Student Satisfaction Level Analysis on Project-Based Learning Online

by Rina Harimurti

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Abstract. There has been a shift from traditional classroom instruction to online-based instruction at most universities, including Unesa. As a result, students and teachers collaborate to implement learning using supplementary resources. The happiness of today's students will increase dramatically as a result of these modifications. Students need to be flexible enough to adjust to educational norm shifts mandated by authoritative bodies. The overall purpose of this study is to quantify how content students are with the PBL Online platform. The findings of this quantitatively descriptive study are reported in the form of a study. Analysis by means of multiple regression. The results revealed that a total of 33.8% of the factors (learning system, quality of lecturers, and quality of learning support services) contributed to the degree of student satisfaction, but, crucially, the effect of these factors was not simultaneous. While other factors, amounting to 66.2%, are not taken into account here.

Keywords: Student satisfaction · Project-based learning · Online learning

1 Introduction

Online learning is an electronic-based application of information technology through the internet. An effective online learning program starts with planning and focuses on the needs of learning materials and the needs of students. It is hoped that this online learning can support the implementation of the learning process, increase student activity, improve students' independent abilities, and improve the quality of material in learning using computer networks. Students and lecturers easily interact in distance learning by using online learning. This means that the success of using online learning in learning can be known when users feel satisfied in using online learning. Online learning can be said to be successful if the level of user satisfaction is high. In this case, the factors of student satisfaction with the academic learning process include the suitability of the curriculum with competency objectives, the quality of lecturer education, the process of delivering material by lecturers, infrastructure in learning both in the classroom and in the laboratory and the ease of finding learning references. Students are consumers/customers of a higher education institution (university) so that the concept of student satisfaction

means the level of one's feelings after comparing the performance or results he feels compared to his expectations [1].

Traditional classroom settings where students and teachers have face-to-face interactions have been the subject of substantial research into the aspects that contribute to student happiness [2]. The proliferation of useful information and communication technology (ICT) applications that expand the pedagogical and scholastic possibilities for both instructors and students is driving the rise in popularity of online education at the university level [3]. To improve students' knowledge, skills, and other results, online learning may be understood as a novel method of providing these services through the dissemination of information in electronic formats.

The implementation of online learning or lectures in this Learning Media course uses a Project Based Learning (PBL) model, this is adjusted to the purpose of lectures, namely to produce students who are able to create learning media to support learning activities in schools. According to [4] that the Project-Based Learning model has advantages, including: (1) improving student learning outcomes and motivation; (2) encouraging students to be creative and independent in producing products: (3) providing student experiences to build their own knowledge; and (4) improve students' ability to communicate products. By implementing project-based learning in learning media courses, it is hoped that students will be motivated to be more creative in producing learning media products. With the background of the problems above, this study will analyze the level of student satisfaction with the online project-based learning system.

1.1 Project Based Learning

Students acquire information and abilities through an organized process of exploring real-world challenges and creating a variety of well-planned works, known as the Project-Based Learning Method [5]. The benefits of the project-based approach to education include: (1). encourage students to think critically and independently as they create things; give students opportunities to gain experience and knowledge; and strengthen students' abilities to articulate their work [4]. Experts agree that when students are given the opportunity to work on a real-world project under the guidance of a teacher, they are more likely to take initiative in their own education and grow as learners. This learning model provides opportunities for students to plan learning activities independently in project work activities. This is in accordance with the expected learning outcomes of learning media courses, namely students must have an understanding, understanding, function, use of learning media, characteristics and criteria of learning media. In addition to these achievements, students are expected to have the ability to develop and evaluate visual, audio-visual, and computer-based media and evaluate the results of media development.

1.2 Online Learning

Understanding, knowledge, and growth are the goals of online learning, which is defined as "the use of the internet to obtain access to resources, to engage with materials, instructors, and other learners, and to acquire assistance while undertaking the learning process" [6]. It's important to have a firm grasp on these three definitions of online education. One,

it's a system that facilitates real-time updating, archiving, retrieval, and distribution of information systems or learning materials; two, it employs internet technology standards to present information via computer hardware; and three, it takes a holistic view of education, discussing alternative approaches to education as well as the conventional ones [7]. To put it simply, online learning is any method or approach to education that makes use of electronic media and the World Wide Web to facilitate communication among teachers and students. Online education has many benefits, such as allowing teachers to spend less time with their students, cutting down on students' out-of-pocket expenses, lowering overall education costs (infrastructure, equipment, books), expanding students' access to education, and fostering greater learner autonomy.

1.3 Student Satisfaction Level

Student satisfaction measures how much an end user (in this example, a customer) enjoys a product or service. The level of student satisfaction may be defined as the gap between the actual situation supplied by the institution and the ideal scenario desired by the students [8]. Dissatisfaction is quantifiable in terms of how far actual outcomes fall short of ideals. This is because happiness may cause a chain reaction of beneficial effects that are of interest to educators, administrators, and students alike. Kotler [9] identifies four approaches for gauging customer satisfaction; the first, a "complaint and suggestion system," implies that any business with a focus on consumers should encourage feedback in as many forms as possible.

Suggestion boxes in prominent locations, comment cards, and phone lines are all viable options. (2) consumer satisfaction survey, which refers to a customer satisfaction study conducted through mail, phone, or in-person interviews; Thirdly, "ghost shopping" refers to the practice of engaging many individuals (ghost shoppers) to pose as actual or potential consumers or buyers of the company's and its rivals' items. Then, based on their actual shopping experiences, the "ghost shopper" reports back on the company's products' merits and flaws, as well as those of the competition; (4) Lost customer analysis involves contacting former buyers or those who have switched suppliers to learn more about why they no longer do business with the company.

Dissatisfaction occurs when actual outcomes fall short of expectations. The rationale for this is that happy students, teachers, and administrators may all contribute to beneficial outcomes [10]. Improvements in student happiness should be used as a primary indicator of educational quality. While there is no one metric by which the effectiveness of a system can be determined, this research will examine how students feel about their own abilities as users, how well they feel they are supported by their surroundings, and how they feel about the system they should adopt in an online lecture hall. Due to its high validity and ease of validation, end-user satisfaction evaluation has become one of the most popular metrics of the efficacy of online learning systems.

2   Research Method

2.1 Research Approach

This study is an example of quantitative descriptive research, which seeks to learn more about a topic by looking into it in detail and then reporting its findings to the reader [11].
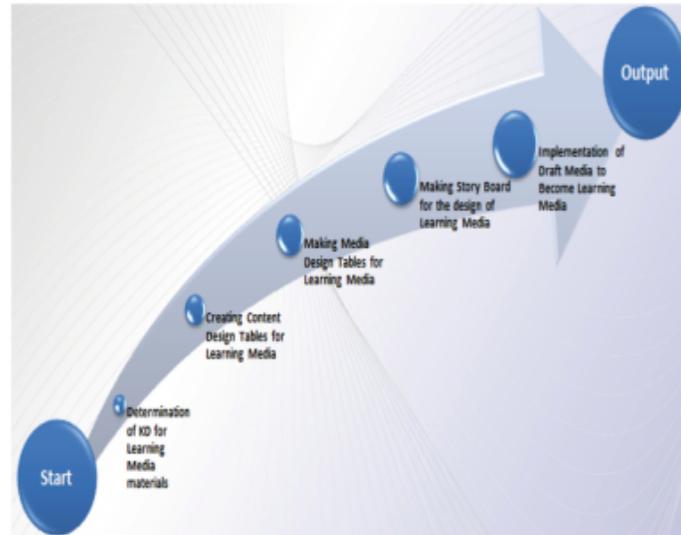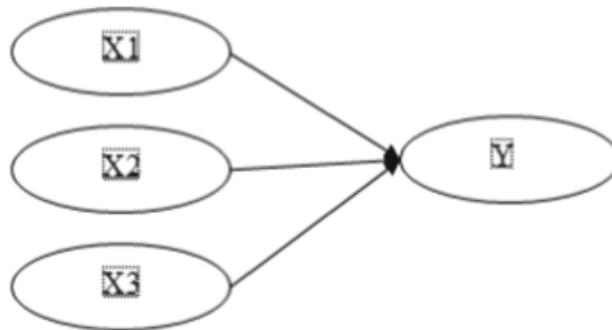
Fig. 1. Research Roadmap.

Fig. 2. Relationship between variables.

The research sample was 40 students who programmed the Learning Media course in the Electrical Engineering Education study program, Electrical Engineering Department. By conducting several stages of research such as the roadmap as shown in Fig. 1.

2.2 Research Design

This study developed 4 variables consisting of 3 independent variables, namely the online learning system (X1), the quality of the lecturers (X2), the quality of online learning support services (X3) and 1 dependent variable, namely the level of student satisfaction with online learning (Y). Figure 2 describes the relationship between these variables:

Data collection was carried out using several instruments consisting of (1) PBL implementation instruments in the online learning system; (2) the questionnaire instrument for the quality of the course lecturers; (3) a questionnaire instrument for the quality of online learning support services and (4) a questionnaire on student satisfaction with online learning. The questionnaire instrument developed using a Likert scale with a scale range of 1–4.

Table 1. Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.338ᵃ	.114	.040	18.88179

ᵃ Predictors: (Constant), X3, X1, X2

2.3 Data Analysis

The data will be analyzed by multiple regression analysis which is used to determine the direction and how much influence the independent variable has on the dependent variable [11]. The regression equation used is:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \text{\euro}$$

Y = The level of student satisfaction with the online learning system
X_1 = Project Based Learning
X_2 = Quality of course lecturers
X_3 = Quality of online learning support services
α = Constanta
$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficient regress
€ = error

3   Results and Discussion

Table 1 shows the results of data analysis using multiple linear regression with 3 independent variables and 1 dependent variable:

From Table 1, the R value is 0.338, which means that all variables (X1, X2 and X3) affect the dependent variable (Y) by 0.338 (33.8%). While the remaining 66.2% is influenced by other variables outside the study. The information shows that the influence of online learning system variables, quality of lecturers, quality of online learning support services on student satisfaction levels is 33.8% while the rest is influenced by other variables outside the study.

The conclusion from Table 2 is by looking at the significance value. In the ANOVA table, the significance value is 0.219 which is confirmed by the cut off value with a level of 0.05 (5%). The conclusion obtained is Sig > (sig > 0.05) meaning that there is no simultaneous significant effect of the online learning system variables, the quality of lecturers, the quality of online learning support services on the level of student satisfaction. From table 2, it can be seen that the calculated F value is 1,548 with a significance level of 0.219. The significance value of 0.219 is greater than = 0.05 or 5%, it indicates that the level of student satisfaction is not significantly affected by the independent variables simultaneously.

Table 3 shows the effect of each independent variable on the dependent variable. The smaller the significance value, the greater the effect. So from the three variables, the

Table 2. ANOVA.

ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1656.184	3	552.061	1.548	.219^b
	Residual	12834.791	36	356.522		
	Total	14490.975	39			

a. Dependent Variable: Y. b. Predictors: (Constant), X3, X1, X2

Table 3. Coefficients

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	156.963	66.526		2.359	.024
	X1	-.631	.619	-.160	-1.019	.315
	X2	-.642	.430	-.237	-1.493	.144
	X3	.146	.166	.139	.875	.387

^a Dependent Variable: Y

X2 variable, namely the quality of the lecturers has the greatest influence on the level of student satisfaction. Next is the X1 variable, namely the online learning system and the last X3 is the quality of supporting services that have the least influence on the level of student satisfaction.

The next stage is to form a regression equation from the constants and regression coefficients shown in Table 3. So that the regression equation formed is as follows:

$$Y = 156.963 - 0.631X_1 - 0.642X_2 + 0.146X_3$$

The interpretation of the multiple linear regression equation above is:

a) The constant value of 156.963 states that if the online learning system variables, the quality of lecturers and the quality of online learning support services have a value equal to zero (0), then the variable level of student satisfaction is 156.963

b) The coefficient value of the online learning system variable (X1) is -0.631 and is negative, which means that if the X1 variable decreases by 1 unit, the variable level of student satisfaction will also decrease by -0.631

c) The coefficient value of the lecturer quality variable (X2) is -0.642 and is negative, which means that if the X2 variable decreases by 1 unit, the student satisfaction level variable will also decrease by -0.642

d) The coefficient value of the online learning support service quality variable (X3) is 0.146 and a positive value means that if the X3 variable increases by 1 unit, the variable level of student satisfaction will increase by 0.146

4   Conclusion

The study found that the quality of the online learning system, the quality of the lecturers, and the quality of the online learning support services all had an effect on the dependent variable, which was the degree of student satisfaction (33.8%). While other factors, amounting to 66.2%, are not taken into account here. The F value also reveals that the independent variables' effects are not additive (together). An F-value of 1548 at a significance threshold of 0.219 suggests that the independent factors have little effect on student satisfaction when considered together.

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Authors' Contributions.   All authors have responsibility in collecting, processing, and analysis data.

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