

Analysis of Factors Affecting Students and Effectiveness of Online Lectures Through a System Approach

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Abstract

The purpose of this study was to determine the effect of place factors, lecturers, students, parents, materials, and facilities that were transformed into the lecture process on student satisfaction and lecture effectiveness. This research is a quantitative descriptive study using a survey method via an online google form to 245 students in the city of Banjarmasin. Calculations using part analysis program SPSS direct and indirect effects. The results showed that the factor of place, lecturers, students, parents, materials, and facilities had an effect on the lecture process where the influence of parental support was the most dominant, followed by the role of the lecturer. The level of student satisfaction in the effectiveness of lectures is strongly influenced by the lecture method carried out in a tutorial manner. Students who like learning will be very helpful in transferring lessons. The implication is that parents must be given awareness to support online lectures, and must perform interpersonal skills by utilizing technology. To facilitate the transfer of knowledge, students must first be interested in the lesson

Keywords: Online Lecture System, Student Satisfaction, Learning Effectiveness

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1. Introduction

Anticipating the transmission of the Covid 19 virus, the government has issued various policies, such as isolation, social and physical distancing to large-scale social restrictions (PSBB). This condition requires everyone to stay at home and to do activities from home, such as working, worshipping, and studying. Educational institutions are no exception, which must follow government regulations to innovate the learning process when a natural disaster or global pandemic occurs through online learning to improve the quality of learning (Gu & Sun, 2021) Online learning is not only caused by the Covid-19 outbreak, but online learning has become a demand in the world of education since the last few years. Moreover, online education is being promoted to become mainstream in the 21st century (Gu & Sun, 2021, He et al., 2014)

Online learning or e-learning is a learning method that utilizes technology using the internet, where the learning process is not done face to face, but using electronic media that makes it easier for students to learn anytime and anywhere. The impact of online learning activities can be seen from the aspect of the spirit of learning, literacy of online learning technology, intrapersonal communication activities, collaborative activities, and independent learning independently (Gu & Sun, 2021, He et al., 2014)

The implementation of e-learning by the lecturers is expected not to reduce students' understanding in receiving teaching materials during lectures. However, we should be aware that the implementation of online lectures has several obstacles and complaints from the lecturers and students. Complaints generally occur on an unstable internet network, materials that cannot be delivered in full at every meeting, the lack of supporting media facilities in online learning activities, and the difficulty of controlling student learning activities without using the video conference application directly. For this reason, effective solutions for online lectures are used as the basis for compiling this research, so that institutions are able to determine the right policies during the Covid-19 pandemic outbreak.

There are various studies carried out by researchers that have discussed online learning during Covid-19. Based on the latest data, research results from He et al. (He et al., 2014) show that the effectiveness of online learning with significant achievements in line with the demands of realizing digital leaders of 21st century higher education; ; (Tunmibi et al., 2015) reviewed 21 reflections on online learning during the Covid-19 emergency; Online learning has become a demand in the world of education since the last few years (Ali et al., 2018) ; Through online learning, higher education will be created with a modern learning environment (Simuforosa, 2013) about the effectiveness of online learning during the Covid-19 pandemic; and (Maatuk et al., 2021) who explained that in online lectures students need their own variations and they prefer online learning as a variation of how to develop and deliver material.

The System Approach is an attempt to solve problems by looking at the existing problems thoroughly and performing a system analysis. A systems approach is needed when we face a complex problem so that an analysis of the problem is needed, to understand the relationship between parts and other parts of the problem, as well as the relationship between the problem and other problems (Aiken, 1971) The system is a group of interacting or interrelated elements. which act according to a set of rules to form a unified whole. A system, surrounded and influenced by its environment, is defined by boundaries, structure and purpose and expressed in

terms of its functions.

The elements or basic components of the system are:

1. Input is a collection of elements / parts contained in the system and which are needed for the functioning of the system.
2. The process is a collection of elements / parts that function to turn the problem into a planned output.
3. Output is a collection of elements / parts resulting from the ongoing process in the system.
4. Feedback is a collection of elements/parts that are the output of the system and at the same time serve as input for the system

In contrast to face-to-face lectures, students usually do lectures in class or in a laboratory on campus, while in online lectures, students and lecturers can do it anywhere in a separate place. Research (Ananta et.al, 2021) explains that the majority of students conduct lectures from home, which are carried out at home, amounting to 99.01%. While the least done in the workplace amounted to 09%.

Online lectures require lecturers to have additional knowledge and skills in addition to knowledge and insight related to the subjects being taught, also in the field of information technology that supports the process of delivering information to students. The application of e-learning technology in schools will help to promote an efficient, effective and productive way of teaching. (Tunmibi et al., 2015)

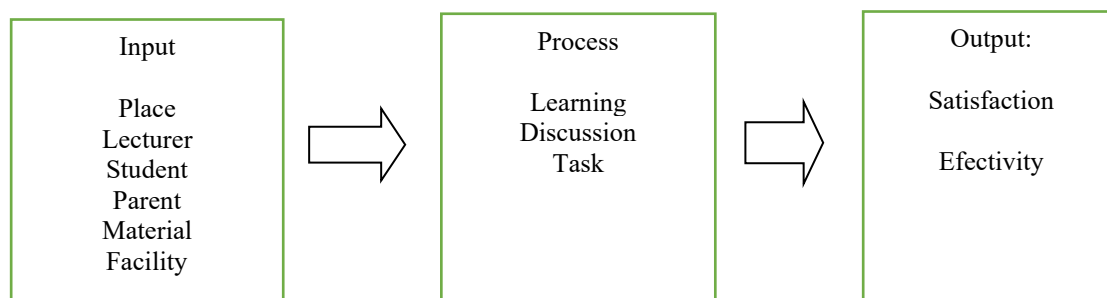
Likewise, students during online lectures are required to master the skills of using information technology such as zoom, google class room, and other online media. Students are still required to have the same attitude in providing time and be active in lectures, including collecting assignments at the appointed time, having an interest in the subject, communicating with other students and enthusiastically daring to try to practice. The results of the study (Yilmaz, 2017) show that students' readiness for e-learning is a significant predictor of their satisfaction and motivation in learning. Parental support is needed by students, to motivate, provide financial assistance or procure the necessary online lecture facilities such as giving quotas, cell-phones, rooms and allowing online lecture time. Parental support is needed to understand the online lecture system, very helpful for the school to help students who have difficulty with learning technology (Smith et al., 2016).

Materials in online lectures in the form of soft power points, words, PDFs, and so on are needed by students to be studied both before lectures and after online lectures which are needed to recall or sharpen the analysis. Scagnoli et al., (2019), Video lectures (VL), considered an effective means of delivering course content and instilling a teaching presence in a virtual environment, have become very popular in the world of education. These findings also remind us of the importance of careful planning and balanced integration of VL with other course materials. It provides important information about the effectiveness of video-lectures in college teaching and learning and the implications for practice in online course design.

Technological facilities that support online lectures in the form of connections, quotas, signals from satellite, cell-phones or laptops, must be owned or accessed easily by students. The process of education and communication between university teachers and students in universities today cannot do without the use of modern forms of information technology (Gillett-Swan, 2017) .

In general, student satisfaction can be interpreted as student satisfaction and blessings related to various aspects of the services they receive (Weerasinghe et al., 2017). In this case, satisfaction is a direct factor. Online and face-to-face classroom interactions, feedback, student and teacher behaviors, activities, materials, online discussions, instructional and technical support, technology features, student learning styles, online discussions, self-efficacy, knowledge and skills, and demographic characteristics can count among these factors. As for understanding (Zhao, 2016) the level of student satisfaction with courses or learning activities is very important for efficient course design and for understanding its efficiency.

Effectiveness is actually a broad concept, encompassing various factors inside and outside the organization. Effectiveness in general shows how far the achievement of a predetermined goal. Says that "effectiveness comes from the word "effect" and this term is used as a causal relationship. "Effectiveness can be viewed as a cause and effect of other variables. Effectiveness is one of the dimensions of productivity, which leads to the achievement of maximum work, namely the achievement of targets related to quality, quantity and time (Trakru & Jha, 2020). According to Ali et al., (2018), basically the general definition of effectiveness indicates the level of achievement of results. In other words, effectiveness emphasizes the results achieved. The results of the study Ali et al., (2018) support that e learning is faster, saves time and money, is suitable for working independently, adds value to student learning, is useful for active learning goals, is faster, responds quickly, is applicable outside the classroom and the quality of e-learning is satisfactory which shows that e-learning is effective. Based on the opinions and results of the research above, online lecture system can be seen as;



Picture 1
Conceptual System Research

A series of hypotheses needs to be compiled to test between variables in the system model above by taking into account the various results of previous research, formulated as follows:

- H1 place, affects the online learning process
- H2 lecturers, affect the online lecture process
- H3 students affect the online learning process
- H4 parents affect the online learning process
- H5 material affects the online learning process
- H6 facilities affect the online learning process
- H7 online lectures affect student satisfaction
- H8 discussion in online lectures affects student satisfaction
- H9 assignments in online lectures affect student satisfaction

Research methods

In this study, we use a correlational quantitative statistical method that measures the effect between two or more variables. Correlation analysis is a statistical method used to evaluate the strength of the relationship between two quantitative variables. A high correlation means that two or more variables have a strong relationship with each other, while a weak correlation means that the variables are almost unrelated. The population of this research is undergraduate and postgraduate students in Banjarmasin who are conducting online lectures during the COVID-19 period in 2021, where the questionnaire uses a google form which is distributed using social media what up in parallel. The results showed as many as 245 answers to the questionnaire were returned to be processed using SPSS 24. The classical test was used to see the validity and reliability of the data, then the regression test between variables that formed the research model.

Research result

From the test results on the validity of the data, it shows that the questions about the place (significance 0.909) and the task (0.229) are still not valid because the probability level is above 0.05, while the other variable measurements are quite valid because all of the significance is $0.000 < 0.005$.

Table 1
Uji Validitas Data

No	Variabel	Koefisien korelasi	Probabili- tas	Output
1	Place	-0.007	0.909	No
2	Facility	0.413	0.000	Valid
3	Material	.348**	0.000	Valid
4	Student	.264**	0.000	Valid
5	Lecture	.408**	0.000	Valid
6	Parent	.625**	0.000	Valid
7	Learning	.573**	0.000	Valid
8	Discussion	.402**	0.000	Valid
9	Task	-0.076	0.229	No
10	Satisfaction	.551**	0.000	Valid
11	Efectivity	.551**	0.000	Valid

SPSS 24

For data trust (reliability) an average of 0.683 or 68.3% higher than the standard Cronbach's alpha of 0.6 on 11 research variables, thus all variables are quite reliable.

Table 2
Reliability Statistics

Cronbach's Alpha	N of Items
.683	11

From the descriptive test, it shows that lectures are more dominant than other variables, which shows that the lecturer's performance (average 3.8579) or 80% is good enough even though it is still not perfect, while the weakest performance is the facility variable (average 2.9938) or 40 % which indicates the availability of facilities for online lectures is still lacking.

Table 3
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Place	249	1.00	4.00	3.8474	.55431
facility	249	2.00	4.57	2.9938	.52900
Material	249	1.00	5.00	3.1526	.99231
lecture	249	2.00	5.00	3.8579	.59155
stiuident	249	2.00	4.50	3.3745	.44838
parent	249	1.00	5.00	3.8072	1.03711
Totutorial	249	2.00	5.00	3.6145	.94397
Discussion	249	1.00	5.00	3.2731	1.09881
Task	249	1.00	5.00	3.0522	1.08939
Satisfaction	249	1.40	5.00	3.2683	.80422
Efektivty	249	1.00	5.00	3.5301	.64843
Valid N (listwise)	249				

Overall, the input of the online lecture system consists of the support of parents, places, students, lecture materials, facilities and lecturers affecting the delivery of lecture material shown in the f test where the effect is quite significant as shown in table 4 below.

Table 4
F Test The Effect of Input on the Delivery of Lecture Material

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	69.997	6	11.666	18.698	.000 ^b
Residual	150.991	242	.624		
Total	220.988	248			

a. Dependent Variable: Learning

b. Predictors: (Constant), Parent, Place, Student, Material, Facility, Lecture

However, partially from the six input variables, only parental support, lecturers, and lecture materials significantly affect the delivery of lecture materials (significant t-test 0.000 role of lecturers and parental support, and lecture materials $0.041 < 0.05$), while the place is 0.927, facilities 0.515 , and the students themselves $0.666 > 0.05$ had no significant effect. The most dominant influencing factor is the lecturer followed by parental support for the successful delivery of lectures as presented in table 5 below;

Table 5
T-Test Effect of Input on the Successful Delivery of Online Lecture Materials

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.333	.596		.558	.577
	Place	.008	.091	.005	.091	.927
	Facility	.071	.109	.040	.652	.515
	Material	.115	.056	.121	2.050	.041
	Student	-.051	.119	-.024	-.433	.666
	Lecture	.413	.098	.259	4.215	.000
	Parent	.329	.054	.362	6.090	.000

a. Dependent Variable: Learning

In addition to lectures delivered by lecturers, online lectures are also carried out in the form of discussions to dig deeper into the students' ability to communicate their understanding of lecture material, two-way communication between lecturers and students, students and other students. Table 6 shows that the overall effect

of parental support, place, students, lecture materials, facilities, and lecturers on class discussions is quite significant with the f test results 19,097 with a significance level of 0.000.

Table 6
F Test Effect of Input on Class Discussion Online Lectures

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	96.219	6	16.036	19.097	.000 ^b
	Residual	203.211	242	.840		
	Total	299.430	248			

a. Dependent Variable: Discussion

b. Predictors: (Constant), Parent, Place, Student, Material, Facility, Lecture

However, partially from the six input variables, only facilities, lecture materials, and lecturers have a significant influence on class discussions (significant t-test 0.000 facilities and materials, and the role of lecturers $0.009 < 0.05$), while the place is 0.807, the student facilities themselves are 0.723, and support parents $0.523 > 0.05$ had no significant effect. The most dominant influencing factor is the facility of 0.603 or more 60% of the class discussion as presented in table 7 below;

Table 7
T-Test Effect of Input on Class Discussion Online Lectures
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.808	.692		-1.167	.244
	Place	.026	.106	.013	.245	.807
	Facility	.603	.126	.290	4.782	.000
	Material	.329	.065	.297	5.051	.000
	Student	-.049	.138	-.020	-.355	.723
	Lecture	.299	.114	.161	2.629	.009
	Parent	.039	.063	.037	.626	.532

a. Dependent Variable: Discussion

In addition to lectures delivered in the form of tutorials and class discussions, online lectures are also carried out in the form of giving assignments to see students' ability to analyze, apply and look for other examples or application of theory in the real world, either individually or in groups. Table 8 shows that the overall effect of parental support, places, students, lecture materials, facilities, and lecturers on class discussions is quite significant with the f test results 7.065 with a significance level of 0.000.

Table 8
F Test Effect of Input on Online Lecture Assignments
ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	43.868	6	7.311	7.065	.000 ^b
	Residual	250.453	242	1.035		
	Total	294.321	248			

a. Dependent Variable: Task

b. Predictors: (Constant), Parent, Place, Student, Material, Facility, Lecture

However, partially from the six input variables, only facilities and lecturers significantly affect the implementation of the task (significant t-test of facilities 0.003 and lecturer's role $0.008 < 0.05$), while place is 0.807, material is 0.102, students themselves are 0.513 and parental support is $0.652 > 0.05$ not significant effect. The most dominant influencing factor is the facility - 0.420 or minus more than 40 % of the class discussion assignments as presented in table 9 below ;

Table 9
T-Test Effect of Input on Online Lecture Classwork
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	4.981	.768			6.485	.000
Place	.202	.117	.103		1.720	.087
Facility	-.420	.140	-.204		-3.000	.003
Material	-.119	.072	-.108		-1.641	.102
Student	.100	.153	.041		.655	.513
Lecture	-.335	.126	-.182		-2.656	.008
Parent	-.031	.070	-.030		-.452	.652

a. Dependent Variable: Task

Overall, the lecture process in the form of tutorials, class discussions, and assignments can significantly affect student satisfaction (with F test results 8,478 with a significance level of 0.000) as shown in table 10.

Table 10
F Test The Effect of Online Lecture Process on Student Satisfaction

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	1.051	.265			3.961	.000
Process	.669	.079	.475		8.478	.000

a. Dependent Variable: Satisfaction

However, partially, the process variables were only in the form of tutorial and class discussions which had a significant effect, while in the form of assignments it did not significantly affect student satisfaction (tutorial t test was significant 0.000 and class discussion was $0.002 < 0.05$, assignment was $0.625 > 0.05$). The most dominant influencing factor is in the form of tutorial of 0.438 or more 40% of student satisfaction as presented in table 11 below;

Table 11
T-Test Effect of Lecture Process on Student Satisfaction

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.189	.245		4.845	.000
	Tutorial	.438	.047	.514	9.396	.000
	Discussion	.134	.042	.182	3.187	.002
	Task	.020	.040	.027	.489	.625

a. Dependent Variable: Satisfaction

Overall, the lecture process in the form of tutorials, class discussions, and assignments can significantly affect the effectiveness of learning (with the F test results 64,160 with a significance level of 0.000) as shown in table 12;

Table 12
F Test The Effect of Online Lecture Process on Student Satisfaction
Coefficients^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.501	1	21.501	64.160	.000 ^b
	Residual	82.773	247	.335		
	Total	104.274	248			

a. Dependent Variable: Effectivity

b. Predictors: (Constant), Process

However, partially, the process variables are only in the form of tutorials and class discussions which have a significant effect, while in the form of assignments they do not significantly affect the effectiveness of online learning (tutorial significant t test and class discussion $0.000 < 0.05$, assignment $0.215 > 0.05$). The most dominant influencing factor is in the form of a 0.241 tutorial on the effectiveness of online learning as presented in table 13 below;

Tabel 13
T-Test Effect of Lecture Process on Learning Effectiveness

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.944	.210		9.241	.000
	Tutorial	.241	.040	.351	6.030	.000
	Discussion	.179	.036	.303	4.984	.000
	Task	.043	.034	.072	1.243	.215

a. Dependent Variable: Efektivitas

The effect of student satisfaction on the effectiveness of online learning is quite significant with a t-test with a significance of 0.000 and a beta of 0.444 as presented in table 14.

Table 14
The Effect of Student Satisfaction on Learning Effectiveness
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.078	.144		14.422	.000
Satisfaction	.444	.043	.551	10.383	.000

a. Dependent Variable: Efektivitas

Implications and Discussion

Lecturers are actors who play the main role in the lecture process. Every appearance, movement and speech are always noticed by students, even more so than students' attention to lecture materials. Through new student lecturers think about lecture materials, if students a priori from the start, do not believe, do not like, students will be forced to follow the next lecture process. Interpersonal skills are very important for lecturers to build closeness and relationships with students, this is in accordance with research (Salamat et al., 2018). In the context of online lectures, this includes the ability of lecturers to use technology and variations of technology such as making videos and animations that can attract students. (Scagnoli et al., 2019)

Parental support, especially for Asians, is very important (Loh & Teo, 2017). Parents, like Chinese culture, are still respected as ancestors, for Muslims the blessing of parents is an obligation for children to get it. In the context of online lectures which are generally carried out at home for students, if parents do not understand, they will give a number of homework assignments to their children who are at home, support is needed by giving space and time for children to study online, it is important to facilitate the learning process.

The process of conducting online class discussions by students will be carried out smoothly as long as it is supported by facilities such as laptops, signals and current quotas, and of course the instructions are clear and the material is sufficiently understood by students. This is in accordance with the results of the study .

This also applies to the fluency of carrying out tasks for students, where if supported by the availability of facilities, smooth networks and support from lecturers in the form of instructions and motivation, students will be faster in carrying out tasks. This is in accordance with the results of the study (El-Seoud et al., 2016)

The results showed that lectures in the form of tutorial still most dominantly influenced student satisfaction compared to discussions and assignments. So that when online lectures use various methods, the composition of the longest time must be in the tutorial lecture model, while discussions and assignments are only complementary additions, not the other way around the dominant assignment (Owens & Price, 2010)

The effect of the task which is not significant on student satisfaction, shows the task of making students' conditions the same, many or not the tasks of student satisfaction are the same. Similar to student satisfaction, the level of effectiveness of online lectures is also influenced and dominated by lectures conducted in a tutorial

manner, followed by discussion methods, while in the form of assignments, the effect is not significant. This is contrary to the opinion (Arifin et al., 2013, DeSimone, 2012), which at the same time criticizes that the form of assignment should be a map to help participants understand the lesson, so there is a possibility that the task given is unstructured or lacks connection with the lesson.

In the end, the results of this study indicate that student satisfaction has a significant effect on the effectiveness of lectures. This is not in accordance with the opinion of Fishbein and Azen (Fishbein & Ajzen, 1975) where the attitude structure begins with understanding first and then feeling satisfied or not, but this supports Aseel's opinion (Assael, 1974) which does not matter which one comes first, where in this study shows if students have a feeling of liking then the lesson will be easier for them to understand. Thus, the lecturer's task must be to make students like the new lesson the transformation strategy.

Conclusion

The spread of the COVID-19 virus has not yet ended, making lectures switching their teaching method, from face-to-face to online lecture method. There are many questions in the community whether online lectures have been effective enough. Based on the results of this study, the effectiveness of lectures is influenced by student satisfaction with the lecture process. Meanwhile, student satisfaction and effectiveness are heavily influenced by the lecture process in the form of tutorials and discussions. The ability of lecturers, parental support and the availability of materials are very important for the e-learning process.

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