

# Perceptions Of Online Learning Experiences Between Students In Urban And Remote Areas: Case Study In Indonesia

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**Abstract:** Education nowadays is very intensive in utilizing information and communication technology in learning, including in the application of online learning. However, there are still uncertainties in education-policymakers about the level of success of online learning between schools in cities and schools in remote areas of Indonesia. This study aims to explore whether there are differences in student perceptions in both regions of online learning in science for junior high school. The research method used is posttest-only control group design with the dependent variable is students' perceptions of online learning. Students in schools in both regions were previously jointed training on the use of learning management systems and attended online learning in Heat and Temperature subject. At the end of learning, students filled out a USE questionnaire measuring the aspects of Usefulness, Easy to use, Easy to learn, and Satisfaction. The results of the statistical analysis using Manova showed that there were no significant differences in the four aspects of perception's score between students in the two regions; except for the aspect of easy to learn. Students' perceptions in the two regions are relatively high, which the average score of perception was higher than 3 out of 4. These results are optimism for educators and education-policymakers to implement online learning optimally in all regions with some adjustments.

**Index Terms:** education policy, learning perception, learning technology, online learning, remote area, science learning.

## 1. INTRODUCTION

Education nowadays is very intensive in utilizing information and communication technology in learning, including in the application of online learning [1-3]. Therefore, the use of ICT in learning is an issue that is still relevant today, especially in developing countries. This technology provides new opportunities for increasing access to quality education in an unlimited distribution of regions [4, 5]. Indonesia, as an archipelago, seized this opportunity and tried to be able to implement it with various obstacles. On the one hand, the teachers' belief in the effectiveness of this technology in learning, and on the other hand is on the level of literacy and student acceptance of this technology [5, 6]. Online learning, which in its development, becomes mobile learning is a learning model used increasingly in various fields of science at various levels of education. The easiness level of access to sources of knowledge led to the focus shifting of learning. Teachers are no longer the primary source of knowledge [7-10]. The teacher has more role as the facilitator of learning so that students can acquire relevant knowledge and can use it in solving specific problems comprehensively. Student-centered learning is a logical consequence of these changes. ICT development has also provided opportunities for use in various forms of learning, such as the learning management system, content management system, data acquisition and analysis, learning apparatus, and simulation [11-15]. This opportunity is increasingly recognized by educators to build new, better students' competencies.

Considering the wide distribution of population in Indonesia, the problem of integration of technology in Indonesia in

learning has become more sophisticated, especially on remote islands [6, 16]. Research that explores teachers' perceptions of integrating this technology through online learning in remote areas is relatively limited. Most studies on the utilization of this technology are applied for teachers and students in urban areas. This situation raises doubts about the successful application of this learning in remote areas. Indeed, the critical aspect that needs to be studied first is the teacher's awareness of utilizing this technology. Previous research related to teacher perceptions in integrating this technology into learning, especially in remote areas showed positive results [8, 11, 17, 18]. Information technology literacy is one of the factors that determine students' success in online learning. Digital technology penetration in Indonesia is high [19], which makes school-age children tend to have functional literacy in this technology; so that the issue of information technology literacy becomes less relevant to see the success of online learning [12, 19]. Preliminary research related to the use of the learning management system showed that applications based on social media tend to be positively perceived by students [12, 20]. This finding is in line with the growth rate of users of social media in Indonesia. The use of social media-based LMS is one of the recommendations when applying online learning to schools in various areas. This research is part of a multi-year study (2017-2020) that seeks to build teacher and student confidence in this technology, and test the effectiveness of the application of ICT-based learning with a variety of learning strategies. The focus of this research is mainly on remote island areas in Indonesia. In previous studies, an intervention model has been developed for science teachers for the use of ICT in science learning [21]. With the age of teachers who are relatively young (digital native), they can well apply ICT in learning. Functional ICT literacy from teachers is a driving factor for successful implementation [18, 21-24]. The involvement of teachers in online learning has been successful in improving the teachers' belief to utilize this technology appropriately in learning (including online learning). However, there are no results yet regarding how students perceive online learning. There are still doubts about education policymakers regarding the ability of students in remote areas and students in urban areas. From the aspect of

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internet network infrastructure, there is no difference between cities and not cities. Internet penetration in Indonesia is already good, including the spread of access to technology [19]. This study aims to explore whether there are differences in student perceptions in both regions of online learning in science for junior high school. The results of this study will support educational policymakers for the equitable distribution of educational quality using online learning. This learning also allows all students from different regions to be put together using a learning management system to learn and interact together positively.

## 2 METHOD

### 2.1 Research Context

The research was a posttest only controlled group design. The subject of the study was eighth-grade students of a junior high school in Yogyakarta (as urban area) and in Maumere (as a remote area), Indonesia. The sampling technique was purposive cluster sampling (student who voluntary joint the research and has the smartphone). Two groups with the total number of 67 students (34 students from remote area, 33 students from city/ urban area) were used as the samples. The independent variable (IVAR) was the school location (urban and remote areas); the dependent variable was the student's experience perception to the online learning. The perception covered four aspect based on USE questionnaire. To analyze the data, the researchers applied Levene's test and MANOVA on the data of posttest.

### 2.2 Instruments

Students in schools in both regions were previously jointed training on the use of learning management systems (Edmodo) and attended online learning in Heat and Temperature subject. At the end of learning, students filled out a USE questionnaire measuring the aspects of Usefulness, Easy to use, Easy to learn, and Satisfaction. The data of student's perception collected using USE questionnaire which measured whether the implementation of online learning in science was well organized and appropriate to the learning expectations. The Likert's scale was used at this questionnaire (using 1 to 4 scales). The questionnaire consist of four aspects i.e. Usefulness (5 items), Easy of use (5 items), Easy of learning (4 items), and Satisfaction (5 items). This questionnaire was adapted from Lund [25].

### 2.2 Learning Phases

Based on the subject of Heat and Temperature, this subject was divided into smaller learning object. There would be several learning cycles for every learning object. The cycle for each learning object includes apperception, polling to check the prior knowledge, providing reading resources, directed discussion, quiz, feedback and appreciation, and overall evaluation. Table 1 shows the relationship between the activities on the cycles and features on the menu in the Edmodo.

**TABLE 1**

*MENU IN THE EDMODO FOR LEARNING ACTIVITY SUPPORT*

No	Activities	Menu	Type
1	Apperception	Posting	Text
2	Measuring prior knowledge	Polling	Multiple Choice
3	Providing reading	Posting	Attachment (pdf), Link

	resources		
4	Directed discussion	Posting	Text
5	Measuring reading materials comprehension	Quiz	T/ F, Matching, Multiple choices, Essay
6	Feedback and	Posting	Text
7	Overall evaluation	Quiz	T/ F, Matching, multiple choices, Essay

## 3 RESULTS AND DISCUSSIONS

### 3.1 Results

In this study there were 34 students from junior high schools in remote areas and there were 33 students from urban (cities) schools. Descriptive data for both schools are shown in Table 2.

**TABLE 2**  
*DESCRIPTIVE STATISTICS*

Aspects	School Location	Mean	Std. Deviation	N
Usefulness	Remote Areas	15.2941	2.20920	34
	Cities	16.1515	1.71612	33
	Total	15.7164	2.01364	67
Easy to Use	Remote Areas	13.6765	2.80390	34
	Cities	15.6667	2.07163	33
	Total	14.6567	2.64891	67
Easy to learn	Remote Areas	11.8824	1.90318	34
	Cities	12.3939	2.22120	33
	Total	12.1343	2.06629	67
Satisfaction	Remote Areas	15.4412	2.03293	34
	Cities	15.7576	2.25042	33
	Total	15.5970	2.13243	67

From Table 2, we can compare the value of Mean and Standard Deviation of both areas. In general, the mean for students in urban areas is higher than the mean for students in remote areas. However, the interesting one is the standard deviation value. On the Usefulness and Easy to use aspects, students in remote areas have a higher standard deviation value than students in urban areas. On the other hand, in aspects of Easy to learn and Satisfaction, students in remote areas have a higher standard deviation value than students in urban areas. This different level of distribution will be a discussion to find out the causes of this difference.

**TABLE 3**  
*MULTIVARIATE TESTS*

Effect	Value	F	Hypothesis df	Error df	
Intercept	Pillai's Trace	.986	1053.605 <sup>a</sup>	4.000	62.000
	Wilks' Lambda	.014	1053.605 <sup>a</sup>	4.000	62.000
	Hotelling's Trace	67.975	1053.605 <sup>a</sup>	4.000	62.000
	Roy's Largest Root	67.975	1053.605 <sup>a</sup>	4.000	62.000
IVAR	Pillai's Trace	.215	4.249 <sup>a</sup>	4.000	62.000
	Wilks' Lambda	.785	4.249 <sup>a</sup>	4.000	62.000
	Hotelling's Trace	.274	4.249 <sup>a</sup>	4.000	62.000
	Roy's Largest Root	.274	4.249 <sup>a</sup>	4.000	62.000

From the multivariate table (Table 3), p-value (Sig.) is smaller than 0.05 using various tests (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, or Roy's Largest Root). In other words IVAR

are at the same level for all the dependent variables. These results indicate that the design (Intercept + IVAR) can explain the phenomenon of student perceptions of online learning. Partial eta squared is similar to the R squared in the simple ANOVA analysis. The partial eta squared of Pillai's Trace for IVAR is 0.986. One can be interpret this as 98.6% of the variability in the dependent variables is being accounted by variability in the IVAR. After the testing of hypothesis the next results is of homogeneity and one can use the Levene's Test for that purpose. Since there are four aspects, it is important to check whether the covariance or the interconnections among the dependent variable is same or not. From the Levene's test, the p-values are higher than 0.05 (Usefulness, 0.780; Easy to Use, 0.555; Easy to learn, 0.082; Satisfaction, 0.295); it means that the error variance of the dependent variables is equal across the independent variables. Based on Table 4, in case of IVAR, there are not all aspects significant at 5% significance level. See the p-values for each aspect: Usefulness (p-value= 0.081), Easy to Use (p-value= 0.002), Easy to learn (p-value= 0.315), and Satisfaction (p-value= 0.548). It means that there is difference in the aspect of Easy to Use and no differences in the aspects of Usefulness, Easy to learn, and Satisfaction.

**TABLE 4**  
*TESTS OF BETWEEN-SUBJECTS EFFECTS*

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	Usefulness	12.311	1	12.311	3.134	.081
	Easy to Use	66.330	1	66.330	10.866	.002
	Easy to learn	4.383	1	4.383	1.027	.315
	Satisfaction	1.676	1	1.676	.365	.548
Intercept	Usefulness	16559.176	1	16559.176	4215.986	.000
	Easy to Use	14418.867	1	14418.867	2362.113	.000
	Easy to learn	9869.219	1	9869.219	2312.474	.000
	Satisfaction	16300.184	1	16300.184	3550.132	.000
IVAR	Usefulness	12.311	1	12.311	3.134	.081
	Easy to Use	66.330	1	66.330	10.866	.002
	Easy to learn	4.383	1	4.383	1.027	.315
	Satisfaction	1.676	1	1.676	.365	.548
Error	Usefulness	255.301	65	3.928		
	Easy to Use	396.775	65	6.104		
	Easy to learn	277.408	65	4.268		
	Satisfaction	298.443	65	4.591		
Total	Usefulness	16817.000	67			
	Easy to Use	14856.000	67			
	Easy to learn	10147.000	67			
	Satisfaction	16599.000	67			
Corrected Total	Usefulness	267.612	66			
	Easy to Use	463.104	66			
	Easy to learn	281.791	66			
	Satisfaction	300.119	66			

### 3.2 Discussions

In the Usefulness aspect, the perceptions of students in urban areas (3.23 out of 4.0) tend to more useful online learning compared to students in remote areas (3.06). This difference is not significant (p-value = 0.08). It means that students in all regions feel the same benefits for online learning. Distribution of perceptual score between students in urban areas (1.71) was different compared to students in remote areas (2.21). The cause of this distribution difference was at the maturity level of students in using the LMS application. Students in remote areas are relatively new on the utilization of this application, so the level of students' skills is relatively more diverse; vice versa students in urban areas. In the Easy to Use aspect, the students' perceptions in urban areas (3.13) tended to feel easier to operate LMS during online learning than students in remote areas (2.74). This difference was significant (p-value = 0.002). This issue means that students in both regions perceived the same level of ease of use. Distribution of perceptual distribution was the same between students in urban areas (2.87) compared to students in remote areas (2.80). The cause of the difference in the perception of the level of use of the LMS application is likely due to the problem of the learning curve as in the Usefulness aspects discussed earlier. In the Easy to learn aspect, the perceptions of students in urban areas (3.10) tended to easier to learn during involved in online than students in remote areas (2.97). But, this difference is not significant (p-value = 0.315). In other words, it means that students in both regions feel the same level of learning ease. Distribution of perceptual distribution tends to be more widespread among students in urban areas (2.22) than students in remote areas (1.90). This finding is an interesting thing. As a new learning strategy for students in remote areas, they feel easier in learning online. The level of interaction and the number of posts in online forums was an indicator that there was a sharing process of knowledge among students [26, 27]. Students in remote areas performed better enthusiasm for these indicators. Although in general, it remains that students in both regions were the same in terms of Easy to learn. In the Satisfaction aspect, the perception of students in urban areas (3.15) is relatively the same as online satisfaction compared to students in remote areas (3.09); this difference is not significant (p-value = 0.548). This finding means that students in both regions feel the same level of learning satisfaction. Distribution of perceptual distribution tends to be the same for students in urban areas (2.25) compared to students in remote areas (2.03). As new learning for students in remote areas and already familiar with online learning; all students tend to be the same in the level of learning satisfaction. The results of the statistical analysis using MANOVA showed that there were no significant differences in the four aspects of perception's score between students in the two regions; accept for the aspect of easy to learn. Students' perceptions in the two regions are relatively high, which the average score of perception was almost 3 out of 4. These results are optimism for educators and education-policymakers to implement online learning optimally in all regions with some adjustments. Online learning does provide many new opportunities in learning. However, online learning is not just installing material and assignments in cyberspace and allowing students to download material and upload assignments [16, 22, 23]. Organizing online learning does not mean making it smooth in learning; but many opportunities allow for better learning [1, 5]. New competencies can be built

using this technology [9, 11, 28, 29]. Weak interaction and social presence in online learning are factors that cause failure in online learning [30-33]. Student activities in daily life that tend to be intense in using social media applications also influence the selection of LMS [12, 20]. Organizing online learning with styles such as social media or at the same time using social media applications will increase the effectiveness of learning [34]. Unfortunately, social media integration as a channel or media for learning still has many constraints on the menu for recording learning activities. The advantage of social media is in the aspect of social presence. One of the findings in this study was that interactions were more intensive through various forms of quizzes, posts, emoticons. It tended to make students more satisfied with learning. Efforts to improve teacher skills to build interaction and social presence during online will significantly determine the comfort and satisfaction of learning for students [35-37].

#### 4 CONCLUSION

The results of this study indicate that education policymakers can eliminate or reduce the uncertainty regarding online learning in students in remote areas. With the support of internet infrastructure, digital technology penetration, and also student IT literacy, online learning can be one way to improve the quality of learning more evenly. In general, students in various regions in both urban and remote areas do not have significant obstacles when involved in online learning. From all aspects of perception, only on the Easy to Use aspect are different. This difference is an obvious thing considering that in students in remote areas, online learning is a new way of learning for them. These results have rebuilt optimism for equitable education through online learning in various regions. As a consequence of the results of this study, there is a need to be more structured to improve teacher skills in managing learning; including the development of student-centered learning strategies, selection of appropriate learning media, and also skills to foster interaction and social presence during learning. Further research on these issues will support the better performance of online learning.

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