

## Acceptance of Google Classroom for Learning English Exit Test

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### Abstract

Online learning has been implemented at the tertiary level by using many platforms such as the university learning management system, massive open online courses (MOOCs) and mobile applications. Online learning permits personalization and autonomous learning. However, this is not the case for the English Exit Test. An initiative was made to provide an online platform for students to practice using the language via Google Classroom. Google Classroom can be accessed as a mobile application on a smartphone or on the web by using a computer. It is essential to support the students' learning in preparation for the test since it is the requirement of graduation for degree students at Universiti Teknologi MARA. This study aimed at determining the level of acceptance in using Google Classroom for learning English Exit Test among students. The sample was selected by using purposive sampling. The data were collected by using a survey designed based on the Technology Acceptance Model (TAM)-and went through data cleansing using Statistical Packages for the Social Sciences (SPSS) Version 21. The data were then analysed by using Partial Least Squares Structural Equation Modelling (PLS-SEM). The results indicate that students positively accepted the use of Google Classroom in preparation for the English Exit Test.

**Keywords:** *online learning, technology acceptance, Google Classroom, English Exit Test*

## Introduction

English Exit Test coded as EET699 is an assessment that is compulsory for all degree students at Universiti Teknologi MARA (UiTM). EET699 must be taken before students graduate. EET 699 consists of two tests namely Speaking Test and Writing Test. Speaking Test comprises simulated questions on conversation, job interview and presentation, whereas Writing Test is a paper-based test which contains two tasks: replying to an email and writing an expository essay based on the provided situation. EET699 is graded based on Common European Framework of Reference (CEFR). Thus, the grades appear as A1 and A2 (basic users), B1 and B2 (independent users), and C1 and C2 (proficient users). The course needs to be registered at the beginning of the semester and the tests are administered at the end of the semester.

When students register for EET699, they are expected to independently prepare themselves for the tests. This is because in-class instruction is not provided and online learning activities that are specifically designed and developed for learning EET699 are limited. To date, from Google Search results, the only relevant online learning materials available are the sample test for Speaking and Writing and past-semester papers from the UiTM Library website. In response to this lack of learning support for EET registered students, a novel idea in the form of EET669 Google Classroom was initiated. EET699 Google Classroom was developed in June 2018 and ~~have~~ has been used to support the learning of EET699 at UiTM Kuala Pilah Campus, UiTM Negeri Sembilan Branch. Students who have registered for EET699 are invited to join the classroom.

The study aimed to examine the acceptance of EET699 Google Classroom (GC) among students who registered for EET699. The following is the research framework and hypotheses of the study.

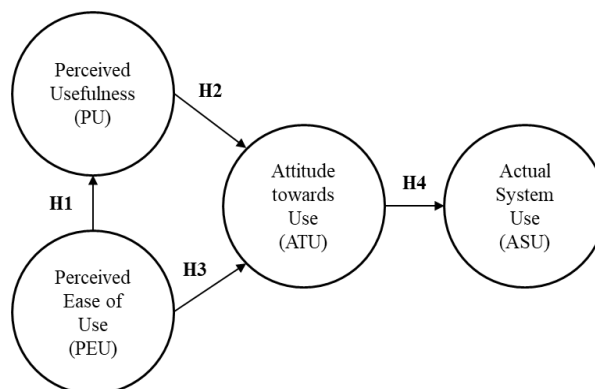


Fig 1. Research Framework

#### Research Hypotheses:

- a. H1: PEU of GC has a positive effect on PU of GC.
- b. H2: PU of GC has a positive effect on ATU of GC.
- c. H3: PEU of GC has a positive effect on ATU of GC.
- d. H4: ATU of GC has a positive effect on ASU of GC.

## Literature Review

### Google Classroom

Google Classroom (GC) was launched in 2014 (Shaharanee, Jamil, & Rodzi, 2016) and has 40 million users comprising students and teachers (BGR, 2019). GC has many advantages. First, GC is a free application. Thus, it does not burden the instructor and students. Second, GC offers flexible accessibility as it can be accessed through smartphones and personal computers. In terms of form, GC can be accessed as a phone application through smartphones by downloading the app through Google Play. GC can also be accessed through web browsers by using smartphones and personal computers. Third, GC is linked with Google Drive. Thus, it is easy to manage any documents that are posted or shared in GC. Fourth, the documents in Word, Excel and PowerPoint can be viewed and edited online by using Google Docs, Sheets and Slides. Finally, GC allows the sharing of more than 30 types of files (Protalinski, 2013). Among the most common ones used for learning purposes are Word, Excel, PowerPoint, Joint Photographic Experts Group (JPEG), Portable Document Format (PDF), Moving Pictures Expert Group 3 (MP3) and MP4. Since GC offers many advantages, many studies have been conducted on the use of GC in teaching and learning.

Al-Marroof and Al-Emran (2018) conducted a study on acceptance of GC based on TAM. The respondents were students at different departments in Al Buraimi University College, Oman involving 305 respondents comprising of 74 males and 26 females. The study investigated the acceptance of GC and the data were obtained through online survey that contains items developed using TAM elements: perceived usefulness (PU), perceived ease of use (PEOU), behavioural intention (BI), and actual use (AU). PLS-SEM was employed by using Smart PLS 3 to analyse the data. The results found positive influence between: (1) PEOU and PU ( $\beta=0.766$ ,  $p<0.05$ ), (2) PEOU and BI ( $\beta=0.588$ ,  $p<0.05$ ), (3) PU and BI ( $\beta=0.199$ ,  $p<0.05$ ), and (4) behavioural intention to use GC and actual use of GC ( $\beta=0.673$ ,  $p<0.05$ ). Al-Marroof and Al-Emran (2018) stated that PEOU and PU promote students' behavioural intention to use GC and suggested the decision makers at educational systems to have the consideration to provide the infrastructure for the implementation of GC.

Bhat, Raju, Bikramjit and Souza (2018) conducted a study on 33 participants (31 students and two instructors) to investigate the usability of GC specifically on the submission of assignments. The study compared the submission of assignment through the traditional way and GC. In the study, students were asked to submit assignments through the traditional way (handwritten and manual submission) and GC (typed-written and online). The data on submission were collected and the students and instructors were in-

interviewed. The findings indicated that submission of assignment through GC facilitates in keeping track of submission and accessing assignments, solves the problem of poor handwriting and not violating the deadline of assignment submission. Bhat et al. (2018) cautioned that assignments submitted by using GC have the tendency of plagiarism as students tend to copy their friends' assignments, but this issue may be easily solved by running a plagiarism check in order to assess the originality of students' work. Ventayen, Estira, Guzman, Cabaluna and Espinosa (2018) conducted a study to examine the usability of GC by using a self-made questionnaire and ISO 9126 standard questionnaire for evaluating the usability of software. The respondents were 59 students comprising of 50.8% females and 49.2% males. The results from the self-made questionnaire indicated GC was useful not only for academic related activities (discussion, quizzes, assignment, collaborative learning, peer tutoring, individual project, group project and examination) but also non-academic related activities (announcements and posting of results/grades). On the other hand, the results from the ISO 9126 standard questionnaire revealed that GC was effective because it was easy to understand, learn and operate, and also attractive. The study also indicated that 94.9% of the respondents agreed to recommend GC for online learning. As such, GC is highly recommended for the implementation of e-learning (Ventayen et al., 2018).

Shaharanee et al. (2016) conducted a study on the acceptance of GC based on TAM. The participants were students enrolling a subject on data mining. The participants were 82% females and only 18% males, while 97% of them were from Decision Science programme and only 3% were from Industrial Statistic programme. The questionnaire used Technological Acceptance Model with five point nominal scales in which 5 is for strongly agree and 1 for strongly disagree. The mean scores for Ease of Access, Perceive Usefulness, Communication and Interaction, Perceive Instruction Delivery and Student's Satisfaction were more than 4 which means students strongly agreed that GC impacted their learning positively. Shaharanee et al. (2016) suggested that GC is a suitable tool for teaching data mining because GC is useful in terms of utility and pedagogy.

Current studies (Al-Marooof & Al-Emran, 2018; Bhat et al., 2018; Shaharanee et al., 2016; Ventayen et al., 2018) indicate that GC is a useful tool for implementing e-learning. It is perceived as an easy-to-use tool and useful. It also has positive impacts on learning.

### Technology Acceptance Model

The Technology Acceptance Model (TAM) was introduced by Davis (1993) for evaluating the acceptance of information technology and how the characteristics system affect the users' acceptance. The model is based on psychological attitude paradigm by Fishbein and Ajzen that focuses on how to assess attitude components related to behaviours, difference between beliefs and attitudes, and identifying how external stimuli affect beliefs, attitudes and behaviour (Davis, 1993). Figure 2 shows the model proposed by Davis (1993).

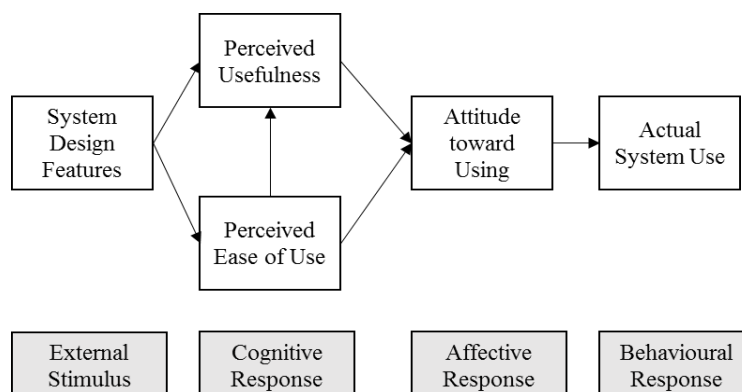


Fig 2. Technology Acceptance Model (TAM) (Davis, 1993, p. 476)

The model by Davis (1993) explains that the overall attitude of the potential user towards using a system mainly determines whether a system is used or not by a user. The model is explained by Davis (1993, p.3) as follow: (1) ATU is a function of two beliefs which are PU and PEU; (2) PEU casually affects PU; (3) system design features directly affect PU and PEU; and (4) system design features indirectly affect ATU and ASU through their direct effect on PU and PEU.

### Problem Statement

Face-to-face and non-face-to-face class are not offered by the university to prepare students for the English Exit Test. Online learning materials specifically for practicing the language for English Exit Test are also limited. Thus, an initiative was made by providing EET699 Google Classroom. It is essential to provide an online platform for students to practice using the language in

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order to prepare the students for taking English Exit Test. In order to determine the acceptance of using Google Classroom for preparing themselves in taking English Exit Test, the study was conducted by using the TAM Model.

## Methodology

The study was conducted in May 2019 at UiTM Kuala Pilah Campus, one the campus of UiTM Negeri Sembilan, Malaysia. The sample of the study was obtained through purposive sampling where the sample was identified to fit the criteria that had been set by the researchers (Creswell, 2012). The sample consisted of all students who registered for EET 699 at UiTM Kuala Pilah campus. Students were invited to join EET 699 Google Classroom through a link that was sent through Whatsapp message. They used GC to learn EET 699 independently. An online questionnaire in the form of Google Form was distributed to students through Whatsapp message after they had used GC for a month. The questionnaire contained two parts: (1) demographic profile and (2) 12 items that were based on TAM (Davis, 1993) in order to evaluate students' acceptance of GC in learning EET 699.

There were several items developed to obtain the data for the demographic profile of the sample. The items were age, gender and type of internet connection used. There are three more items that used five Likert scales namely strongly disagree, disagree, neutral, agree and strongly agree. The questions were on GC access, learning materials in GC for Writing and Speaking components.

The items in the questionnaire for measuring the model were designed based on the TAM (Davis, 1993). All items in questionnaire were employed by using five Likert scales namely strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). Every variable has four constructs. The items are as follow:

Table 1. Items for the questionnaire adapted from Davis, (1993)

	Re mark	Item
1	PE	GC is user-friendly
.	U1	
2	PE	EET 699 GC is convenient
.	U2	
3	PE	I do not need any training to use EET 699 GC.
.	U3	
4	PE	It is easy to access EET 699 Google Classroom.
.	U4	
5	PU	EET 699 GC helps me to learn EET 699 efficiently.
.	1	
6	PU	EET 699 GC helps me to improve my grades in EET 699 tests.
.	2	
7	PU	EET 699 GC helps me to save my time in learning EET 699.
.	3	
8	PU	EET 699 GC helps me to perform learning tasks quickly.
.	4	
9	AT	I want to use EET 699 GC more.
.	U1	
1	AT	I want to recommend my friends to use EET 699 GC.
0.	U2	
1	AT	I am interested to use EET 699 GC.
1.	U3	
1	AT	It is worth to use EET 699 Google Classroom.
2.	U4	
1	AS	I use EET 699 GC frequently.
3.	U1	
1	AS	I use EET 699 GC regularly.
4.	U2	
1	AS	I use EET 699 GC daily.
5.	U3	

1 AS I use EET 699 GC weekly.  
6. U4

The data were collected and analysed using two types of software. First, the descriptive data analysis for demographic data was conducted using Statistical Package for Social Sciences Version 23, whereas, the measurement model assessment was conducted by employing Partial Least Square: Structural Equation Model (PLS SEM). A software known as SmartPLS 3 was used to run PLS-SEM in order to test the hypotheses in the model.

## Results and Discussion

### Demographic Profile

There were 114 students who registered for EET699. Only 80 students (70.18%) answered the online survey. The data were then cleaned to check for missing data and scores of variables that were out of range through descriptive analysis (Pallant, 2016). The data collected had no missing data and scores of variables that were out of range.

The age range of the students was from 21 to 25 (M=22.58, SD=.938). Female students formed the majority (85%) whereas the male students made up 15% of the total.

Table 2 shows the results of items that used the five points Likert scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. Students strongly agreed that they preferred to access EET Google Classroom through Mobile App Google Classroom (M=4.30, SD=.818) and Mobile Website Google Classroom (M=4.14, SD=0.998). The means for Mobile App GC is slightly higher than that of Mobile Website GC. This may be due to Mobile App GC can be accessed more easily by using smartphones compared to Mobile Website GC that requires a computer/ laptop that is less portable. Students agreed that the learning materials in EET 699 Google Classroom are sufficient to prepare them for the Speaking Test (M=3.53, SD=.842) and Writing Test (M=3.56, SD=.809). The results indicate that materials provided for learning EET699 is adequate to help students learn EET699 independently outside the classroom. Overall, they agreed that they liked using GC (M=3.82, SD=.632), and were motivated to use GC (M=3.81, SD=.638). The overall results suggest that the use of GC for learning EET699 is promising as GC can engage students in learning EET699.

Table 2. Statistics for the items of demographic profile

	N	M	M	M	SD
	in	ax	ean		Deviation
1. Programme	80	1	2		.480
2. Age	80	1	5	2.58	.938
3. Gender	80	1	2		
4. I prefer to use Mobile App GC.	80	2	5	4.30	.818
5. I prefer to use Mobile Website GC.	80	1	5	4.14	.896
6. Internet access: Post Paid Plan	80	0	1		.497
7. Internet access: Prepaid Plan	80	0	1		.480
8. Internet access: University WiFi	80	0	1		.487
9. EET 699 Google Classroom is sufficient to prepare me <sup>[1]</sup> <sub>SEP</sub> for Speaking Test.	80	1	5	3.53	.842
10. EET 699 Google Classroom is sufficient to prepare me <sup>[1]</sup> <sub>SEP</sub> for Writing Test.	80	1	5	3.56	.809
11. I like using EET699 GC.	80	3	5	3.82	.632

12. I am motivated in using EET699 GC	8	2	5	3.	.638
	0			81	

### Measurement Model Assessment

The reliability of the items was measured first by assessing the convergent validity using the factor loadings, Cronbach's Alpha, composite reliability (CR), average variance extracted (AVE) and Heterotrait-Monotrait Ratio (HTMT).

Table 3 shows the factor loadings, Cronbach's Alpha, CR and AVE. The threshold value for loadings is  $\geq 0.7$ , Cronbach's Alpha is  $\geq 0.7$ , CR is  $\geq 0.5$  and AVE is  $\geq 0.5$  (Hair, Hult, Ringle, & Sarstedt, 2017). All loadings were greater than 0.7 except for PEU3 (0.175). Therefore, only one item, PEU3 was deleted since the loading was below 0.7. All values for Cronbach's Alpha, CR and AVE were more than the threshold values.

Table 3. Discriminant validity					
Construct	Item	Loading	Cronbach's Alpha	CR	AVE
Perceived Usefulness	PU1	0.889	0.908	0.936	0.784
	PU2	0.876			
	PU3	0.851			
	PU4	0.925			
Perceived Ease of Use	PEU1	0.954	0.916	0.947	0.857
	PEU2	0.939			
	PEU3	<b>0.175</b>			
	PEU4	0.883			
Attitude Towards Use	ATU1	0.901	0.929	0.950	0.825
	ATU2	0.939			
	ATU3	0.939			
	ATU4	0.851			
Actual System Use	ASU1	0.863	0.839	0.892	0.673
	ASU2	0.841			
	ASU3	0.761			
	ASU4	0.813			

Note: CR=Composite Reliability, AVE=Average Variance Extracted

Next, Fornell and Larcker Criterion was assessed to check discriminant validity. Discriminant validity is assessed by comparing the squared correlations between constructs and the variance extracted for a construct (Fornell & Larcker, 1981). The squared correlations between constructs must be higher than the variance extracted for a construct in order to establish the discriminant validity (Hair et al., 2017). Table 4 indicates that the discriminant validity was established.

Table 4. Fornell and Larcker Criterion

	ATU	ASU	PEU	PU
ATU	<b>0.908</b>			
ASU	0.496	<b>0.820</b>		
PEU	0.694	0.368	<b>0.926</b>	
PU	0.826	0.437	0.806	<b>0.886</b>

Note: Diagonals (bold) represent the square root of the average variance extracted while the other entries represent the correlations.

Another way of assessing discriminant validity is through Heterotrait-Monotrait Ratio (HTMT). Table 5 indicates that there were discriminant validity problems according to the  $HTMT_{0.90}$  criteria for all constructs. HTMT values close to 1 indicate a lack of discriminant validity. Using the HTMT as a criterion involves comparing it to a predefined threshold. Henseler, Ringle and Sarstedt (2015) recommended the threshold of HTMT criterion of 0.90 to indicate that discriminant validity between two reflective constructs is established. Table 5 shows that HTMT ratio for all constructs were below 0.90. Thus, the discriminant validity between two reflective constructs was established.

Table 5. Heterotrait-Monotrait Ratio (HTMT)

	ATU	ASU	PEU
ASU	0.550		
PEU	0.753	0.420	
PU	0.896	0.494	0.880

The results indicated that the convergent validity using the factor loadings, Cronbach's Alpha, composite reliability (CR), average variance extracted (AVE) and Heterotrait-Monotrait Ratio (HTMT) were all fulfilled. Therefore, the measurement model assessment indicated that all the items for all constructs was reliable.

### Structural Model Assessment

The structural model was assessed by conducting a bootstrapping of 5000 resample (Hair et al., 2017). Figure 3 shows the research model. Only one item, PEU3, was deleted due to the low loading of 0.175 which was below the threshold (0.7). Before assessing the structural model, the collinearity assessment was conducted by evaluating the Variance Inflated Factor (VIF) in order to check any collinearity problem. Table 6 indicates that VIF was fulfilled as all the values of VIF were less than 5 as recommended by Hair et al. (2017). Then, the  $R^2$ , beta ( $\beta$ ) and the corresponding t-values, and the predictive relevance ( $Q^2$ ) and the effect sizes ( $f^2$ ) were evaluated (Hair et al., 2017).

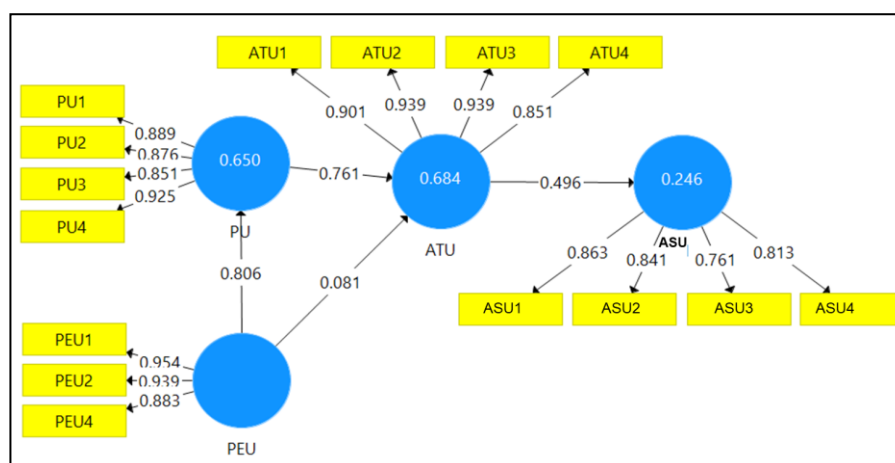


Fig. 3 The research model <sup>[11]</sup><sub>SEP</sub> Note: PEU3 was deleted (loading=0.175)

Table 6. Variance Inflated factor (VIF)

	AT	ASU	PEU	PU
U				
ATU		1.00		
PEU	2.85			1.00
6				
PU	2.85			
6				

Table 7 shows the results of path coefficient ( $\beta$ ) and the test of hypotheses.  $\beta < 0.3$  indicates that the relationship between two construct is weak (Hair et al., 2017) while  $\beta > 0.8$  indicates that the relationship between two construct is substantial (Chin, 1998). A hypothesis is supported when  $t > 1.96$  and  $p < 0.05$  (Hair et al., 2017). PEU had a positive effect on PU of GC ( $\beta = 0.806$ ,  $p < 0.01$ ), PU had a positive effect on ATU of GC ( $\beta = 0.761$ ,  $p < 0.01$ ), PEU had a positive effect on ATU of GC ( $\beta = 0.081$ ,  $p < 0.01$ ) but was not significant, and ATU had a positive effect on ASU to Use of GC ( $\beta = 0.496$ ,  $p < 0.01$ ).

Table 7. The test of hypotheses and the path coefficients

Hypothesis	Relationship	Path Coefficient	T-Statistics	Result
H1	PEU $\rightarrow$ PU	0.806	15.817	Supported**
H2	PU $\rightarrow$ ATU	0.761	7.051	Supported**
H3	PEU $\rightarrow$ AT	0.081	0.964	Not Supported*
	U			
H4	ATU $\rightarrow$ AS	0.496	6.313	Supported**
	U			

Note: \* $p < 0.05$ , \*\* $p < 0.01$

The coefficients of determination ( $R^2$ ) value indicates the variance proportion for a dependent variable that is explained by an independent variable in a regression model. Hair et al. (2017) stated that the level of prediction is substantial, moderate and weak when  $R^2 = 0.75$ ,  $R^2 = 0.50$  and  $R^2 = 0.25$  respectively.  $R^2$  for PU was 0.650; thus 65.0% of the variance in PU can be explained by the extent of PEU. Next,  $R^2$  for ATU was 0.684; thus 68.4% of the variance in ATU can be explained by PU. Lastly,  $R^2$  for ASU was 0.246; thus 24.6% of the variance in ASU can be explained by ATU.

The predictive power of a model was then evaluated by using blindfolding in order to obtain  $Q^2$  values. The value of  $Q^2$  should be larger than 0 in order to indicate that a model is relevant (Hair et al., 2017). Table 8 indicates that all  $Q^2$  values were more than 0; thus the model had sufficient predictive relevance.

Table 8. Predictive relevance ( $Q^2$ )

Construct	$Q^2$
ATU	0.529
ASU	0.145
PU	0.477

The effect of exogenous construct on endogenous construct is measured by the effect size ( $f^2$ ). The effect size is large, medium and small when  $f^2$  are 0.35, 0.15, and 0.02 (Cohen, 1988). Table 9 indicates the two relationships that had large effect were between PU and ATU ( $f^2 = 0.641$ ), and PEU and PU. The relationship between ATU and ASU had a medium effect, whereas the relationship between PEU and ATU only had a small effect.

Table 9 Effect size

Relationship	$f^2$	Effect size
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ATU□ASU	0.326	Medium
PEU□PU	1.856	Large
PEU□ATU	0.007	Small
PU□ATU	0.641	Large

The study had postulated four hypotheses. From the results, it can be concluded that:

- a. (1) H1: PEU of GC has a positive effect on PU of GC. The relationship between the two constructs (PEU□PU) was supported ( $t=15.817$ ,  $p<0.01$ ) and the strength of relationship was significantly high ( $\beta=0.806$ ,  $p<0.01$ ). The effect size was large ( $f^2=1.856$ ). As a result, H1 was accepted.
- b. H2: PU of GC has a positive effect on ATU of GC. The relationship between the two constructs (PU□ATU) was supported ( $t=7.051$ ,  $p<0.01$ ) and the strength of relationship was moderate ( $\beta=0.761$ ,  $p<0.01$ ). The effect size was large ( $f^2=0.641$ ). As a result, H2 was accepted.
- c. H3: PEU of GC has a positive effect on ATU of GC. The relationship between the two constructs (PEU□ATU) was not supported ( $t=7.051$ ,  $p<0.05$ ) and the strength of relationship was weak ( $\beta=0.761$ ,  $p<0.480$ ) and not significant as  $p>0.05$ . The effect size was also small ( $f^2=0.0071$ ). As a result, H3 was rejected.
- d. H4: ATU of GC has a positive effect on ASU to Use GC. The relationship between the two constructs (ATU□ASU) was supported ( $t=6.313$ ,  $p<0.01$ ) and the strength of relationship was moderate ( $\beta=0.496$ ,  $p<0.01$ ). The effect size was medium ( $f^2=0.326$ ). As a result, H4 was accepted.

According to the values of  $R^2$ ,  $Q^2$  and  $f^2$ , PEU and PU are important predictors in the success of the implementation of GC in learning EET699. It is because PEU strongly influences PU while PU strongly influences ATU. However, PU is not important to influence attitude towards the use of GC in learning EET699. Another important predictor that gives impact of GC in learning EET699 was ATU as it moderately influences ASU to use GC. In terms of usefulness and ease of use of GC, the results were consistent with the results from other research (Al-Marroof & Al-Emran, 2018; Bhat et al., 2018; Shaharanee et al., 2016; Ventayen et al., 2018) except for the relationship between PEU and ATU which contradicted the study by Al-Marroof and Al-Emran (2018).

## Conclusion

When students perceived GC as an easy tool to use, it may influence them to believe that GC is useful for learning. Thus, an instructor should highlight to the students on how easy it is to use GC. Consequently, it may lead to the success of implementing GC as a teaching and learning tool for e-learning.

As for learning EET699, GC needs to be considered as a platform to provide learning materials since in-class instruction is not provided. The research indicates that students found that GC was easy to use and useful which greatly influenced their attitude toward using GC and their actual use of GC. It is important to ensure that students have positive attitudes towards using GC in order to ensure that they have the actual use of GC for learning EET699 voluntarily and independently.

In using EET699 Google Classroom, PEU had no direct significant relationship with ATU. It means that although GC was perceived easy to use, it did not have any impact on ATU unless the students perceived the GC was useful in helping them to prepare for English Exit Test. Thus, in this case, students perceived the GC was useful for its content could help them in preparing themselves for English Exit Test (refer to the finding for the demographic questions 9 and 10). The content was selected based on the learning objectives of the test. Therefore, the findings suggest that GC is useful when it is developed to achieve learning objectives (in this case is to prepare the students for taking English Exit Test). GC is merely a tool for online learning. The usefulness of GC greatly depends on how it is designed and developed in achieving the learning objectives. Learning objectives are one of the crucial factors in the instructional design (Gagne, Briggs, & Wager, 1992; Isman, 2011).

This study had several limitations. One of the limitations was that the data were collected from only one campus. Thus, the results cannot be applied to other UiTM campuses and other learning institutions. Another limitation was that the students were exposed to using GC for only one month.

Future research should examine the effectiveness of using GC compared to other online learning platforms (such as MOOCs or the university official learning portal) or conventional teaching methods through quasi-experiments as more empirical findings may help in understanding the impact of GC on learning compared to other platforms or methods. Research on instructors should also be conducted in terms of acceptance of using GC and the readiness to design and develop learning materials for classrooms in GC. Another aspect of research is to focus on participants. To date, research on GC such as usability, acceptance and effectiveness on students at the primary and secondary school levels specifically in Malaysia is limited. It is significant to conduct the research on the group as ICT has been implemented and part of the initiatives in the Malaysia Education Blueprint (Ministry of Education, 2013).

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