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Analysis of User Satisfaction with the Google Classroom Application in Animation Engineering Practicum using the PIECES Method

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Abstract

Currently, the use of online learning media is still widely applied by various campuses in Indonesia, this is because there are still some students who still do not understand the material in direct learning which requires hybrid (offline-online) learning. This Media Knowledge Management System (KMS) has become supporters of online learning, one of which is Google Classroom. Google classroom is one of the learning media that is very popular and used. The aim of this research is to identify the level of satisfaction and level of importance as well as the weaknesses and strengths of the Google Classroom application in animation engineering practicum. This research uses the PIECES framework method which consists of Performance, Informations and data, Economics, Control and security, Efficiency and Service. The sample used was students (semester 4 in classes 4A and 4D) at Trunojoyo Madura University. The results of this research obtained an average score for each domain, namely the Performance domain got a score of 4 (Satisfied), Information and data got a score of 3.88 (Satisfied), Economy got a score of 4.5 (Very Satisfied), Control and security got a score a score of 3.88 (Satisfied), Efficient gets a score of 3.66 (Very Satisfied) and Service gets a score of 3.93 (Very Satisfied). Meanwhile, the total average level of satisfaction from all domains is 3.97 (Satisfied).

Keywords: User Satisfaction, *Google Classroom*, *PIECES Framework*

1. Introduction

Revolution 5.0 in the use of technology in the world of Indonesian education is very important and essential. Learning activities using technical media are called e-learning. The main concept of e-learning is to facilitate the learning process through the distribution of learning materials, exams and assessments that can be accessed anytime and anywhere. The use of e-learning is a response to technical learning problems as well as problems related to learning resources and materials, thereby enabling students to advance the learning process in terms of looking for material to expand their knowledge [1]. Currently, the use of e-learning is still widely applied by various campuses in Indonesia, this is because there are still some students who still do not understand the material in direct learning which requires hybrid (offline-online) learning. The Media Knowledge Management System (KMS) is the support online learning. An example of an e-learning application is Google Classroom. This application is really needed by students, students, teachers, lecturers and everyone who is studying.

Google Classroom is an application owned by Google which has features that can support the teaching and learning activities of educators and students, one of which is the feature on the main page, namely the display of student assignment lists and class layouts which can make it easier for students to find assignments. Then there is a create assignments feature that educators can use to create school assignments or share learning materials in video form or via paperword. Apart from that, there is a comments column feature that students can use to discuss learning material provided by educators or to discuss with other participants [2].
One of the many studies related to analyzing user satisfaction with the PIECES framework is research that aims to evaluate user satisfaction with the Google classroom system from the perspective of students. The focus of this research is to determine the level of satisfaction of Trunojoyo Madura University students. The research aims to identify the level of satisfaction and level of interest as well as the weaknesses and strengths of the Google classroom application in animation engineering practicum. Another aim of this research is to determine the level of satisfaction with the use of e-learning in informatics learning [3].

2. Material

2.1. Object of research

This research was conducted on students (semester 4 in classes 4A and 4D) at Trunojoyo Madura University. This research as a whole was carried out on May 28 - June 10 2024.

2.2. Research flow

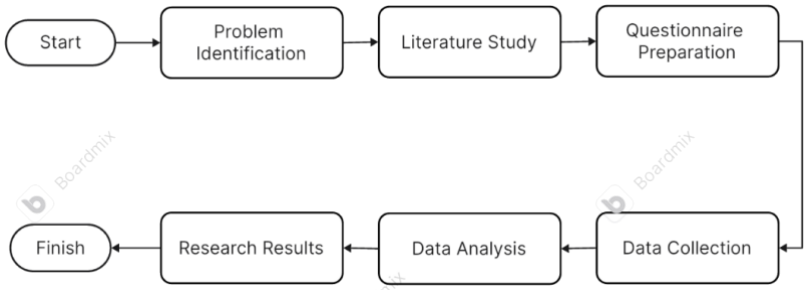

Fig. 1: Research flow [6]

a. Identification of problems

Google Classroom is a web-based online learning application created to facilitate learning activities between teachers and students without having to meet face to face. Researchers want to measure the level of user satisfaction to find out the advantages and disadvantages of using the Google Classroom application in animation engineering practicum as evaluation material so that meet the needs of users.

b. Study of literature

PIECES is a method that has six categories in classifying and solving system problems: [1], [4] – [12]. These include Performance, Information and Data, Economics, Control and security, Efficiency, and Service. This research will apply these variables to produce additional results that can be considered in system development [6]

c. Preparation of Questionnaires

Table 1: Questionnaire questions

No	Question code	Question
A.	Performance	
1	P1	The Google Classroom application runs smoothly and responsively
2	P2	The Google Classroom interface is easy for users to understand
3	P3	The Google Classroom application provides the features needed to support Animation Engineering practicum
4	P4	The Google Classroom application can facilitate the workload of Animation Engineering practicum well
B.	Information and Data	
1	I1	Initial use tutorial is quite helpful for new users
2	I2	Practical materials and instructions are easy to understand and accessible via Google Classroom.
3	I3	Google Classroom makes it possible to access practical materials and communicate with lecturers and classmates easily
4	I4	Google Classroom helps me in organizing and managing Animation Engineering practicum assignments
C.	Economics	
1	E1	The quality of service on Google Classroom is commensurate with the costs incurred.
2	E2	Google Classroom Does not require large internet data (quota) for access.
D.	Control and security	
1	C1	I feel my data and information are safe when using Google Classroom
2	C2	Google Classroom has adequate access controls to ensure data privacy and security.
3.	C3	I feel comfortable using Google Classroom to share assignments and practical materials
E.	Efficiency	
1	F1	Google Classroom helps me save time and complete Animation Engineering practicum assignments more efficiently
2	F2	Google Classroom helped me complete my Animation Engineering practicum assignments in a more organized and structured manner
3.	F3	Google Classroom helps me collaborate with lecturers and classmates more easily and effectively

F.	Service	
1	S1	The services provided by Google Classroom are according to your needs
2	S2	Documentation and guides for using Google Classroom are easy to access and understand
3	S3	I got quick and clear answers to my questions about Google Classroom

d. Data Collection

The data collection method used was a questionnaire. This method is efficient when the researcher has determined the variables to be measured and understands the respondents' expectations [6]. Primary data was obtained through a Google questionnaire. According to the book "Foundations of Behavioral Research" by Kerlinger and Lee, in quantitative research, a minimum of 30 samples is recommended [15]. The questionnaire was conducted closed-ended, where respondents chose from the answer options provided for each question.

e. Data Analysis and Evaluation

Data obtained from the results of a questionnaire regarding the level of satisfaction of Google Classroom users in the animation technique practicum were analyzed using a Likert scale using the following formula [12].

RK = JSK/JK

Information:

RK = Average Satisfaction

JSK = Total Questionnaire Score

JK = Number of Questionnaires

To measure user satisfaction, researchers utilized the following Kaplan and Norton model [1]

Table 2: Assessment Characteristics

No	score value	information
1	1,00 - 1,79	Very Dissatisfied
2	1,80 - 2,59	Dissatisfied
3	2,60 - 3,39	Doubtful - Doubtful
4	3,40 - 4,19	Satisfied
5	4,20 - 5,00	Very Satisfied

With the table above, the assessment will use a Likert scale measurement with a score of 1 to 5 which comes from the PIECES Framework [2].

Table 3: Likert Scale Instrument

PK	STS	TS	N	S	SS
Score	1	2	3	4	5

3. Result and Discussion

3.1. Classification of Respondents

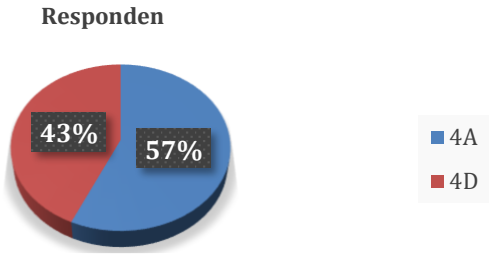

Fig. 2: Classification by class type

This questionnaire was filled in by 37 respondents from Trunojoyo Madura University students from the Informatics Education Department. The classification of respondents based on class type (classes 4A and 4D) can be seen in the figure, stating that the number of respondents from class 4A was 21 people with a percentage of 57% and class 4D was 16 people with a percentage of (43%)

3.2. Questionnaire Results and Calculation of Weights

This stage is carried out after the information has been obtained through a questionnaire using the PIECES Framework method, in order to carry out a perfect analysis using a Liker scale, where the Liker scale measurement follows six predetermined variables; Performance, Information and Data, Economics, Control and security, Efficiency, and Service [5].

1. Performance Variables

Table 4: Perfomance Variables

Question	Respondent				
	STS	**TS**	**N**	**S**	**SS**
The Google Classroom application runs smoothly and responsively	1	1	5	14	17
The Google Classroom interface is easy for users to understand	2	0	2	18	16
The Google Classroom application provides the features needed to support Animation Engineering practicum	1	3	9	15	10
The Google Classroom application can greatly simplify the workload of Animation Engineering practicum	1	3	6	20	8
Total	5	7	22	67	51

$$\text{RK} = \frac{(5*1)+(7*2)+(22*3)+(67*4)+(51*5)}{(5+7+22+67+51)}$$

$$RK = \frac{608}{152}$$

$$RK = 4$$

The results obtained from calculating the average level of satisfaction of Google Classroom users in Performance Variables were categorized as 4 (Satisfied). It can be concluded that Performance Variables is able to provide good service to its users during the use phase

2. Information and Data Variables

Table 5: Information and Data Variables

Question	Respondent				
	STS	**TS**	**N**	**S**	**SS**
The initial usage tutorial is quite helpful for new users	2	1	8	18	9
Practical materials and instructions are easy to understand and accessible via Google Classroom.	2	1	4	22	9
Google Classroom makes it possible to access practical materials and communicate with lecturers and classmates easily	1	3	10	12	12
Google Classroom helped me organize and manage Animation Engineering practicum assignments	3	0	6	14	15
Total	8	5	28	66	45

$$\text{RK} = \frac{(8*1)+(5*2)+(28*3)+(66*4)+(45*5)}{(8+5+28+66+45)}$$

$$RK = \frac{591}{152}$$

$$RK = 3{,}88$$

The results obtained from calculating the average level of satisfaction of Google Classroom users in Information and Data Variables received a value of 3.88 which was categorized as (Satisfied). It can be concluded that Information and Data Variables is able to provide good service to its users during the use phase

3. Economics Variables

Table 6: Economics Variables

Question	Respondent				
	SS	**S**	**N**	**TS**	**STS**
The quality of service on Google Classroom is commensurate with the costs incurred.	0	0	1	10	27
Google Classroom does not require large internet data (quota) for access.	0	0	3	20	15
Total	0	0	4	30	42

$$\text{RK} = \frac{(0*1)+(0*2)+(4*3)+(30*4)+(42*5)}{(0+0+4+30+42)}$$

$$RK = \frac{342}{76}$$

$$RK = 4.5$$

The results obtained from the calculation of the average level of satisfaction of Google Classroom users in Economics Variables were categorized as 4.5 (Very Satisfied). It can be concluded that Economics Variables is able to provide very good service to its users during the use phase

4. Control and security Variables

Table 7: Control and security Variables

Question	Respondent				
	SS	**S**	**N**	**TS**	**STS**
I feel my data and information is safe when using Google Classroom	0	3	10	16	9
Google Classroom has adequate access controls to ensure data privacy and security.	0	3	9	17	9
I feel comfortable using Google Classroom to share assignments and practical materials	0	0	10	18	10
Total	0	6	29	51	28

$$\text{RK} = \frac{(0*1)+(6*2)+(29*3)+(51*4)+(38*5)}{(0+6+29+51+28)}$$

$$RK = \frac{443}{185}$$

$$RK = 3.88$$

The results obtained from the calculation of the average level of satisfaction of Google Classroom users in the Control and security variables received a value of 3.88 which was categorized as (Satisfied). It can be concluded that Control and security Variables is able to provide good service to its users during the use phase

5. Efficiency Variables

Table 8: Efficiency Variables

Question	Respondent				
	SS	**S**	**N**	**TS**	**STS**
Google Classroom helps me save time and complete Animation Engineering practicum assignments more efficiently	1	3	9	19	6
Google Classroom helped me complete my Animation Engineering practicum assignments in a more organized and structured manner	2	0	5	20	11
Google Classroom helps me collaborate with lecturers and classmates more easily and effectively	1	5	8	15	9
Total	4	8	22	54	26

$$\text{RK} = \frac{(4*1)+(8*2)+(22*3)+(56*4)+(26*5)}{(4+8+22+54+26)}$$

$$RK = \frac{432}{118}$$

$$RK = 3{,}66$$

The results obtained from the calculation of the average level of satisfaction of Google Classroom users on Efficiency Variables received a value of 3.66 which was categorized as (Satisfied). It can be concluded that Efficiency Variables is able to provide good service to its users during the use phase

6. Service Variables

Table 9: Service Variables

Question	Respondent				
	SS	**S**	**N**	**TS**	**STS**
The services provided by Google Classroom are according to your needs	0	0	8	23	7
Google Classroom documentation and usage guides are easy to access and understand	0	0	6	24	8
I got quick and clear answers to my questions about Google Classroom	0	1	14	15	8
Total	0	1	28	62	23

$$\text{RK} = \frac{(0*1)+(1*2)+(12*3)+(63*4)+(109*5)}{(0+1+12+63+109)}$$

$$RK = \frac{449}{114}$$

$$RK = 3{,}93$$

The results obtained from calculating the average level of satisfaction of Google Classroom users in Service Variables received a value of 3.93 which was categorized as (Satisfied). It can be concluded that Service Variables is able to provide good service to its users during the use phase

Table 10: Calculation of average weight

Variabel	**Average Level Satisfaction**	**Information**
Performace	4	Satisfied
Information and Data	3,88	Satisfied
Ekonomic	4,5	Very satisfied
Control and Scurity	3,88	Satisfied
Efficiency	3,66	Satisfied
Sevice	3,93	Satisfied
Total	**3,97**	**Satisfied**

Calculation of the average satisfaction level of Google Classroom users shows a value of 3.97 which places it in the Satisfied category according to the characteristics of the satisfaction level of the PIECES Framework, which is based on the Kaplan and Norton model. The results show that Google Classroom users are very satisfied and have a positive role in the animation technique practicum.

4. Conclusion

According to data analysis and calculation results, each domain of the PIECES Framework gets an average score of 4 which is a good score; the Information and Data domain gets a score of 3.88 which is a good score; the Economics domain gets a score of 4.5 which is

a very good score; the Control and Security domain scored 3.88, which is a good score; the efficiency domain gets a value of 3.66; and the Services domain gets a score of 3.99 which is a good score. The calculation results show that Google Classroom functions well and has many benefits for practical animation techniques so that users are very satisfied when using it. However, there were some participants who gave quite poor reviews; This is one input for improving the current Google Classroom service.

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