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Analysis of Student Active Learning in Moodle LMS Using the SERVQUAL Method

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ABSTRACT

Growth in the use of technology in education in Indonesia is increasing every year. Various universities in Indonesia already have e-learning systems based on LMS moodle. In the e-learning system, teachers and students generally do not meet face to face, so it is difficult to know how enthusiasm and response of students to the subject matter they receive and the success of the teaching and learning system itself. The purpose of this study is to design a system that can analyze the level of student activity. This system was created using PHP and mySQL programming languages as a database and data analysis with the SERVQUAL method. Based on the results of research analysis of learning by using the best ranking servqual method, namely students named Vony Oktavia (193112700650077) with the highest weighting value of 1.57143 out of 30 students.

1. Introduction

Growth in the use of technology in the field of education in Indonesia reached 25% annually exceeds other countries in Asia, even the whole world. With the e-learning system, teachers and students generally do not come face to face directly, so it is difficult to know how the response and enthusiasm of the students to the subject matter of the acceptance and success of teaching and learning system itself. Student activity in Moodle can be monitored process and its value, yet necessary process of measurement, collection, analysis and context data about students with learning analytics whose purpose is to assess the level of activity and optimize student learning and the environment in which learning takes place. So it takes a software application for the activities of the learning process that is connected online Learning Management System (LMS). A system that can monitor the activities and the effectiveness of learning so that more optimally using Moodle LMS [1]. A study revealed that online learning activities can have positive effects on students in terms of solving the problem. Their online discussion room can be a means of social interaction among students and also to encourage students to involve themselves in problem-solving activities [2] A study revealed that online learning activities can have positive effects on students in terms of solving the problem. Their online discussion room can be a means of social interaction among students and also to encourage students to involve themselves in problem-solving activities [2] A study revealed that online learning activities can have positive effects on students in terms of solving the problem. Their online discussion room can be a means of social interaction among students and also to encourage students to involve themselves in problem-solving activities [2]

Of the many features provided, the feature most often accessed by students which is a feature assignment, feedback, quizzes, and modules that are considered very important work [3]. The availability of facilities such as computer laboratories also help maximize this e-learning activity [4]. Learning analysis is often conducted to determine the suitability of the features provided with the needs of students who access it. [5]. Students of LMS Moodle activities in the extract in learning anlytics toolsdan using linear regression, the results show that women are more active student and got good value in learning than male students. Students are more active on the exam week and a day before the exam.

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2. Research methods

2.1. SERVQUAL

SERVQUAL (Service Quality) was built to calculate the level of satisfaction where the level of satisfaction consists of the comparison of the two main factors, namely real customer perception of the service they receive (Perceived Service) with the service expected by the customer (Expected Service).

If the reality is more than expected, it can be said to be of good quality and if the reality is less than expected then the service is said to be of good quality and if the reality and expectations at the service was satisfactory. Here's the formula service quality presented in equation 1.

$$Q = P - E \quad \text{..... .... (1)}$$

Information :
Q = Value Service Quality
P = Weight Value Perception
E = Weight Value Expectations

2.2. System Diagram Method

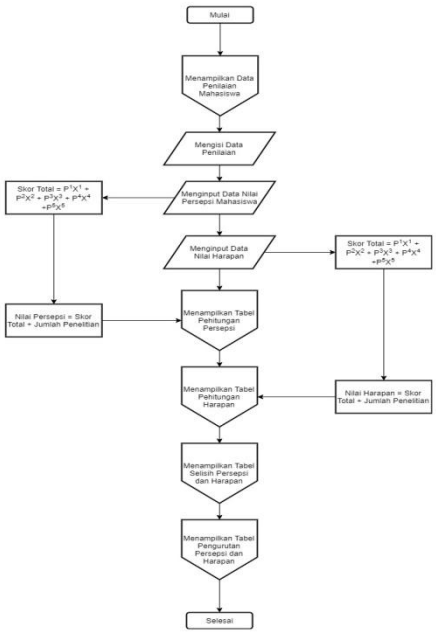

Fig 1. System Diagram Method

In Figure 1 describes the process flow of calculation and assessment methods servqual starting from the user input the value perceptions and expectations to show the calculation results, the differences and sorting weight value perception and value expectations of students.

3. Results and Discussion

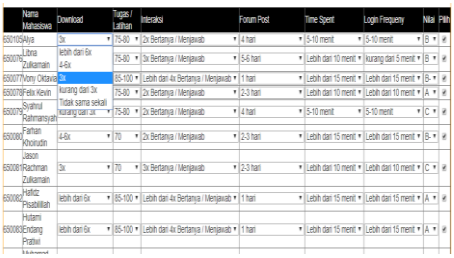

Fig 2. Process Assessment.

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Figure 2 shows the data on the selected value based on active students in the 7 criteria: download, Tasks, Interaction, Time Spent, login Frequenchy, and value whether the student was very active, Just Off, On, Less Active, Inactive. Examples include students said to be very active when downloading more than 6 times.

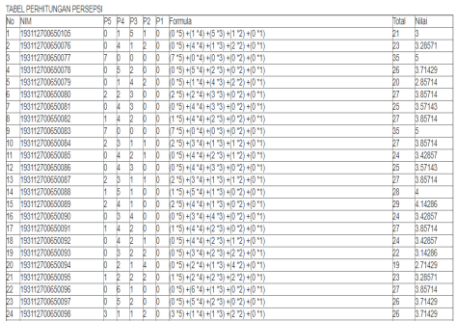

Fig 3. Calculation of Perception

In figure 3 shows the calculation of the value perception is by calculating the total score of each criterion by calculation using equation (2) below sebagau.

Total score X 1 = P1 + P2 + P3 X X 2 X 4 + 3 + P4 P5X5 ..... (2)

Information :
P1 = The number of very active student penlaian
P2 = The number of active students enough votes
P3 = Number of active student assessment
P4 = Number of ratings less active students
P5 = Number of ratings Students inactive
Value Perception = Total Score: Number of Ratings
Value Perception = 35: 7 = 5

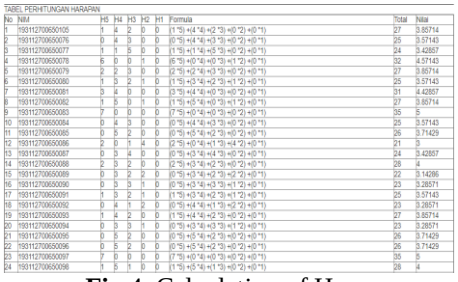

Fig 4. Calculation of Hope

The expected value indicates the expected value to students by calculating the total score of each criteria as in equation (3) below:
The total score = P1 + P2 X 1 X 2 X 3 + P3 + P4 P5 X4 + X 5 (3)

Where :
P1 = The number of very active student penlaian
P2 = The number of active students enough votes
P3 = Number of active student assessment
P4 = Number of ratings less active students
P5 = Number of ratings Students inactive
Value Expectations = Total Score: Number of Ratings
Value Expectations = 24: 7 = 3.42857

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TABEL SELISIH PERSEPSI DAN HARAPAN

No	NIM	Nilai Persepsi	Nilai Harapan	Formula	Gap Score
1	193112700650105	5	3.85714	5 - 3.85714	1.14286
2	193112700650076	3.28571	3.57143	3.28571 - 3.57143	-0.28572
3	193112700650077	5	3.42857	5 - 3.42857	1.57143
4	193112700650078	3.71429	4.57143	3.71429 - 4.57143	-0.85714
5	193112700650079	2.85714	3.85714	2.85714 - 3.85714	-1
6	193112700650080	3.85714	3.57143	3.85714 - 3.57143	0.28571
7	193112700650081	3.57143	4.42857	3.57143 - 4.42857	-0.85714
8	193112700650082	3.85714	3.85714	3.85714 - 3.85714	0
9	193112700650083	5	5	5 - 5	0
10	193112700650084	3.85714	3.57143	3.85714 - 3.57143	0.28571
11	193112700650085	3.42857	3.71429	3.42857 - 3.71429	-0.28572
12	193112700650086	3.57143	3	3.57143 - 3	0.57143
13	193112700650087	3.85714	3.42857	3.85714 - 3.42857	0.42857
14	193112700650088	4	4	4 - 4	0
15	193112700650089	4.14286	3.14286	4.14286 - 3.14286	1
16	193112700650090	3.42857	3.28571	3.42857 - 3.28571	0.14286
17	193112700650091	3.85714	3.57143	3.85714 - 3.57143	0.28571
18	193112700650092	3.42857	3.28571	3.42857 - 3.28571	0.14286
19	193112700650093	3.14286	3.85714	3.14286 - 3.85714	-0.71428
20	193112700650094	2.71429	3.28571	2.71429 - 3.28571	-0.57142
21	193112700650095	3.28571	3.71429	3.28571 - 3.71429	-0.42858
22	193112700650096	3.85714	3.71429	3.85714 - 3.71429	0.14285
23	193112700650097	3.71429	5	3.71429 - 5	-1.28571
24	193112700650098	3.71429	4	3.71429 - 4	-0.28571

Fig 5. The difference Perceptions and Expectations

By knowing the value of expectation and perception in the table above, the score serqual (gap score) from each activity level student assessment criteria can be calculated by the formula in equation (4) below:

Servqual Score = Perception Score - ex - pectation Score ....(4)

Example: For a student with NIM193112700650077
Value Perception = 35: 7 = 5
Value Expectations = 24: 7 = 3.42857
So Servqual score / gap score = 5 - 3.42857 = 1.57143

TABEL PENGURUTAN BOBOT PERSEPSI DAN HARAPAN

No	NIM	Nama Mahasiswa	Formula	Gap Score	Ranking
1	193112700650097	Irman Badri	3.71429 - 5	-1.28571	1
2	193112700650079	Syahrul Rahmansyah	2.85714 - 3.85714	-1	2
3	193112700650078	Felix Kelvin	3.71429 - 4.57143	-0.85714	3
4	193112700650105	Alya	5 - 3.85714	-0.85714	4
5	193112700650081	Jason Rachman Zulkarnain	3.57143 - 4.42857	-0.85714	5
6	193112700650093	Hari Widodo	3.14286 - 3.85714	-0.71428	6
7	193112700650094	Aldi King Agathon Tahar	2.71429 - 3.28571	-0.57142	7
8	193112700650095	Lutfhi Aprianto	3.28571 - 3.71429	-0.42858	8
9	193112700650076	Libna Zulkarnain	3.28571 - 3.57143	-0.28572	9
10	193112700650085	Muhamad Rizki	3.42857 - 3.71429	-0.28572	10
11	193112700650098	Revin Zuhdi Zanzibar	3.71429 - 4	-0.28571	11
12	193112700650102	Roni Setiawan	3.57143 - 3.85714	-0.28571	12
13	193112700650100	Eric Junianto	4.14286 - 4.28571	-0.14285	13
14	193112700650082	Hafidz Pisabilillah	3.85714 - 3.85714	0	14
15	193112700650083	Hutami Endang Pratiwi	5 - 5	0	15
16	193112700650088	Rifda Fadlya Achya	4 - 4	0	16
17	193112700650103	Rafee Surya Setyardhana	3.71429 - 3.71429	0	17
18	193112700650096	Andi Ajria Musdalifah	3.85714 - 3.71429	0.14285	18
19	193112700650090	Muammar Khadafi	3.42857 - 3.28571	0.14286	19
20	193112700650092	Muhammad Rizki Zidan	3.42857 - 3.28571	0.14286	20
21	193112700650101	Muhammad Fadli Alfai	3.71429 - 3.57143	0.14286	21
22	193112700650080	Farhan Kholiudin	3.85714 - 3.57143	0.28571	22
23	193112700650084	Muhamad Rian Syah	3.85714 - 3.57143	0.28571	23
24	193112700650091	Ichsan Surya Darma	3.85714 - 3.57143	0.28571	24

Fig 6. Ordering Weight Perceptions and Expectations

Based on the figure 6 it can be concluded that students with NIM 193,112,700,650,077 gets the highest weight value 1.57143 will then be sorted by ranking the largest

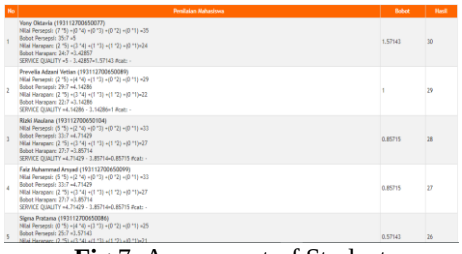

Fig 7. Assessment of Student

In Figure 7 is the result of sorting by weight and the highest results are:
Vony Oktavia (193112700650077)
Service Quality = 5 - 3.42857 = 1.57143 rated 30. From the student assessment results with the students' level of activity Vony name Oktavia namely Extremely Active

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The benefits of this research is to determine the level of activity of students making it easier for lecturers in peilaian liveliness gave the students

4. Conclusion

Based on research that has been done on learning analytics activity level of students in LMS Moodle, obtained the following conclusions:

a. Teachers can assess students' level of activity by analyzing the activity of students in LMS Moodle.
b. Ratings are given based on how active student lecturer in exercise / assignment, login frequency, time spent was assessed by ranking
c. Students who receive the greatest weight is considered highly active and sorted from smallest kw World rankings

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