



Effectiveness of Online Chemistry Learning Judging from Student Perceptions

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Abstract

This research aimed to clarify student perceptions of the effectiveness of online chemistry classes during the coronavirus pandemic. The research population only consisted of students from the chemistry education research program at the Faculty of Teacher Training and Education, Indonesian Christian University. The sample for this research was 47 students of the Indonesian Christian University Chemistry Education study program, which were obtained using saturated sampling techniques. The instrument used was a closed Chemistry Education questionnaire regarding student perceptions regarding the effectiveness of online learning, with answers scored according to a Likert scale and validated by experts. Research data was analyzed using descriptive statistics. Based on research results, students' perceptions of the effectiveness of online chemistry learning during the COVID-19 pandemic consist of three indicators, namely acceptance, understanding, and evaluation, with an average score and percentage of 72.61 achieved. Therefore, it can be concluded that online chemistry learning during the COVID-19 pandemic was successful at the Indonesian Christian University Chemistry Education Research Program

Keywords— Student Perceptions, Online Chemistry Learning, Covid Pandemic 19

I. INTRODUCTION (HEADING 1)

Indonesia is affected by the coronavirus disease 2019 (Covid-19) outbreak which has been going on for more than a year. (Muliadi et al., 2021). Due to the rapid spread of Corona virus infection to various countries, every The state immediately implemented community welfare and social assistance programs different for local and individual individuals, institutions, networks and associations international. The Covid-19 pandemic continues to affect many aspects of life in Indonesia. The World Health Organization (WHO) declared Covid-19 as a global pandemic in March 2020. Promote education and Public awareness is one strategy to stop it spread of Covid-19. This policy change allows students to do online learning (Kusumaningrum & Wijayanto, 2020). The Minister of Education and Culture of the Republic of Indonesia sent Circular Letter Number 4 of 2020 on March 24 2020 concerning implementation of education policies during the Covid-19 pandemic. In a letter the circular explains that learning is carried out at home via online or distance learning, and this is done for provide meaningful learning experiences for students. Face-to-face learning faces are prohibited at all levels of education from elementary school totertiary institutions (colleges) by the Ministry of Education and Culture of the Republic of Indonesia. As a result, female students, university students, and students must take part in online learning. This has a negative impact towards education at all levels. (Dewi, 2020).

Since the beginning of the pandemic, a policy has been established by the government through Circular Letter Number 3 of 2020, the Ministry of Education and Culture implemented online learning to prevent the spread

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of Covid-19 in institutions education. Online learning must be implemented at all levels education, including tertiary institutions. (Muliadi et al., 2021). As is to this policy, universities throughout Indonesia responded quickly linked to online learning, including Christian Universities Indonesia. Information and communication technology has been used for learning in Indonesian Christian University since March 2020, especially in the Faculty Teacher Training and Education and Chemistry Education Study Program. Lots opportunities for students to access teaching materials provided by the system online learning. The Chemistry Education Study Program utilizes various applications media for conducting online learning individually or in groups. The application used by lecturers and students is wrong the only ones are, Microsoft Teams, Google Classroom, Google Meet, Zoom Meetings, and so on. Purba's research results (2021), one of the media which is utilized by the Indonesian Christian University Microsoft Teams 365. During the Covid-19 pandemic, the FKIP Chemistry Education Study Program also took advantage Microsoft Teams for online learning. Learning to use Microsoft Teams 365 makes difficult learning easy. Based on researchers' findings or their own observations, that There were several complaints or obstacles experienced by students at the time online learning, for example: network constraints, quota limitations, location the student's domicile area is far from urban areas, the 3T area network facilities are not yet complete. The Chemistry Education Study Program has students are dominated by sons and daughters who come from other areas Network coverage facilities are still difficult, especially in 3T areas, for example: Mentawai (Siberut (Saibi Samukop, Sirisura), Sikakap (Talak Pulei), and Sipora (Rokot, Sao, Monga), Kalimantan (Parasan, Kerasik), Nias (Umbunasi). This makes students have the potential to experience obstacles in implementing online learning. So it is feared that it will have an impact towards achieving Learning Outcomes.

To know in detail about how the experience or what a person or group of people feels about an action or activities, can be carried out in various ways, including: trace opinions, observations or observations, perception analysis, and so on. Therefore, to obtain information regarding opinions students or what students feel regarding online learning at the Chemistry Education Study Program can be carried out using perception analysis. Related to this, researchers are interested in how perception occurs students about how online learning is carried out during the pandemic Covid-19, Chemistry Education Study Program.

II. RESEARCH METHODOLOGY,

This research method uses descriptive quantitative research and instruments data collection in the form of a questionnaire. This research was conducted to describe the perceptions of Christian University Chemistry Education Study Program Students. The Likert scale questionnaire distributed online via Google form is the data collection method in this research that uses an approach quantitative descriptive Indonesia on the effectiveness of online learning during the Covid-19 pandemic. The sample in this research was 47 chemistry education study program students taken using purposive sampling technique

As we know, the goal of a research project is to collect data, so the method used to collect it is very important. The methods used to collect data in this research include: by using a questionnaire or questionnaire. A questionnaire is a survey that consists of of written questions that are intended to be answered by the respondent aimed. The type of questionnaire used in this research is a questionnaire closed with predetermined answer choices. As for the Instrument grille questionnaire used in this research with the grid such as the table 1

Table 1. Grid Instruments Measuring Perception

Indicator	Statement Number	Total
Acceptance/Absorption	1,2,3,5,10,19,20	7
Comprehension/Understanding	6,7,8,11,13,17	6
Evaluation/Assessment	4,9,12,14,15,16,18	7
Total		20

This research uses research procedures to determine the stages will be done. The following are the research procedures:

1. Preparation Stages

The preparation stage begins with making a proposal, determining the population and sample, followed by compiling research questionnaire instruments, proposal seminars and validating the instruments used in the research.

2. Implementation Stages

The implementation stage begins with making a research permit, then distributing the questionnaire instrument online to the intended respondents.

3. Final Stage

In the final stage of the research, the researcher will process existing data, followed by discussions and drawing conclusions until the thesis

III. RESULT AND DISCUSSION

The formula for calculating the score or percentage value from the questionnaire results data is as follows.

$$P = \frac{F}{N} \times 100\%$$

Information :

P = Percentage Value of Respondents' answers

F = Score (frequency) of respondent's answers

N = Number of Respondents

The assessment results will be categorized according to the percentage of the questionnaire. During the COVID-19 pandemic, the assessment results categories were used to determine students' perceptions of the effectiveness of online chemistry learning. Determining the average percentage assessment category uses the indicators in Table 2.

Table 2. Student Perception Score Interpretation Category

Interval Presentase	Kategori
86 - 100	Very good
85 – 70	Good
69 - 54	Not good
53 - 38	Very Not Good

The data obtained is shown in Table 3 below based on the distribution of student perception questionnaire instruments regarding online learning during the COVID-19 pandemic. The instrument consists of three indicators, namely acceptance indicators, understanding indicators, and evaluation indicators.

Table 3. Overall Results of Student Perceptions of Effectiveness of Online Chemistry Learning during the Covid-19 Pandemic

Indicator	Average	Category
Reception	75,38	Good
Understanding	72,19	Good
Evaluation	70,26	Good
Average	72,61	Good

From Table 3 above, it is known that the overall results of students' perceptions of the effectiveness of online chemistry learning during the Covid-19 pandemic, which consists of three indicators, obtained an average percentage score of 72.61 in the good category.

Perception is a process of receiving a stimulus by an individual through the sense organs, also called a sensory process (Walgito, 2010). According to Bimo Walgito's opinion in the journal Kusnia, (2019), there are 3 indicators of perception, namely, the acceptance/absorption indicator which is a perception indicator whose function is to capture external stimuli, an understanding indicator, and an evaluation indicator which is a stimulus perceived from outside, which will then be evaluated by individuals.

Based on the results of research on student perceptions of the effectiveness of online chemistry learning, it is explained based on student responses to 20 questionnaire instrument statements. Each statement item has answer choices on a Likert scale, namely Strongly Agree (SS), Agree (S), Disagree (TS), Strongly Disagree (STS). The statements in the questionnaire instrument were filled in by 47 Chemistry Education students from

the 2018 – 2021 class of Indonesian Christian University. Students' responses to each of the 20 statements they filled out on the research Google Form revealed the proportionate value each statement held.

Based on the results of the overall data analysis in table 3, it is known that Chemistry Education students' perceptions of the effectiveness of chemistry learning online during the Covid-19 pandemic with an average percentage value of 72.61 with a good category (Sugiyono, 2013). The results of this research explain that chemistry learning carried out online during the Covid 19 pandemic in the Chemistry Education Study Program at the Indonesian Christian University is progressing well. Several studies have been conducted related to student perceptions of online learning shows quite good results and some also provide positive response. Like research conducted by Muhali et al (2021). explained that his research showed the effectiveness of learning online systems chemistry is going quite well, and the research carried out by Rais (2021) explains students' perceptions regarding learning remotely using Microsoft Teams shows that students have positive perception with pleasant criteria.

However, there are several other researchers who have conducted research that actually shows this the opposite result, such as research conducted by Hadi, (2020) where The results of the research show that students prefer learning offline (face to face) rather than online learning. This is due to the many obstacles experienced by students and lecturers during online learning at the Christian University Chemistry Education Department Indonesia includes: (a) Problematic network access, online learning can be accessed via the internet network, but in reality it is a network the internet is bad (Asrul & Afil, n.d.). This is one of the obstacles that many experience by Chemistry Education students during online learning. Network constraints This lack of stability is not only experienced by students who live in the area remote, but students who live in urban areas also experience it, so The online learning they are taking part in is a bit hampered and experienced delays in the learning process they follow online; (b) Quota limitations, after inadequate network, internet quota too one of the obstacles often experienced by chemistry education students online learning. If the internet quota is insufficient then online learning nor can it be accessed

IV. CONCLUSION,

Based on the results of the research and discussion, it can be concluded that students' perception of the effectiveness of online chemistry learning during the Covid-19 pandemic in the Chemistry Education Study Program was 72.61 in the good category. Acceptance indicator with a score of 75.38, understanding indicator 72.19, and evaluation indicator 70.26. The research results show that students have a positive perception regarding online learning.

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