pre-Service Teachers' Intentions to Use E-Learning for Teaching

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Abstract

This research was aimed at finding out the effect of an authentic learning experience, the experience in taking a real course in a university, when e-learning was combined with face-to-face interaction on the pre-service teachers' intention of using e-learning in their future teaching employment. Fifty-two pre-service teachers majoring in an English grammar course at a state university in Indonesia participated in this research. The average test scores revealed that they performed poorly on quizzes based on assigned reading materials. The Theory of Planned Behavior (TPB) questionnaire was used for pre-test and post-test, and the data were analyzed using the Paired Sample Wilcoxon test at the significance level of 0.05. The research results show that all pre-service teachers' intentions of using e-learning for teaching were significantly different in a negative direction before and after the participants received an authentic learning experience. These results suggest that the low-performing pre-service English teachers' intention to use e-learning was lower after they had an authentic learning experience with e-learning.

Keywords: blended learning, e-learning, Theory of Planned Behavior, low-performing students

Introduction

The effect of classroom teaching can be intensified with technology, particularly e-learning. E-learning is intended to make it easy for teachers to disseminate educational information to their students. In addition, teachers can track their students' progress, including the number of hours they dedicate to complete an assigned learning activity. This monitoring capability was not easily possible through traditional instructional delivery. Students can benefit from using e-learning because it can provide immediate feedback for the exercise on which they are working, and thus they can reattempt the exercise if needed. Students can also complete an assignment or activity without constraints with time or space. When used in a classroom for blended learning, e-learning makes it possible for students to collaborate and interact with their peers and teachers. These activities are possible because most e-learning platforms have features for synchronous chat, discussion forums, and peer review such as Workshop Activity Module in Moodle, one of the most popular open-source Learning Management Systems (Elfiondri et al., 2022). Among other benefits, students perceived learning through e-

learning as individualized, collaborative, pleasant, effective, autonomous, active, and motivating (Popovici & Mironov, 2015).

Despite the non-exhaustive list of benefits of e-learning, the use of e-learning among lecturers in higher education in developing countries is infrequent. In Indonesia, however, e-learning is available for students and lecturers in many universities (Zainuddin & Keumala, 2018). In some universities, e-learning has been implemented since 2014 (Pradana & Amir, 2016). However, according to Syam et al. (2019), most lecturers have not used the e-learning system although, according to Mon The and Usagawa (2018), students have been ready to learn using e-learning since the early 21st century. At Universitas Syiah Kuala, the biggest and oldest university in the Province of Aceh, e-learning has been encouraged, and all students were automatically registered in the university e-learning platform in every course they enrolled in each semester. However, the participation among lecturers is very low, i.e., between 1% and 5% (Tarman et al., 2018, p. 3), even in the English Language Teaching department, where most of the lecturers have experienced authentic learning through e-learning from western universities.

The low participation in using e-learning is unexpected among lecturers in the English Language Teaching Department at Universitas Syiah Kuala, Indonesia because, based on a study conducted by Valtonen et al. (2015), the intention to use ICT in teaching should improve after an authentic learning experience with ICT. In their research, Valtonen et al. (2015) experimented with teaching pre-service teachers in an actual course, but the student participation in using ICT did not affect their grades. Such a situation does not always apply to most ICT-based classrooms, where ICT is used even for assessment or as a tool to deliver tests for an exam, and students are not given an option to take paper-based counterparts. Thus, it is significant to discover how an authentic learning experience with compulsory e-learning affected students' intentions to implement e-learning for teaching in their future teaching careers. Therefore, the objective of the present study was to find out the difference in pre-service teachers' intentions to use e-learning in their future teaching career before and after they were taught using e-learning and performed poorly in the course. The results of this research will be very significant for teacher educators in finding a method to improve the teacher candidate's intentions to use e-learning.

Blended Learning

Distance education has been popular since the emergence of internet technology in the late 20th century, termed as "the third generation course model" (White, 2003, p. 15). In non-distance learning, online learning is also used through blended learning, which is a combination of traditional face-to-face interaction and online learning (Garrison & Vaughan, 2008). Inoue (2010) claimed that this approach is better than distance online learning or traditional face-to-face learning. It improves students' engagement and maximizes their learning because the online learning component enables students to work outside the classroom. The face-to-face interaction in blended learning can be used by the course instructor to deliver the materials, which can also be made online. It is an essential component of learning, and even students involved in distance learning still prefer the traditional onsite counterpart (White, 2003).

In blended learning, teachers are left with two choices of classroom material

delivery (Thorne, 2003). Teachers can provide an onsite mode of instructional delivery, e.g., explaining the material through a teacher-centered approach although, according to Hou Vat (2010), this delivery mode has many disadvantages, such as lack of collaborative culture. Another option is to deliver the material online using instructional videos recorded by the teacher or videos available online such as YouTube or videos recorded in other classes. With this mode of delivery, teachers can act as facilitators, and thus only when students need them do teachers step in (Reardon, 2010). This approach enables individualized instruction, which is based on the concept that every student is unique in a way that he or she learns differently at a different speed (Kawasaki, 1980).

Like material delivery, assessment can also be conducted conventionally using paper and pencil or modernly using e-learning. Many research studies have tried to compare the effectiveness of both types of test delivery with mixed results (Ladyshevsky, 2015; Retnawati, 2015; Weiner & Hurtz, 2017). According to Mustafa and Sofyan (2018), an online assessment can be conducted, but it is only effective when it is supervised strictly. For example, the teacher can make the test only available after all students are in class, seated in exam position, which is possible in many Learning Management Systems (LMS) such as Moodle. In addition, each test question is shown on each page in random order, and returning to previous questions is disabled, preventing students from cheating.

Moodle as an E-Learning Platform

Based on the level of popularity, Moodle is the most popular LMS in higher education in most countries in the world (Escobar-Rodriguez & Monge-Lozano, 2012). In addition, other LMS are also used, such as Schoology, Google Classroom, Edmodo, WebCT, Boddingtons, and Fronter (Stacey & Gerbic, 2009; Zainuddin & Keumala, 2018). In Southeast Asia, Moodle is the most popular LMS because it is an open-source web-based application (Latchem & Jung, 2010).

Moodle, which stands for Modular Object-Oriented Dynamic Learning Environment, was first developed by Martin Dougiamas (Walasek et al., 2015), and it was initially intended to be used in higher education. The platform is maintained and updated very regularly to meet the need for education (Cole & Foster, 2008). Therefore, it is very easily accepted by students in higher education (Khamaruddin et al., 2017). Many studies have analyzed the effectiveness of this Learning Management System (LMS), which is also known as Course Management System (CMS) or Virtual Learning System (VLS) (Damnjanovic et al., 2015). Those studies concluded that Moodle as an e-learning platform is very effective for the teaching and learning process (Caliskan & Bicen, 2016; Novo-Corti et al., 2013; Sun, 2014; Umek et al., 2017).

The effectiveness of Moodle as an e-learning platform is due to its features, which can facilitate learning, and these features are regularly updated. The most helpful feature of Moodle is its ability to track a student's learning process, which makes it possible to conduct formative student evaluations (Sun, 2014). Other standard features for e-learning include assignment, workshop, feedback, survey, glossary, discussion forum and chat, survey, wiki, and quiz (Cole & Foster, 2008). In addition, Moodle has complete features for tests or quizzes. Teachers can create many types of questions such as short answers, essays, multiple choices, matching, and drag and drop. Questions and options can also be shuffled to reduce the possibility of cheating (Novo-Corti et al., 2013). Therefore, we need to encourage teachers to use e-learning platforms such as Moodle to facilitate a

better quality of learning, and the theory of planned behavior is one of the procedures to see their intention to use it.

Theory of Planned Behavior (TPB)

The theory of planned behavior was first developed by Ajzen (1991) as an effort to have a more in-depth understanding of the relationship between beliefs and behavior. According to Ajzen (1985), the theory was to improve our ability to predict what was proposed by the previous related theory called Theory of Reasoned Action. TPB is in fact an extension of the Theory of Reasoned Action with the addition of perceived behavioral control (Ajzen, 1985). The Theory of Reasoned Action looked at the interplay between positive attitudes, subjective norms, and motivation. According to Fishbein and Ajzen (1975), the theory of reasoned action suggests that people's evaluation of certain behaviors exposed to them is positive, and their judgment of significant others leads them to think that they want them to perform the suggested behaviors (subjective norm), hence, increasing the intention or motivation for them to end up performing the action (behavior). Positive attitude and subjective norms have been reported to have a strong correlation with behavioral intention, and eventually the behavior (Sheppard et al., 1988). More recent studies have also been conducted using the theory of planned behavior, a modified version of the theory of reasoned action, in many different disciplines.

A questionnaire was designed based on the construct of TPB to predict intention and behavioral control (Ajzen, 1991; Teo & Beng Lee, 2010). The constructs include attitude, self-efficacy, subjective norms, and behavioral intentions (Ajzen, 1985). However, the intention does not necessarily result in the actual action because it can be prevented by situations (Teo & Beng Lee, 2010). There are also factors that can motivate people to change their intention (Ajzen, 1985). These factors are usually unique to the given actions and sometimes unrelated to motivational factors, such as other requirements of the action, requisite opportunities, and resources.

Attitude

Attitude is defined as "a person's overall evaluation of performing the behavior that includes assessing the consequences of the behavior" (Bhuyan, 2011). According to Albarracin et al. (2008), attitude is essential in shaping behavior because it determines perceptions. It is categorized into an explicit attitude and an implicit attitude. Implicit attitude is the attitude that is unconsciously developed, and thus it cannot be consciously controlled (Devos, 2008). Meanwhile, an explicit attitude refers to the attitude which can be self-evaluated through introspection (Albarracin et al., 2008). Therefore, "implicit attitudes better predict relatively spontaneous, uncontrollable, or unconscious behaviors, whereas explicit attitudes are a more potent predictor of deliberate behavioral responses" (Devos, 2008, p. 76).

Self-Efficacy

Self-efficacy or behavioral control is "the individual's perceptions of his/her ability to perform a given behavior" (Bhuyan, 2011, p. 207). When self-efficacy is strong, a person is more motivated to perform human behavior (Flammer, 2001). According to

the self-efficacy theory (SET) laid down by Bandura (1997), perceived self-efficacy is a key determinant of behavior (Sutton, 2001). Empirical research studies also found that self-efficacy can predict behaviors (Conner & Norman, 1998), including behavior in learning (Seon Ahn & Bong, 2019). For teachers, self-efficacy can potentially predict student learning experience and achievement (Schunk, 2001).

Subjective Norms

Subjective norm is the belief of what other people who are important to the person expect the person to do (Bhuyan, 2011). According to Fishbein's theory of reasoned action, the subjective norm is one of the two factors which shape human behavior (Trafimow, 2000). It has been found to significantly influence behavioral intentions to use technology through direct and moderated effects (Schepers & Wetzels, 2007). Therefore, the subjective norm is used as the questionnaire construct of both TPB and TAM (technology acceptance model) (Rhodes & Courneya, 2003; Schepers & Wetzels, 2007). Both models have been extensively used in research to predict intentions to use technology in education (Escobar-Rodriguez & Monge-Lozano, 2012; Khamaruddin et al., 2017; Lee et al., 2010; Valtonen et al., 2015).

Behavioral Intentions

Behavioral intentions are the factors that show a person's determination to perform the behavior (Ajzen, 1991). It has been predicted to correlate with subjective norms and attitudes (Teo & Beng Lee, 2010). In Ajzen's theory of planned behavior, behavioral intentions are the central factor that directly affects actual behavior and are influenced by attitude, self-efficacy, and subjective norms. In the TPB questionnaire, some questions or statement items are dedicated to extracting people's behavioral intentions to obtain more accuracy and precision of prediction, although they can be predicted from the other three constructs.

The Present Study

The focus of the present study is to investigate the effect of an authentic learning experience with e-learning on the intentions of using e-learning for teaching. The study only focused on pre-service EFL teachers whose achievements in the experiment were low, i.e., between 24% and 59%. The effect of authentic learning experience had rarely been observed on students or pre-service teachers with that characteristic of achievement in relation to their intentions to use e-learning for teaching. In this research, the intentions are accessed using the theory of planned behavior (TPB). Since the constructs of intentions as determined in TPB (Ajzen, 1985) are attitudes, self-efficacy, subjective norms, and behavioral intentions, the research questions are intended for each construct as outlined below:

1. Is there a significant difference between low-performing EFL pre-service teachers' attitudes on the use of e-learning for teaching before and after the authentic learning experience with e-learning?
2. Is there a significant difference between low-performing EFL pre-service teachers'

- self-efficacy on the use of e-learning for teaching before and after the authentic learning experience with e-learning?
3. Is there a significant difference between low-performing EFL pre-service teachers' subjective norms on the use of e-learning for teaching before and after the authentic learning experience with e-learning?
 4. Is there a significant difference between low-performing EFL pre-service teachers' behavioral intentions on the use of e-learning for teaching before and after the authentic learning experience with e-learning?

[Terminological note: In this study, we are using 'low-performing' to refer to a low score in tests]

Method

This research is a quantitative study with a quasi-experimental design involving pre-test and post-test. The purpose of this research was to find out the effect of the treatment; therefore, a control group was not relevant based on the nature of this study.

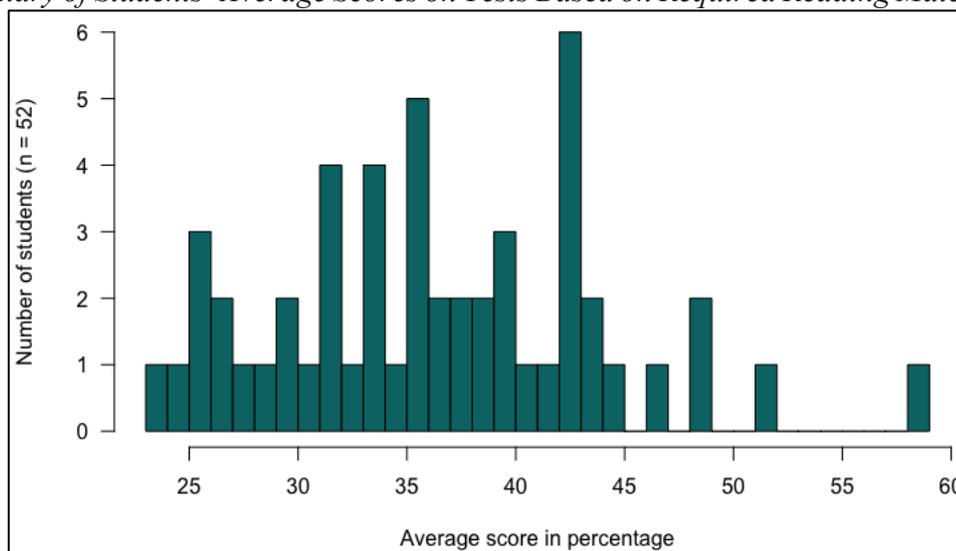
Research Participants

The experiment was conducted in a Basic English Grammar course for students at the Department of English Language Teaching, Universitas Syiah Kuala, Indonesia. The students were in the first semester, and they were never taught using e-learning. Two classes were used for this research, and the combined number of students was 52, consisting of 46 females (88%) and 6 males (12%) between 17 and 18 years of age. Thus, all the participants are Digital natives. The majority of them were from the Province of Aceh, an Indonesian province located on the northern end of Sumatra island.

At Universitas Syiah Kuala and most other universities in Indonesia, professors usually deliver a lot of course content through lectures in classroom. Students are not accustomed to reading the required materials before the class, nor are they expected to. In these two experimental classes, the researchers introduced a different instructional approach, where students were required to read materials to be discussed in the class. Reading questions were also provided immediately after the pre-class reading materials were uploaded to the e-learning platform to guide them in reading the materials. In addition, tests were administered in the class delivered through e-learning in the form of multiple-choice, completion, and matching questions. The summary of the average scores based on five tests is presented in Figure 1.

Figure 1

The Summary of Students' Average Scores on Tests Based on Required Reading Materials



Based on Figure 1, the minimum average score obtained by the students was 24%, and the maximum score was 59%. Based on the university assessment criteria, the students' scores were 0 (0% - 40%), 1 (41% - 50%), and 2 (51% - 59%) on a four-level scale. In addition, only 16 students (32%) obtained scores higher than 40%. Therefore, the participants in this research were considered low-performing students.

Instruments

The instrument used in this research was a questionnaire based on the Theory of Planned Behavior (TPB) to evaluate students' intention of using e-learning for future teaching. The questionnaire was divided into four sections, i.e., attitude (5 items), self-efficacy (3 items), subjective norms (4 items), and behavioral intentions (3 items) in the context of the use of e-learning for teaching. This questionnaire was used because it has been regarded as a valid instrument to measure intentions (Ajzen, 2020). To ensure validity and reliability, we adapted the questionnaire used by Valtonen et al. (2015) (Table 1). The questionnaire was presented using a six-level Likert scale (6 = strongly agree, 1 = strongly disagree). The questionnaire items were translated into the students' L1, i.e., Bahasa Indonesia, to ensure that all questionnaire items were well understood. The internal consistency of the questionnaire based on our data analyzed using Cronbach's alpha, as suggested by Cohen et al. (2007), exceeded 0.90, i.e., 0.936 for the pre-test and 0.942 for the post-test. Therefore, the questionnaire has a very high-reliability level.

Data Collection and Experiment

For the pre-test, the questionnaire based on TPB was delivered in the first class meeting using the Moodle platform, where the students had been automatically enrolled after they registered into the course. The students were invited to ask questions when they encountered any problems completing the questionnaire. The same questionnaire was delivered in the same mode in the last class meeting after the final exam as the post-test.

The purpose of this questionnaire was to assess the level of their intention to use e-learning in their future teaching career.

The authentic learning experience in this research included pre-class reading activities and in-class learning activities comprising discussions of pre-class reading and tests. The class was a blended learning class, where students completed learning activities through Moodle outside the classroom except for graded tests. The students were required to read the assigned materials before each class in the course. The materials were delivered through e-learning in PDF format. Students were able to download the materials and read them offline. They were required to complete reading questions based on the materials for some meetings, but the reading questions were not scored because they were used to guide students in reading the materials. In other meetings, the reading questions were delivered in a workshop format, using the Workshop Activity feature in Moodle, with the following procedures:

1. Students answer the questions based on reading in essay format. They were asked to demonstrate their understanding of the materials.
2. After the submission phase, two students were assigned to review each submission. The reviewers knew the writer's identity of the submission, but not the other way around.
3. In assessing the submission, the reviewer scored each question using percentages, with the following criteria:

76 - 100 = The answer is correct and complete

51-75 = The answer is correct but not complete

26 - 50 = The answer is correct to some extent

1 - 25 = Your classmate is not sure what the answer is.

0 = Your classmate does not know what the answer is.

In addition, reviewers were instructed to assign a zero if the submission contained texts copied from the materials because it is difficult to assess whether they understood the text or not.

After the review phase, the scores for submission were the average score given by both reviewers. The students did not know the identity of the reviewers.

In the meeting, the class was begun with a quiz, which was also delivered through Moodle platform. The students were required to sit in the examination seating arrangement, and they were strictly supervised. The students who were found cheating were blocked from the test, and they were not allowed to continue the quiz. Most of the students used their smartphones to complete the quiz. The quiz came in several test formats, i.e., multiple choice with a single correct answer, multiple choice with multiple correct answers, completion, and matching. The students were given limited time, usually 30 minutes to complete approximately 30 questions, and their answers were submitted automatically.

Data Analyses

Since the data in this research were categorical, the analyses were performed using the Paired Samples Wilcoxon test, a non-parametric alternative to paired t-test used to

compare paired data (Privitera, 2018). The hypothesis to be tested was "*there is no difference in pre-service teachers' intention before and after the treatment.*" The hypothesis was rejected at the significance level of 0.05, which meant that the alternative – "*there is a difference in pre-service teachers' intention before and after the treatment*" – hypothesis was accepted. This small p-value was used to avoid type I error, i.e., rejecting a null hypothesis when it is true. The analyses were also performed separately for attitude, self-efficacy, subjective norms, and behavioral intentions. In addition, since attitude, self-efficacy, and subjective norms have been known to influence intentions, they were also analyzed as one variable. In addition, Spearman rank correlation analysis, as recommended by Privitera (2018) for categorical data, was used to find the correlation between students' ICT skills and their e-learning skills.

Before testing the hypothesis, confirmatory factor analysis was performed to check whether each questionnaire item had sufficient factor loading, i.e., the pattern of item-factor relationships. The item was removed when the factor loading was less than 0.30, as Brown (2015, p. 27) recommended.

Results

This section reports the results, starting from the factor analysis, followed by the results of repeated measures Paired Sample Wilcoxon Test, combined with mean values before and after the treatment. In addition, the student's perceived ability to use ICT and e-learning is also reported in detail.

Perceived ICT and E-Learning Skills

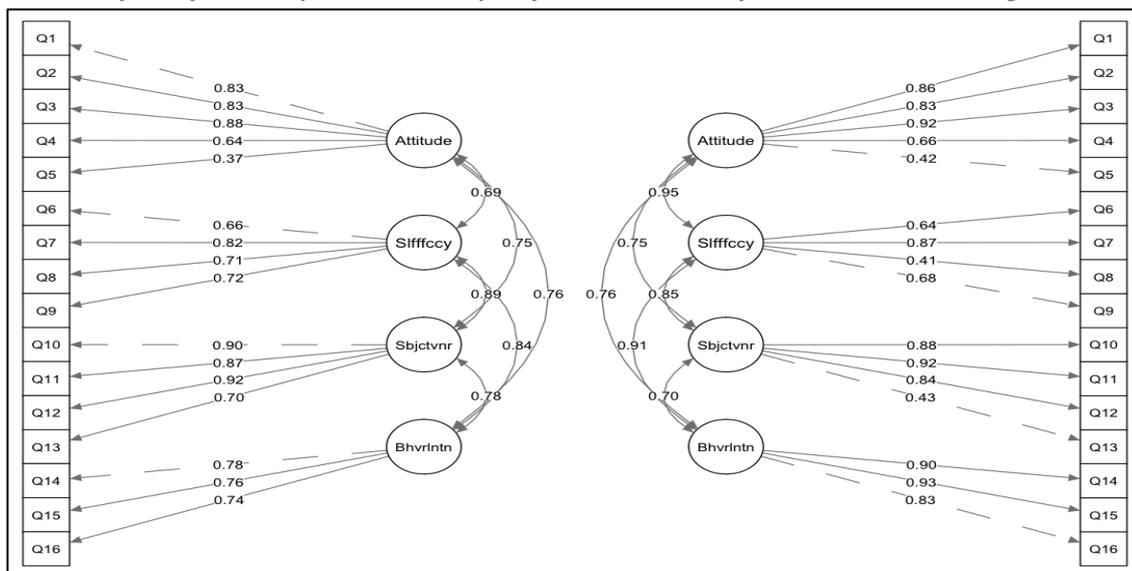
Based on the background information questions, the students' self-reported ICT skill was "sufficiently strong" both before and after the treatment with the mean of 3.96 for pre-test (sd. of 0.93) and 4.04 post-test (sd. of 0.88). They also felt that they would achieve "sufficiently strong" ability (mean of 3.90 with sd. of 0.99 in pre-test and 4.13 with sd. of 0.77 in the post-test) to use e-learning for teaching if they learn how to use it. Both perceived ICT and e-learning skills, were not statistically different between pre-test and post-test, with p-values of 0.664 for ICT skills and 0.376 for e-learning skills based on Paired Sample Wilcoxon test. In addition, in both before and after the treatment, ICT, and e-learning skills were significantly correlated, i.e., $R = 0.63$ for pre-test and $R = 0.67$ for the post-test at the significant level of < 0.000 based on Spearman's rank correlation analysis.

Factor Analysis and Descriptive Statistics

Figure 2 shows the results of factor analysis for pre-test and post-test for each item and the correlations among the constructs of behavioral intentions.

Figure 2

Results of Confirmatory Factor Analysis for Pre-Test (Left) and Post-Test (Right)



Note. In the figure, nodes have been abbreviated, where Q is questionnaire item, Slffccy is Self-efficacy, Sbjctvnr is Subjective norms, and BhvrIntn is Behavioral Intentions.

Based on Figure 2, the results of Confirmatory Factor Analysis showed that all items loaded sufficiently to each factor in both pre-test and post-test, and no item had a factor loading less than 0.30. Thus, all items were included in the analysis. In addition, the latent variable of behavioral intentions, which is the dependent variable in this research, significantly correlated to other latent variables or factors, i.e., 0.76 (attitude), 0.84 (self-efficacy), and 0.78 (subjective norms). Therefore, the results of the analysis could be confidently used to conclude the effect of the authentic learning experience with e-learning on intentions to use e-learning for teaching.

Table 1 presents descriptive statistics of each item in the questionnaire, including minimum and maximum values, mean, and standard deviation for data visualization.

Table 1

Pre-test and Post-Test Item Description

Statements [Alpha = 0.94 (pre-test), 0.94 (post-test)]	Pre-test				Post-test			
	Min	Max	Mean	sd	Min	Max	Mean	sd
Attitudes [Alpha= 0.84 (pre), 0.87 (post)]								
e-Learning provides possibilities for enhancing the quality of learning.	2	6	4.73	0.97	1	6	3.58	1.29
For me, it is important that my future students will use e-learning in their learning.	2	6	4.51	0.94	1	6	3.46	1.13
I look forward to the use of e-learning in my work as a teacher.	2	6	4.32	1.00	2	6	3.50	1.13
The use of e-learning in education is integral to today's society.	1	6	4.21	1.11	1	6	3.54	1.21
It is important that my future students will acquire the necessary abilities to take advantage	3	6	5.00	0.79	3	6	4.60	0.82

of e-learning.

Self-efficacy [*Alpha* = 0.80 (*pre*), 0.77 (*post*)]

I can teach using e-learning.	1	6	4.44	1.11	2	6	3.87	1.15
I can support students' learning with e-learning.	2	6	4.61	0.93	2	6	3.79	1.07
Learning to use different software is easy for me.	2	6	4.02	0.94	2	6	3.71	1.03
I can use e-learning for the things I need.	2	6	4.61	0.84	2	6	3.98	0.94

Subjective norms [*Alpha* = 0.91 (*pre*), 0.85 (*post*)]

My future colleagues will expect me to use e-learning for teaching.	2	6	4.27	0.93	1	5	3.40	1.01
The principal of my future school will expect me to use e-learning for teaching.	2	6	4.27	0.89	1	6	3.52	0.99
Parents of my future students will expect me to use e-learning for teaching.	2	6	4.35	1.05	1	5	3.56	0.98
My future students will assume that I can use e-learning for teaching.	2	6	4.52	0.98	2	6	4.04	0.93

Behavioral intentions [*Alpha* = 0.79 (*pre*), 0.91 (*post*)]

If there are good e-learning resources available in my future work, I will make them available to my students for use in their learning.	2	6	4.85	0.96	2	6	4.06	1.07
If there are sufficient e-learning resources available, I will make use of them in my future work as a teacher.	2	6	4.94	0.75	2	6	4.00	1.01
I will actively use e-learning in my future work as a teacher.	2	6	4.33	1.04	2	6	3.42	0.99

Based on Table 1, standard deviations were very similar between one construct and another, and the means seem to be higher in the pre-test than those in the post-test (the significance of which is presented in the next section). The item presented in Figure 1 is in the original language, while the Bahasa Indonesia translated version was presented to the participants. In addition, the alpha for the collected data, which ranges between 0.77 and 0.91, suggests that each item is closely associated within each subscale.

Subscales of TPB before and after the Authentic Learning Experience

The average of TPB subscale based on 16 items was very high before the students were taught using e-learning. One of the items in the attitude subscale was perceived as "agree (5)" by most of the participants with the lowest standard deviation, suggesting a small variation in the participants' opinions. This item also produced the lowest standard deviation and most positive opinion in the post-test, although it was lower than that in the pre-test. In fact, all items were rated lower with the difference of approximately one scale on average.

The minimum lowest values were rarely 1 in the pre-test, namely only for two items. However, the value of 1 was very common on the post-test, where six items were scored 1. For the maximum value, all items received "strongly agree (6) in the pre-test; however, two items received the value of "agree (5)" after the students experienced

authentic learning using blended learning with e-learning. This decreased intention of using e-learning after the treatment indicated the negative effect of the authentic learning experience with e-learning. The statistical evidence that the decrease was significant is provided in the following section.

Correlations between TPB Subscales

Table 2 illustrates the correlation between subscales and how predictors of behavioral intentions correlated with behavioral intentions based on the data in this research. Both pre-test and post-test were analyzed to show a consistency of correlation. The correlations were calculated using Spearman's Correlation Coefficient.

Table 2

Correlations, Means and Standard Deviations of TPB Subscales

Subscales	mean	sd	Subscales				
			1	2	3	1, 2 & 3	4
Pre-test							
1. Attitude	4.558	0.759	1.00				
2. Self-efficacy	4.423	0.761	0.55	1.00			
3. Subjective norms	4.351	0.852	0.60	0.77	1.00		
4. Behavioral intentions	4.705	0.774	0.64	0.64	0.71	0.77	1.00
Post-test							
1. Attitude	3.735	0.909	1.00				
2. Self-efficacy	3.827	0.806	0.78	1.00			
3. Subjective norms	3.630	0.814	0.75	0.81	1.00		
4. Behavioral intentions	3.827	0.948	0.69	0.76	0.70	0.78	1.00

Note. All pairs are significant at $p < 0.000$

Table 2 shows that the correlations between one construct and another were high, ranging from 0.64 and 0.81. Based on the comparison, the correlations were higher in the post-test for almost all subscales.

Hypothesis Testing

In determining the effect of the treatment, this study tested the hypothesis at the significance level of 0.05. Since the data were categorical, Paired Sample Wilcoxon test was used for hypothesis testing. The results of the hypothesis tests are provided in Table 3.

Table 3

Results of Hypothesis Testing Based on Paired Sample Wilcoxon Test

Subscale	Mean of pre-test/sd	Mean of post-test/sd	Statistics	P-value
Attitude (A)	4.558/0.759	3.735/0.909	1103	0.0000
Self-efficacy (SE)	4.423/0.761	3.827/0.806	860	0.0005
Subjective norms (SN)	4.351/0.852	3.630/0.814	849.5	0.0002
S, SE, and SN	4.453/0.697	3.731/0.767	1074.5	0.0000
Behavioral intentions	4.705/0.774	3.827/0.948	1002.5	0.0000

Table 3 shows that the means of pre-test are higher than those of the post-test for all subscales. The p-value lower than 0.05 for all subscales suggests that the hypothesis, i.e. “the attitude, self-efficacy, subjective norms, and behavioral intentions of using e-learning for teaching were similar before and after the treatment,” was rejected. Thus, all subscales before and after the treatment were significantly different, and in a negative direction. Therefore, we now have a piece of statistical evidence that the authentic learning experience with blended learning using e-learning and face-to-face interaction negatively impacted the students' intention to use e-learning in teaching. The evidence was also found when all predictors of behavioral intentions, i.e., attitude, self-efficacy, and subjective norms, were combined.

Discussion

This research aimed to examine how an authentic learning experience with blended learning through face-to-face interaction combined with e-learning impacted student teachers' intention to use e-learning for teaching. The study was conducted by teaching students enrolled in a compulsory course, i.e., Basic English Grammar, by using a standard e-learning platform, i.e., Moodle version 2.9, installed in the university website domain. The compulsory reading materials were delivered through the e-learning platform to be read before the class. In addition, the reading questions were delivered in class through e-learning, and the students were strictly supervised during the test. We expected that students' intentions to use e-learning improved after this authentic learning experience because familiarity with ICT has been found to improve technology acceptance (Khamaruddin et al., 2017). However, the result was unexpected, that is the students' intentions to use e-learning for teaching decreased based on all subscales of TPB questionnaires, i.e., attitude, self-efficacy, subjective norms, and behavioral intentions.

All subscales of behavioral intentions (attitude, self-efficacy, and subjective norms) had mean values higher than 4 and close to 5 in the pre-test. This perception is very positive in these subscales, which signals a high possibility that the students will use e-learning when they become teachers (Qazi et al., 2014). However, their perception was lower after they were taught using e-learning. The perception jumped to less than 4, with a difference of almost 1 point from the pre-test. The highest decrease was in the subscale of attitude, where the students' attitude after the authentic learning experience was not as positive, i.e., 3.735 out of 6, a 0.8-point difference from the pre-test. This decrease is also seen in the response variable, i.e., behavioral intentions. The students' self-reported behavioral intentions decreased from 4.705 (pre-test) to 3.827 (post-test), with a difference of 0.88, higher than its predictor variables.

The decrease in the students' intentions to use e-learning in teaching can be explained by their “rejected” experience of learning using the experimented teaching technique. In the current credit system, i.e., semester credit hour (SCH), each credit refers to weekly a 50-minute class meeting and two-hour learning activities outside the scheduled class meeting (Yoga et al., 2016). However, students and lecturers rarely practiced this system (Poedjiastutie, 2009), and thus they do not spend much time preparing for their courses. With e-learning in our experiment, lecturers could easily give them materials to read to meet the SCH requirement. In addition, their learning activities

could be monitored. In the workshop activities, students had to spend much time completing the reading questions and reading their classmates' work for assessment. They would be embarrassed because their classmates would read their work if they did poorly; therefore, the students were forcefully encouraged to work seriously by spending more time than they wanted to. The e-learning platform forced students to learn and monitor their learning to ensure that they did not waste any time which should have been allocated to unscheduled learning activities required by the prevailing SCH system. This e-learning capability put much responsibility on the students. Based on our monitoring of students' learning, they started reading the material at the last minute, so most of them could not finish the reading. Many students only read the material to find the answers to ungraded reading questions. As a result, they did poorly in the supervised, graded quizzes. This explains the high decrease in students' attitudes on the use of e-learning for teaching.

Based on these research results, the authors would like to suggest some pedagogical implications for better practice to avoid decreasing the students' intentions to use e-learning for teaching. First, before designing or planning the materials and learning activities, both in class and at home, an anonymous survey should be conducted to find the students' attitudes towards the proposed activities, as suggested by Howard and Major (2004). Using more student-approved activities using e-learning can potentially improve their attitude towards the use of e-learning for teaching, instead of decreasing them, as found in the current study. Second, the activities in e-learning need to be designed to enable students to improve their achievement without acquiring them to work excessively. This can be done by providing learning activities that can enhance students' retention of the material. Therefore, the activities should be engaging, such as the use of videos and animated videos (Duverger & Steffes, 2012). In addition, the materials provided in e-learning should be able to facilitate interesting learning activities, such as materials involving augmented reality (Elmqaddem, 2019). Finally, quizzes can also be made less strict by allowing students to reattempt the quiz. This will prepare for the quiz less stressful for students, which hopefully gives less chance for students to negatively change their attitudes toward the use of e-learning. Being able to reattempt the quiz makes them perceive e-learning as beneficial for improving their achievement. In fact, according to Zabrukky and Bays (2015), repeating the test can prolong student retention of the material.

Conclusion

Based on previous research, we had expected that the authentic learning experience using e-learning could improve pre-service teachers' intentions to use e-learning for teaching in their future careers. We experimented with first-semester undergraduate students in a Basic English Grammar course and delivered a questionnaire based on the theory of planned behavior (TPB) for the pre-test and post-test. The results showed that the EFL students' intentions to use e-learning for teaching were significantly different in all subscales, with a p-value lower than 0.05. However, the differences were in a negative direction, where the students' intentions were higher before the students experienced authentic learning using e-learning. Further research is recommended to investigate how EFL students' familiarity with using e-learning in teacher roles affect their intentions on using e-learning for teaching in the hope that we can find a method to

improve students' intentions to use e-learning in their future teaching career.

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