

ANALYSIS OF ONLINE LEARNING DIFFICULTIES FOR CLASS X STUDENTS ON QUANTUM NUMBERS FOR THE ACADEMIC YEAR 2021/2022 AT MA RAUDHATUSYSYUBBAN

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Since the COVID-19 virus pandemic hit, the learning process has been shifted to online learning. The aim of this research to analysis online learning difficulties to class X MA Raudhatusysyubban year 2021/2022 at quantum number matter in chemistry object. In this paper described difficulties online learning not only from student but also from teacher. The research uses descriptive method. Results of the analysis showed that 26% of students had difficulty answering the test questions on the material of quantum numbers. Students difficulties are not all student's like chemistry, duration in learning relative short, difficult understand in online learning, application sometimes crashes, internet quota and speed are not enough distube online process and replay learning. Teacher difficulties are each student's has own internal and external problem, not eazy identify students understanding in online learning include requirement concept before quantum number matter, duration in learning relative short, teacher have to reduce assignments to students, and teacher difficult explain in online learning compared in real classroom.

Keywords: *Learning Difficulty Analysis, Online, Quantum Number Material*

1. Introduction

"A process of changing the attitudes and behavior of a person or a group of people in an effort to mature humans through teaching, training, actions, and ways of education can be interpreted as education" [1]. The education that has been carried out so far is a face-to-face learning process where students and teachers are in class, but since the COVID-19 virus pandemic hit, the learning process has been diverted to follow and help break the spread of COVID-19 by conducting a bold learning process until 2020. Disturbances in the direct learning process between students and teachers and cancellation of learning assessments have an impact on the psychology of students and the decline in the quality of students' skills [2]. Talking about education and online learning, it is important for a teacher to master technology so that online learning can continue to run effectively during a pandemic like this. Given that online learning is actually not easy to apply, especially for chemistry. Online learning environment may be drastically different from a classroom situation where students may interact with the instructor and other classmates in real time [3]. Therefore, Especially in learning chemistry, students learn about composition, structure, properties, changes, and the energy that accompanies them [4].

Internal factors that cause learning difficulties include understanding the prerequisite concepts and concepts, lower mathematical ability, interest, and low motivation to learn chemistry. External factors negative effect from their friends, supporting facilitate, and lerning methods [5]. Chemistry is often considered a difficult subject, which sometimes makes students reluctant to study chemistry further [6]. Difficult impression that occurs because most of the chemical concepts are abstract and complex, so it requires a deep understanding in studying them [5]. "External factors that cause learning difficulties include teaching methods applied by teachers, negative peer influences, less conducive learning conditions and times" [7]. Based on the results of interviews with chemistry teachers at MA Raudhatusysyubban, information was obtained that during online learning there were several obstacles faced by teachers and students. Online learnig activity fully problem not only face problem from student, but also from teacher too. This condition never faced before. For chemistry learnig, subject quantum number has specific material. This subject matter of atomic structure is abstract and potentially



produced lack of student attention.

The aim of this research to analysis online learning difficulties for class X MA Raudhatussuyubban at quantum number matter in chemistry object. In this paper described difficulties from student and teacher in online learning.

2. Methods

The research design used in this paper is descriptive method. Phenomenological that occurs in the surrounding environment so as to produce the necessary information. The data obtained is qualitative data, which still needs to be interpreted so that its meaning can be understood [8]. According to [9] "descriptive method is research that describes object being studied according to the situation and conditions when the research was carried out".

Subject in this research class XI students natural science MA Raudhatussuyubban their chemistry teacher. Data from research come from students and teacher in order to find more information. Instrument in this research are tests and interviews. The test use essays test use construct validity by lecturer. The test follow theory from [10] where the learning outcome test is a test given after the subject matter is given to students and the results are used to analyze the difficulties. The interview technique carried out is included in the semi-structured interview technique in order to get more in deep information.

The credibility interview for teacher performed use observation extention dan for students performed use triangulation techniques. According to [11] states that: observation extention, researcher reobserve and reinterview source data and the recents data. Triangulation techniques, namely to test the credibility of the data is done by checking the data to the same source with different techniques. So the researchers obtained data with test questions, then checked with interviews and documentation.

3. Results And Discussion

3.1 Research Instrument Analysis

The test question consists of essay question. Question in this moment have different condition with before. In this research condition is the first time for students have to study fully from home and in the school. The result of validty for the test are 6 questions of essay. The process of construct validity some question needs to be repaired. For intrumen of interview, interview for student and teacher need to be repaired in get more information in effective time. Table 1 shown guideline

3.2 Difficulty Percentage Scale

Students' online learning difficulties were analyzed through answer sheet of students. **Table 1** shown score result on students test of 15 students. 15 students in class XI MIA Raudhatussuyubban. So the results of the answers to the test questions are to find out students' online learning difficulties in quantum number material based on the values students get from students' answers that are adjusted to the discussion on the question indicators. The following is a table of scores on student test questions.

Table 1. Score Results on Student Test Questions

<i>Score Interval</i>	<i>Predicate</i>	<i>Frequency (students)</i>
5 (91- 100)	Very good	5
4 (76 – 90)	Good	4
3 (61 – 75)	Enough	1
2 (51 – 60)	Not enough	3
1 (0 ≥ 50)	Very less	2

Based on the table above, after totaling the scores from the answers to the overall test questions, the students are calculated using a Likert scale, namely, the total number of student scores multiplied by the Likert score as shown in table 2:

Table 2. Total Score Result

SB	5 x 5	25
B	4 x 4	16
C	3 x 1	3
K	2 x 3	6
SK	1 x 2	2
score		52

The score values are analyzed to find out which values are very real, the boundary between high scores and low scores on the total scale. And all the results are added up so that the total score is 52. Then in order to get the interpretation results, first it must be known the lowest score (X) and the highest score (Y) for the assessment item, then X is equal to 200 for the lowest score and Y is equal to 500 for the score. Highest after calculated by the formula. Before entering the percent index results, we also have to know the interval (range of distance) and the percent interpretation in order to know the assessment using the method of finding the percent score intervals (I). Then the percent score intervals (I) are equal to 100 divided by the number of Likert scores, namely 5 the result is equal to 20. This is the distance interval from the lowest 0% of the highest 100%. The criteria for the interpretation of scores based on intervals shown in table 3

Table 3. Interpretation of Scores Based on Interval

80% - 100%	SB
60% - 79,99%	B
40% - 50,99%	C
20% - 39,99%	K
0% - 19,99%	SB

The final settlement looking for the lowest score or the percentage of students who have learning difficulties, the total score is 52 divided by X (lowest score) 200 multiplied by 100 percent so the result is 26%. In the table of interpretation scores based on intervals are in the 20% - 39.99% category K (less) and the percentage of students who have learning difficulties can be identified through the table 4. Table 4 show percentage scale of learning difficulties, according to [13].

Table 4. Difficulty Percentage Scale

<i>Level of difficulty</i>	<i>Criteria</i>
80 – 100%	Very high
66 – 79%	High
40 – 65%	Currently
0 – 39%	Low

It can be seen from the results of students' answers to questions on the test questions, which is 26%, which in the table the percentage scale of learning difficulties is at 0-39%, which means that students' online learning difficulties in the quantum number material are low

3.3 Analyzing student's and teacher difficulties

Analysis from semi-structured interview technique. Student and teacher difficulties in online learning shown in table 5.

Table 5. Student and teacher difficulties in online learning

<i>Student</i>	<i>Teacher</i>
Not all student's like chemistry object	each student's has own internal and external problem
The teacher explains the material online and adds a very short delivery time.	not eazy identify students understanding in online learning and also requirement
The material is difficult to understand online.	



The online learning application sometimes crashes.	concept before quantum number matter.
The internet quota and speed are not enough and disturb students process in online learning.	In online learning duration learning limited although student's replay or restudy
Internet quota not only disturb process in online learning, but also disturb student in replay learning video.	Reduction of assignments to students as a law for teacher in order to minimize student stress in pandemic covid 19.
strategies taken by students by studying on	Teacher feel difficult explain in online learning compared in real classroom.
	Student's do not use ask option when they do not understand.

Based on the summary table of the results of teacher and student interviews, this is inversely proportional to the test questions which in the summary it can be concluded that according to student chemistry lessons are fun because learning chemistry can find out various kinds of changes in substances that occur in everyday life and know harmful substances. But some students also don't like chemistry lessons on math material during online learning because it's difficult to understand, moreover, the many obstacles encountered when learning online are from internal and external factors.

In this study, the factors of learning difficulties internally were the students' lack of understanding of the prerequisite material for understanding advanced material, students' lack of understanding of arithmetical chemistry, the difficulty of students understanding the material when studying online and teachers who had difficulty teaching students the matter of counting and reactions in chemistry learning. A similar study was also conducted by [12] with the title Analysis of learning difficulties for class X on atomic structure material, where students had difficulty solving problems on the subject of atomic structure, namely on concept questions, the average was (59.73 %) of students who answered incorrectly and the calculation questions were (74,91%), because students only memorized and did not understand the concept correctly. Students only focus on the teacher's explanation at school without looking for other sources.

External learning difficulties factors in this study are online learning applications sometimes have problems (errors), limited learning time, so that the material delivered by the teacher is very lacking, insufficient internet quota if learning requires watching learning videos, internet quotas are wasteful during online learning. This is in line with the research conducted by [14] entitled Factors that trigger student anxiety in conducting online learning during the COVID-19 pandemic, involving 74 informants who are high school students in Indonesia. Informants were asked to fill in open-ended questions related to the research topic via an online form. The results showed that the triggers for students' anxiety during online learning included difficulty understanding the material, difficulty doing assignments, the availability and condition of the internet network, technical obstacles, and worries about the next assignment. Efforts made to overcome this anxiety includes independent study, immediately does the assigned tasks, discussions with teachers and friends, pray, encourage yourself, and do other activities such as watching movies, listening to music, playing games, sleeping, eating, and exercising.

At the time of learning quantum number material, students are relatively easy to understand because the teacher explains it well. It's just that the difficulty factor in online learning of students on the material of quantum numbers in this study is time. Because the time for online learning is only 20 minutes to 1 hour of learning. So that the time for delivering the material by the teacher is not enough and the only material that is important and in accordance with the Basic Curriculum (KD) from the government for the pandemic period is delivered. For the provision of student learning assignments, the time for collecting their assignments is also given a fairly long period so that students are not stressed and their health is maintained.

As for the efforts of students and teachers in overcoming learning difficulties while online, the teacher conducts discussions on the e-learning application timeline from the Ministry of Religion so that students are more active in learning. But some students are forced to learn to understand on their own and learn to repeat the material presented by the teacher and do a search on internet media such as Google, ask friends for help and ask the teacher a lot through private chat. Because the time given for

collecting assignments is quite long but the time for providing material and students' understanding of learning is not sufficient, resulting in some students like to learn shortcuts, namely cheating via Google, which results in the value of the results of student questionnaires being inversely proportional to what was explained by students. in interviews in this study. And why can researchers say that students have done learning shortcuts or cheated because it was found that some of the students in their questionnaire had the same answers and it was true that there were answers taken from several blogspot on google.

In line with what has been discussed by researchers, according to [15] in their research entitled the impact of online learning on student character education, which is related to the lower level of honesty of students when studying online.

4. Conclusion

Based on the results and discussion, it can be concluded that the results of the answers to the test questions that have been given are 26% of students who have difficulty answering the test questions on the quantum number material. Students difficulties are not all student's like chemistry, duration in learning relative short, difficult understand in online learning, application sometimes crashes, internet quota and speed are not enough distube online process and replay learning. Teacher difficulties are each student's has own internal and external problem, not eazy identify students understanding in online learning include requirement concept before quantum number matter, duration in learning relative short, teacher have to reduce assignments to students, and teacher difficult explain in online learning compared in real classroom.

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