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Analysis of Teacher Responses to the Use of Web-based Assessment to Assess Students' Attitudes towards Science Subjects

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ABSTRAK

Purpose of the study: The purpose of this study was to determine the results of the teacher's response to the use of web-based assessment as a medium for assessing student attitudes towards science subjects.

Methodology: This research uses quantitative descriptive research. The population in this study were all teachers of MTsN 8 Muaro Jambi and SMPN 30 Muaro Jambi. The sample of this study was taken using a total sampling technique of 38 people. The research instrument used was a non-test instrument in the form of a user response questionnaire. The data analysis technique used is descriptive statistics.

Main Findings: From the research that has been done, it is found that teachers at MTsN 8 Muaro Jambi have a very good response with a percentage of 68.18%, while users (teachers) at SMPN 30 Muaro Jambi have a good response to the use of web-based assessment used to assessing students' attitudes towards science subjects with a percentage of 68.75%.

Novelty/Originality of this study: The novelty of this study is to analyze the teacher's response to the use of web-based assessments to assess students' attitudes towards science subjects. This is because the analysis of user responses with a sample of educators (teachers) especially in the use of web-based assessments used to assess students' attitudes towards science subjects has not been carried out. Therefore, this research will complement the previous research.

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1. INTRODUCTION

The development of science and technology continues to grow rapidly and expand so that it has an impact on all aspects of human life [1-3]. Advances in science and technology have given rise to various tools and applications as media that can be utilized in the learning process [4]. The use of technology in the field of education will improve the quality of learning activities because it can realize effective and innovative learning activities, as well as assist students in obtaining various information [5-7]. Utilization of this technology can be applied in learning natural sciences.

Natural science is one of the main subjects in the education curriculum in Indonesia, which studies a collection of knowledge about objects and natural phenomena obtained from the results of thinking with the skills of experimenting through the scientific method [8, 9]. Learning natural sciences is not only aimed at requiring students to master skills, knowledge in the form of facts, concepts or principles, but also the process of discovery through experiments in the learning process [10, 11]. The achievement of science learning objectives can be known by conducting an assessment. Assessment in the 2013 curriculum is carried out in 3 (three) assessment domains,

namely the cognitive, affective and psychomotor domains [12]. One of the important assessments in science learning is the assessment of the affective domain in the form of attitudes [13].

The affective domain in the form of attitudes in science learning is very important to be considered more deeply. This is because the attitude of students in learning science will determine the success of the learning process [14]. Students' attitudes towards science subjects can be seen from how students respond to science learning in the form of positive attitudes and negative attitudes [15, 16]. The attitude of students can be assessed by the teacher in each learning process. However. in fact, there are still many teachers who take the assessment process as secondary and consider it a mere formality, even though the assessment process is very important in assessing individual or group performance [17]. In addition, there are too many time constraints in assessing students and the assessment criteria used are sometimes not able to describe the attitudes of students as a whole [18]. Therefore, an assessment of the attitudes of students in science subjects is very much needed in science learning. Attitude assessment is used as a reflection of understanding and analyzing the progress of individual student attitudes during the learning process [19]. This attitude assessment can be done using a technology-based assessment.

One form of technology-based assessment is known as e-assessment. E-assessment is effective and efficient in assessing the affective domain to obtain information that describes student behavior [20]. E-assessment that is widely used is web-based assessment. Web-based assessment has been widely used today to assist learning activities and replace paper-based assessment [21]. The use of Web-based assessment provides an opportunity for students to complete an attitude assessment anywhere and anytime [22]. Web-based assessments can also provide live data results that can be viewed and widely distributed [23]. This shows that web based assessment is very helpful for teachers in the learning assessment process.

There are several previous studies related to the assessment of student attitudes in science subjects that are relevant to the research I will be doing, namely research conducted by [24] aims to measure and determine the response of users (students) to the application of web-based assessment to assess students' attitudes towards science subjects. The results of the research show that the average user response obtained is 3.38, meaning that students have a good response to the use of web-based assessment in the implementation of the assessment of student attitudes towards science subjects and character education values. Further research by [25] aims to describe student attitudes based on three indicators of student attitudes towards science. The results of his research indicate that the attitude of students in junior high school is categorized as good, because the three indicators measured show a good category which shows a positive attitude. Then the research conducted by [26] using a sample of 134 students, the results of the research show that the attitudes of junior high school students have a good category seen from the indicators of pleasure in learning science. Then the research by [27] showed the results that the assessment of student learning outcomes in the knowledge aspect was good, but the assessment of attitudes and skills was still rarely carried out. Then research by [28] aims to analyze the problems faced by educators, especially in the learning assessment process carried out. From his research, it was concluded that teachers had difficulty in developing an assessment rubric that was in accordance with the 21st Century innovative learning model, especially the assessment of students' attitudes and skills. Furthermore, research by [29] shows the results that the measurement of the attitude of responsibility carried out by teachers has not been standardized.

Based on the description above, it can be concluded that the thing that distinguishes the previous research from the research I did is in the sample used, in this study the sample used was the teacher, while the sample used in the previous research was students, so that the following things will be obtained. new things that can complement and support previous research. User response is very important in implementing a product, because it becomes a determining factor for the success of a product. Therefore, the purpose of this study was to find out how the results of the teacher's response to the use of web-based assessment as a medium for assessing students' attitudes towards science subjects.

2. RESEARCH METHOD

This research uses quantitative descriptive research. Quantitative descriptive research is a type of research that aims to describe systematically, factually, and accurately about certain facts and populations, or try to describe phenomena in detail [30]. The population is the entire object of research that is used as a source of data in the study [31]. The population in this study were all 22 teachers at MTsN 8 Muaro Jambi and 16 people at SMPN 30 Muaro Jambi. The sample is part of the number and characteristics of the population [32]. The sample in this study was obtained by total sampling technique. Total sampling is a sampling technique by using all members of the population as a sample [33]. So that the sample used is 38 teachers.

The data collection technique used in this study is a non-test instrument in the form of a user response questionnaire adapted from research conducted by [34]. This questionnaire consists of 18 statements. The user response questionnaire in this study used a Likert scale with a score of 5 for the strongly agree (SS) category, a score of 4 for the agree category (S), a score of 3 for the neutral category (N), a score of 2 for the disagree category (TS), and a score of 2 for the 1 for the category strongly disagree (STS). Data was collected by distributing response questionnaires to each teacher at MTsN 8 Muaro Jambi and teachers at SMPN 30 Muaro Jambi. The following

grid of user response questionnaires to the application of web-based assessment to measure student attitudes towards science subjects can be seen in Table 1 below.

Table 1. User Response Questionnaire Grid

Variable	Indicator	Item Number
Theory	1. Font selection.	13
	2. Material suitability.	2, 5
	3. Material clarity.	1, 3, 10, 11
Language	1. The language used is easy to understand.	7
	2. Grammar used according to EYD.	13, 15
Appearance	1. Ease of use of media.	14
	2. Attractive media display.	9, 12
Benefit	1. The media provides information on student attitude assessment.	18
	2. Make it easier for teachers to assess student attitudes.	4, 6, 8, 16, 17

User response data processing techniques are carried out using descriptive statistics. Descriptive statistics are used to simplify and simplify the delivery of information more quickly and precisely [35]. The categories of user (teacher) responses to the application of web-based assessment to measure students' attitudes towards science subjects can be seen in Table 2.

Table 2. Category of User Response Results

Range	Category
18.0 – 32.4	Very Not Good
32.5 – 46.8	Not good
46.9 – 61.2	Enough
61.3 – 75.6	Good
75.7 – 90.0	Very Good

3. RESULTS AND DISCUSSION

Web-based assessment has many advantages over paper-based assessment, so it can be a new innovation in the learning assessment process. Therefore, web-based assessment is very necessary in measuring student attitudes towards science subjects in science learning. The description of the response of users (teachers) to the use of web-based assessment to measure students' attitudes towards science subjects can be seen in Table 3.

Table 3. Description of User Response Statistics

Variable	Range	f	%	Category	Mean	Me	Mo	Max	Min
Teacher's	18 – 32,4	0	0%	Very Not Good	81,5	83,5	90	90	71
Response	32,5 – 46,8	0	0%	Not good					
at MTsN 8	46,9 – 61,2	0	0%	Enough					
Muaro	61,3 – 75,6	7	31,82%	Good					
Jambi	75, 7 - 90	15	68,18%	Very Good					
Teacher's	18 – 32,4	0	0%	Very Not Good	75,3125	73	72	90	68
Response	32,5 – 46,8	0	0%	Not good					
at Junior	46,9 – 61,2	0	0%	Enough					
High	61,3 – 75,6	11	68,75%	Good					
School 30	75, 7 - 90	5	31,25%	Very Good					

Table 3 shows the results of teacher responses to training on the application of web-based assessment to measure students' attitudes towards science subjects. Based on the table, it can be seen that as many as 31.82% of teacher responses at MTsN 8 Muaro Jambi to the use of web-based assessment to assess students' attitudes towards science subjects are in the good category. In addition, there are 68.18% of teachers who have a very good response to training in the use of web-based assessment to assess students' attitudes towards science subjects, the average score is 81.5, the median is 83.5, the mode is 90, the minimum score is 71, and the maximum score is 90. Meanwhile, the teacher's response at SMPN 30 Muaro Jambi to the use of web-based assessment to assess students' attitudes towards science subjects is in the good category with a total percentage of 68.75%, the average value of

75.3125, the median is 73, the mode is 72, the minimum score is 68, and the maximum score is 90. In addition, there are 31.25% of teachers who have a very good response to training on the application of web-based assessment to assess students' attitudes towards science subjects.

Web-based assessment is very important to be developed in learning because web-based assessment has many advantages compared to paper-based assessment. Web-based assessment can help teachers to determine the level of competency achievement and diagnose students' difficulties in learning, provide feedback to students so that they can improve the methods, approaches, activities and learning resources used [36]. This is in line with the opinion [37] that through web-based assessment, teachers can get feedback and know the students' understanding directly, so that they can improve the next learning process. Online-based assessments are capable of conducting a large number of assessments. In line with opinion [38] which suggests that web-based assessments can perform multiple assessments at the same time.

Research on user responses to web-based assessments has been carried out by many previous researchers, including research conducted by [39] aims to provide an innovative paper-free evaluation of test results, namely by mobile online-based evaluation using Google Forms. The results of the research show that the developed online mobile test assessment instrument assisted by Google Form is suitable for use for learning evaluation. Then the research conducted by [40] aims to analyze user responses in using web-based assessment as a character assessment medium. The results showed that the average score of 3.52 from user responses was categorized as very good, so this web-based assessment was feasible to be used in student character assessments. Furthermore, research conducted by [41] it was found that the average user (student) response had a very good response to the application of web-based assessment to measure science process skills. This is indicated by the respondents who stated that the web-based assessment only requires a short time in processing data, saves procurement costs, and is quite easy to apply. In addition, online assessments to assess students' affective domains can also increase students' interest and competence in learning [42]. Some of these studies show that the use of web-based assessment is able to make assessments more innovative and make students more interested and interested in participating in science learning. Then research conducted by [43] shows the results that the development of students' social attitudes will run effectively through example, habituation, supervision, rule enforcement, and parental involvement. Furthermore, research by [44] shows that the use of attitude assessment with observation techniques is carried out by the teacher directly after recording students' negative attitudes in a journal by giving warnings, advice, and making letters of agreement. Then research by [45] shows the results that teachers use journals in measuring the value of student togetherness, and the tendency of the value of friendly attitudes in SMP Negeri in Dukun District is included in the very high category.

The novelty in this study is to analyze the teacher's response to the use of web-based assessment to assess students' attitudes towards science subjects. The previous research only discussed the development of web-based assessments, and student responses to web-based assessments. However, the analysis of user responses with a sample of educators (teachers) especially in the use of web-based assessment which is used to assess students' attitudes towards science subjects has not been carried out. Therefore, this study will complement the previous studies.

The use of web-based assessment in measuring students' attitudes towards science subjects also has an impact on learning. The short-term impact of using web-based assessment in assessing students' attitudes towards science subjects is to make it easier for students to access the website [46, 47]. While the long-term impact is that this web-based assessment can increase student interest in learning and learning outcomes because there are features for assessments that are interesting and can be accessed easily [48, 49]. This shows that the use of web-based assessment is very supportive and helpful in assessing the learning process.

Web-based assessment makes it easier for teachers to assess student attitudes towards science subjects because the assessment process is much more effective and efficient and does not require a long time to manually correct students' answers. Therefore, teachers are expected to be able to deal with technological developments by implementing technology-based assessments that are more effective and efficient. So that this research is expected to be used as a basis for developing a technology-based assessment process to support the implementation of a better and more effective learning process.

4. CONCLUSION

Based on the results of the research that has been carried out, it can be concluded that users (teachers) at MTsN 8 Muaro Jambi have a very good response with a percentage of 68.18%, while users (teachers) at SMPN 30 Muaro Jambi have a good response to the use of the web- based assessment used to assess students' attitudes towards science subjects with a percentage of 68.75%. Both schools show that teachers respond well to the use of web-based assessment to assess students' attitudes towards science subjects.

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