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Students' Engagement, Satisfaction, and Difficulties Encountered in the Utilization of Google Classroom

[1]Helen N. Perlas, [2]Rex P. Flejoles

Iloilo Science and Technology University Miagao Campus Iloilo, Philippines

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Abstract: **This study was conducted to determine students' engagement in a Google classroom as well as their satisfaction and difficulties encountered in utilizing the said application. This study involved 29 students, 12 from the Bachelor of Secondary Education major in Biological Science (BSEd) 3C and 17 from the Bachelor of Science in Information Technology (BSIT) 3G, of Iloilo Science and Technology University Miagao Campus. Students' engagement was based on their participation in the eight (8) assigned activities. Students' satisfaction was based on their responses to the items on the instrument prepared by the researchers. The instrument used contained 18 items based on the ISO/IEC 25010 model. While the difficulties encountered was based on the problems they listed down. BSEd 3C students' engagement was found to be higher than that of the BSIT 3G students. Both groups of students had at least high satisfaction on the Google classroom's functional suitability and usability. Poor internet connection was the mostly identified difficulty encountered by them.**

Keywords: **Google classroom, blended learning, e-learning, student engagement, learning management system.**

I. INTRODUCTION

A. Background of the Study

Various learning environments may be chosen to implement teaching-learning process activities for a certain course. This learning environment is a diverse physical locations, contexts, and cultures in which students learn [1]. The choice of environment depends on many factors such as teacher knowledge, learning styles, and available resources. With today's interconnected and technology-driven world, learning environment may be virtual, online, or remote [2].

Online delivery mode, whether synchronous or asynchronous, had shown good effect in student's learning [3]. It is usually associated to distance education and e-learning. E-learning theory recognizes the cognitive science principles that describe how electronic educational technology can be used and designed to promote effective learning [4].

The implementation of e-learning strategy may improve teaching effectiveness and academic achievement [5]. If full online delivery is not an option, a blended learning may be considered. On one perspective, blended learning refers to a combination of face-to-face and online learning activities [6].

Online activities may be implemented in many ways. However, any computer-based learning may result to unhappiness among involved students if such is implemented with insufficient support [7]. Learning Management System (LMS), which allows communication and interaction between teachers and students in virtual spaces [8] is available as an option. As an example, Google classroom may be utilized.

Google classroom streamlines assignment, boosts collaboration, and fosters seamless communication [9] in teaching-learning process. Among its features include creating of questions, assignments, and announcements from teachers. In response, students may post answers and upload files. However, like any system the appreciation of its quality differs from person to person, such as a student may be reluctant to utilize its features if some issues are encountered [10].

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On the quality of software, an ISO/IEC 25010 product quality model may be considered since it determines quality characteristics when evaluating the properties of a software product [11]. It has eight (8) characteristics, namely: functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. The functional suitability and usability could be easily evaluated by most of the users. Functional suitability refers to the degree to which a system provides functions that meet stated and implied needs [12]. It has three (3) sub-characteristics, namely: functional completeness, functional correctness, and functional appropriateness. While usability refers to which a system can be used to achieve goals with effectiveness, efficiency, and satisfaction in a specified context of use [13].

B. Conceptual Framework

Taking advantage of the benefits of technology and believing in the advantages of e-learning, this study was conducted. Fig. 1 shows the conceptual framework of the study. The independent variable is the section, while the dependent variables are engagement in Google classroom, satisfaction of the Google classroom's functional suitability and usability, and difficulties encountered in utilizing the Google classroom.

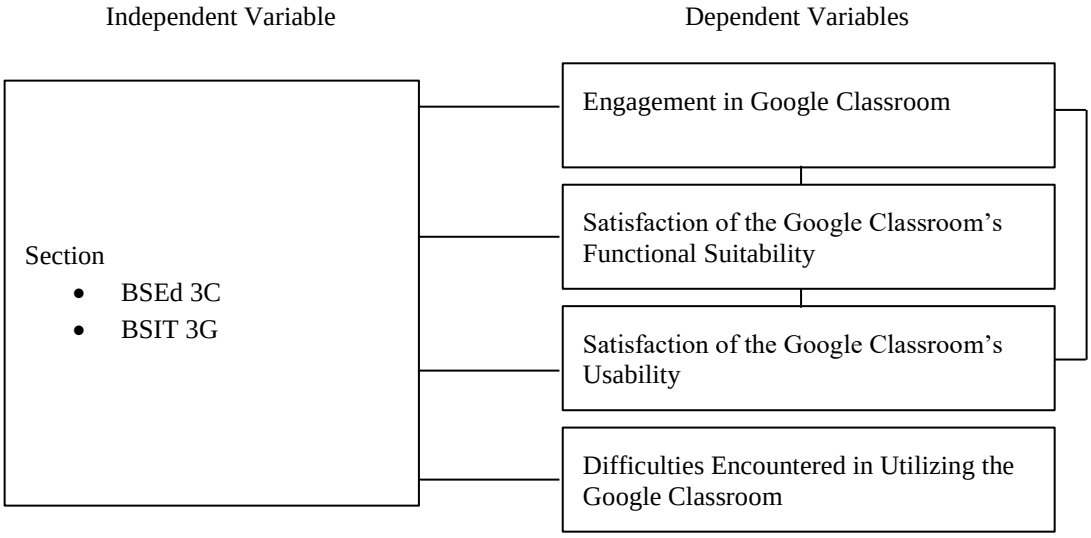

Fig. 1 Showing the Relationship among Variables

C. Statement of the Problem and Hypotheses

This study focused on determining students' engagement in Google classroom as well as their satisfaction and difficulties encountered in utilizing the said application.

Specifically, this study aimed to answer the following questions.

1. What are the levels of students' engagement in Google classroom and their satisfaction of the Google classroom's functional suitability and usability when taken as an entire group and when grouped according to section?

2. What are the difficulties encountered by the students in utilizing the Google classroom?

3. Are there significant differences in students' engagement in Google classroom as well as students' satisfaction of the Google classroom's functional suitability and usability when grouped according to section?

4. Are there significant relationships among the students' engagement in Google classroom, students' satisfaction of the Google classroom's functional suitability, and students' satisfaction of the Google classroom's usability?

In line with the problems, the following null hypotheses were tested at the 0.05 level of significance.

1. There are no significant differences in students' engagement in Google classroom as well as students' satisfaction of the Google classroom's functional suitability and usability when grouped according to section.

2. There are no significant relationships among the students' engagement in Google classroom, students' satisfaction of the Google classroom's functional suitability, and students' satisfaction of the Google classroom's usability.

II. METHODOLOGY

A. Participants

This study involved students from the two sections of Iloilo Science and Technology University (ISAT U) Miagao Campus, who were officially enrolled during the Second Semester, Academic Year 2017-2018. These sections were Bachelor of Secondary Education major in Biological Science (BSEd) 3C and Bachelor of Science in Information Technology (BSIT) 3G. They were purposively chosen since they were under the class of one the researchers.

Out of 54 students, only 29 had complete data necessary in the analysis. Data from 12 out of 24 BSEd 3C students enrolled in ICT2 (Multimedia in Science) and 17 out of 30 BSIT 3G students enrolled in CS10 (Web Information Systems) were included.

B. Materials

Two online classes were created in Google classroom, one for the BSEd 3C and another for the BSIT 3G. Each class was provided with eight (8) activities, six (6) activities were uploading of files while two (2) were quizzes. Students' engagement was based on their participation on the assigned activities.

Mean was used to determine the students' engagement and described based on the following scale arbitrarily assigned by the researchers: "very low" for a mean range of 0.00-1.60, "low" for a mean range of 1.61-3.20, "average" for a mean range of 3.21-4.80, "high" for a mean range of 4.81-6.40, and "very high" for a mean range of 6.41-8.00.

To determine students' satisfaction of the Google classroom's functional suitability and usability, the researchers prepared a questionnaire. The instrument used contains 18 questions based on the ISO/IEC 25010 (Software Product Quality) model. Out of the eight (8) main characteristics identified in the model, only two (2) characteristics were covered in the instrument: functional suitability with three (3) sub-characteristics and usability with six (6) sub-characteristics. The choice took into consideration those characteristics that may be clearly experienced by the students who served as evaluators.

Functional suitability includes the following sub-characteristics: functional completeness, functional correctness, and functional appropriateness. The following six (6) items were prepared to determine students' satisfaction of the Google classroom's functional suitability: (a) I can say that the application contains the necessary features to help me learn the subject; (b) I can say that the application contains all the intended functions and capabilities to help me learn the subject; (c) I can say that the application generates correct results on online examinations; (d) I find the application responsive to the commands I initiated; (e) I am provided with information relevant to the subject; and (f) I am provided with relevant functions and corresponding capabilities.

While usability has the following sub-characteristics: appropriateness recognisability, learnability, operability, user error protection, user interface aesthetics, and accessibility. The following 12 items were prepared to determine students' satisfaction of the Google classroom's usability: (a) I can easily determine whether the application is appropriate to my learning of the subject; (b) I can easily know the intended use of this application; (c) I can easily learn how to use the application; (d) I am satisfied with the features and capabilities of this application; (e) I am guided by the given information on how to use this application; (f) I can use the application without much effort; (g) I am provided with corresponding confirmation to commands I initiated; (h) I am prompted with corresponding feedback to my inappropriate inputs; (i) I find the interface of this application pleasing to my eyes; (j) I find the format of texts and other objects satisfying; (k) I can access the contents in different ways; and (l) I can easily access the information and features.

Two (2) corresponding statements were phrased for each sub-characteristic. Each statement is answerable by strongly disagree, disagree, slightly disagree, slightly agree, agree, and strongly agree with the weight of 1, 2, 3, 4, 5, and 6 respectively. Mean was used to determine the students' satisfaction of Google classroom's functional suitability and usability and described based on the following scale arbitrarily assigned by the researchers: "very low" for a mean range of 1.00-2.00, "low" for a mean range of 2.01-3.00, "average" for a mean range of 3.01-4.00, "high" for a mean range of 4.01-5.00, and "very high" for a mean range of 5.01-6.00. Performing the reliability test using the data from the respondents, the obtained Cronbach's alpha value for the functional suitability was 0.861 (0.861 based on standardized items). While, the obtained Cronbach's alpha value for the usability was 0.939 (0.939 based on standardized items).

Lastly, to determine students' difficulties encountered in using the Google classroom, they were asked to write them down.

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III. RESULTS AND DISCUSSION

A. Engagement and Satisfaction of the Students

TABLE I: STUDENTS' ENGAGEMENT AND SATISFACTION

Parameters	M	Description	SD
Students' Engagement			
Entire Group	4.59	Average	2.47
BSEd 3C	7.00	Very High	1.54
BSIT 3G	2.88	Low	1.27
Students' Satisfaction on Functional Suitability			
Entire Group	4.74	High	0.74
BSEd 3C	4.97	High	0.32
BSIT 3G	4.57	High	0.90
Students' Satisfaction on Usability			
Entire Group	4.79	High	0.76
BSEd 3C	5.13	Very High	0.37
BSIT 3G	4.55	High	0.87

Table 1 shows the students' engagement in Google classroom and their satisfaction of the Google classroom's functional suitability and usability. Students' engagement when taken as an entire group was "average". When grouped according to section, BSEd 3C students' engagement was "very high", while BSIT 3G students' engagement was "low". As to Google classroom's functional suitability, students' satisfaction when taken as an entire group and when grouped according to section was consistently "high". In terms of Google classroom's usability, students' satisfaction when taken as an entire group was "high". When grouped according to section, BSEd 3C students' satisfaction was "very high", while only "high" among BSIT 3G students.

B. Encountered Difficulties

TABLE II: STUDENTS' DIFFICULTIES ENCOUNTERED IN UTILIZING GOOGLE CLASSROOM

Difficulties encountered	f	%
Poor internet connection	21	72
Unavailability of the Internet connection	9	31
Uncomfortable with some features	9	31
Less familiarity of the application	7	24
Unrecalled login credential	5	17
Poor feature of the application	4	14

Table 2 shows the students' difficulties encountered in utilizing the Google classroom. The most encountered problem was poor internet connection.

C. Students' Engagement and Satisfaction Differences

TABLE III: MANN-WHITNEY U TEST RESULTS ON STUDENTS' ENGAGEMENT AND SATISFACTION

Parameters	Mean Rank	Mann-Whitney U	p
Students' Engagement			
BSEd 3C	22.79	8.5	.000
BSIT 3G	9.50		
Students' Satisfaction on Functional Suitability			
BSEd 3C	16.67	82.0	0.368
BSIT 3G	13.82		
Students' Satisfaction on Usability			
BSEd 3C	18.96	54.5	0.035
BSIT 3G	12.21		

Table 3 shows the difference in students' engagement and students' satisfaction on the functional suitability and usability of the Google classroom. Significant difference was found in the Google classroom engagement between BSEd 3C and BSIT 3G students (U=8.5, p=0.000). This means that BSEd 3C students were more engaged in the Google classroom than BSIT 3G students. As to the Google classroom's functionality, no significant difference was found in students' satisfaction between BSEd 3C and BSIT 3G (U=82.0, p=0.368). This result shows that the BSEd 3C students' satisfaction of the Google classroom's functional suitability was the same as that of the BSIT 3G. In terms of the Google classroom's usability, significant difference was found in students' satisfaction between the BSEd 3C and the BSIT 3G (U=54.5, p=0.035). This result suggests that the BSEd 3C students' satisfaction of the Google classroom's functional suitability was higher than that of BSIT 3G.

D. Students' Engagement and Satisfaction Relationships

TABLE IV: SPEARMAN'S RANK CORRELATION ON STUDENTS' ENGAGEMENT AND SATISFACTION

Parameters	rho	p
Students' Engagement and Functional Suitability Satisfaction	.198	.304
Students' Engagement and Usability Satisfaction	.507	.005
Functional Suitability Satisfaction and Usability Satisfaction	.771	.000

Table 4 shows the correlation among students' engagement and satisfaction. No significant relationship was found between the students' engagement and the students' satisfaction of the Google classroom's functional suitability, rho=0.198, p=0.304. While, significant relationship was observed between the students' engagement and the students' satisfaction of the Google classroom's usability, rho=0.507, p=0.005. Also, significant relationship existed between the students' satisfaction of the Google classroom's functional suitability and usability, rho=0.771, p=0.000.

IV. CONCLUSION

The BSEd 3C students were more engaged than the BSIT 3G students. This may be attributed to becoming soon-to-be teachers of the former. They might have felt the importance of their participation in the learning activities regardless of a strategy chosen by a teacher. Students must be encouraged to involve actively in online activities. Greater online interaction has a positive impact on performance [5].

However, organizational factor, such as infrastructure, influences the learning process [14]. In this study, poor Internet connection obviously created difficulties among students. To minimize such a problem on poor Internet connection, schools that intend to utilize any online system must provide sufficient Internet account. Alternatively, students are encouraged to acquire their own Internet connection.

The Google classroom's functional suitability and usability were highly commended by the students. Such system provides relevant and implied features, hence considered to be of good quality. Moreover, it shows effectiveness and efficiency expected by the users. However, perspectives of the users in terms of usability differ, as in this case between the Education students and the IT students. To reinforce the results of this study, similar study is recommended involving more students and increasing the number of sections.

Direct, significant relationships exist between engagement and satisfaction on usability as well satisfaction on functional suitability and satisfaction on usability. As one is more engaged to the system, he or she is more satisfied on its usability, and vice versa. Furthermore, as one is becoming more satisfied on a system's functional suitability, he or she is also satisfied on its usability, and vice versa. To increase appreciation of the use of the Google classroom and similar system, student should utilize it more often for them to be more familiar of its features and find ease and comfort in using it. For teachers, they may consider including more activities for students to be more engaged with the system.

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