

## TEST OF CRITICAL THINKING ABILITY ASSEMBLY ASSESSMENT PROTOTYPE

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### ABSTRACT

*The purpose of this study is to develop and implement and produce valid and practical assessment tools for critical thinking skills in disaster geography learning. Assessment tools are said to be valid if they have been declared appropriate to be used to measure the process and learning outcomes of disaster geography by geography education experts and education evaluation experts. In the research design this development follows the development model according to plomp which consists of three phases. In this study only took the prototyping phase (prototype phase). The instrument used in this study is an assessment that has been designed beforehand in the form of self-assessment assessment, assessment of colleagues and critical thinking assessment. After the device was made, three trials were conducted which consisted of one-on-one (individual) trials, small group trials, and large group trials. The results obtained in this study are limited to the results of trials in small groups by evaluating previously designed assessments*

**Keywords:** *Assessment, Critical Thinking Skills, Prototype*

### A. INTRODUCTION

Mentions the quality of good learning must be followed by a good assessment strategy, because information from the assessment results is useful for efforts to improve the quality of learning (Syahrul, 2010). Efforts to improve the quality of learning can be done through learning models and the way the assessment is applied. This is one of the factors that determine student learning achievement. Other factors in learning are the factors within each student in this case critical thinking, having good reasoning and communication skills.

States that teaching and developing critical thinking skills must

be seen as something urgent and cannot be underestimated. Mastery of critical thinking skills is not enough to be used as an educational goal only, but also as a fundamental process that allows students to overcome uncertainty in the future (Murawski, 2014).

Disaster Geography course is one of the courses that can train critical thinking, resonance, and communication skills. Disaster management through the educational curriculum is the basis for providing disaster knowledge in teaching and learning activities in schools. As stated by (Kamil et al., 2021) that studying Disaster Geography is the basis of an

appropriate medium for studying natural disasters. Because geography studies the interaction of natural and social systems, and as one of the disciplines of natural disaster as an object of study. Topics of geography include understanding the concept of natural hazards in it, various geological and atmospheric phenomena, such as earthquakes, hurricanes, river and coastal flooding, drought, and global warming as well as land use for settlements.

Student graduation rates in disaster geography courses greatly influence graduation in other subjects. This goal is a unity reflected in knowledge, skills and attitudes that are not mutually exclusive. Mulyasa (2013) states that curriculum assessment must cover aspects of knowledge, skills and attitudes as a whole and proportionally. In Mulyasa's opinion, the learning assessment must be able to evaluate each student's knowledge, skills and attitudes (cognitive, affective and psychomotor). So, aspects that only focus on cognitive assessment are no longer relevant to the curriculum, especially the 2013 curriculum which is competency based. Therefore, an assessment is needed that not only focuses on cognitive assessment, but

also touches affective and psychomotor assessments.

Previously, Disaster Geography lecture assessment tools have been designed which are expected to be able to assess students' critical thinking skills. The assessment tool in question is assessment of student behavior / activities, self assessment, and critical thinking assessment. This assessment is expected that the process of measuring learning outcomes is no longer considered an uninteresting activity and is not a separate part of the lecture process. The assessment that has been designed has been validated by experts, so that the assessment of disaster geography lectures can be used to measure critical thinking skills.

Based on the results of a literature study to measure students' critical thinking skills, PythotS instruments can be used in the form of reasoned multiple choice (Istiyono et al., 2014). HOTS instruments can also be used to measure the level of critical thinking skills of students (Budiman & Jailani, 2014). Besides that critical thinking skills can be started from improving the quality of learning, it is recommended to improve learning outcomes and scientific attitudes of students so that lecturers provide

problems that can arouse curiosity and problems are real and follow the trends of events or events during lectures (Gunada et al., 2017).

From the results of the literature study, to measure critical thinking skills students can use the PythoS and HOTS instruments. In addition, in the lecture process the lecturer must be able to improve the quality of learning. In the literature study, there has been no discussion about how the forms of assessment are integrated in the learning process. Assessment that is integrated in the learning process is important to be carried out, because lecturers have had difficulty conducting assessments which can touch three domains, namely cognitive, affective and psychomotor. Although the lecturer has tried to make an assessment but the lack of a comprehensive and authentic instrument has caused this assessment to not be intensely implemented (only focusing on results). Therefore an assessment tool is needed that prioritizes the process without ignoring the results.

Disaster Geography lecturers do not have an assessment to measure valid critical thinking skills and assessments that can capture all

process activities and student learning outcomes. Assessment carried out in conventional learning in general can only reveal what is known to students, while assessments must be used accordingly with the demands of a curriculum that is classroom-based assessment that aims to reveal what is known and what students can do. Through this assessment, educators not only get a picture of students' understanding of the concepts of Geography that have been studied. More than that, educators can express students' attitudes and motivations for the lessons and abilities of students.

Therefore, a valid assessment tool is needed to be able to measure student learning outcomes both in the cognitive domain, especially critical, affective and psychomotor thinking skills. The purpose of this assessment development is expected to be able to integrate learning outcomes with the entire learning process, even the assessment itself is an integral part of the whole learning process. Through the assessment it is expected that lecturers can capture all process activities and student learning outcomes by using various instruments that can prioritize individual potential.

## **B. MATERIALS AND METHODS**

This research is a development research that follows the general design model according to (Plomp & Nieveen, 2007). In this study focused on the prototype phase, namely the development of prototypes to be tested and revised based on formative evaluation. Evaluation is focused on relevance (content validity) consistency (construct validity) and practicality. The next stage is focused on the practicality and effectiveness when the product is tested.

Product testing is done to get the data used to revise the assessment device. Trials were conducted three times, which consisted of one-on-one (individual) trials, small group trials, and expanded trial stages (large groups). Individual and small group trials are intended to identify problems that can hinder the implementation of assessment models such as readability, language use, and the time required by lecturers and students to use assessment tools. So that revisions can be made until an assessment model that meets criteria is valid, practical and effective is obtained. Based on the results of the two tests, a prototype was revised and a better assessment model would be obtained. Against the revised prototype, an expanded trial is then

carried out. This trial aims to identify assessment shortcomings when used in actual conditions and can be seen the practicality and effectiveness of the assessment.

The trials conducted in this study were limited to small group trials. The instruments used in this study were interview guidelines, observation sheets and critical thinking tests. The data obtained were analyzed descriptively.

## **C. RESULTS AND DISCUSSION**

The assessment that has been designed is a self-assessment assessment, assessment of peer assessment and critical thinking assessment. This assessment has gone through an evaluation by the researcher himself (self evaluation), expert review (Expert review), and one-on-one evaluation (Disaster Geography lecturer team) in the first year. The revised assessment was based on the results of expert review and one-on-one evaluation was tested on small groups of students consisting of high, medium and low abilities. The results of an expert review of this assessment were carried out by two experts called validators. The validator gives an assessment of three aspects, namely 1) Aspects of Feasibility of

content, 2) Aspects of Presentation, and 3) Aspects of Language. The average rating of the validator is valid. However, there are differences in the valuation that is quite high between the two validators indicating that the product must be repaired and revised based on the results of discussions with the validator. The validator assesses that the product assessment tool in all three aspects is very valid (3.86) and states that the device can be used without revision, but Validator II considers that the device is invalid and can be used with moderate revisions. Therefore there must be a review and revision, so that the resulting equipment can be used properly.

In the assessment of critical thinking skills, indicators of critical thinking skills observed are identifying assumptions (A), formulating the main points of the problem (B), determining the consequences of provisions (C), Detecting Bias (D), Uncovering Data (E), Evaluating argument. The results of the trial are as follows: The results of observations of students' critical thinking observations in disaster geography lectures show that by using a critical thinking assessment tool, the ability of the high group to increase from the critically Critical (CK) to the

Very Critical (SK), while in the medium group low does not experience significant changes which are still in the CK criteria.

It can be concluded that, from critical thinking observation observations, it can be seen that the use of critical thinking assessment tools can invite students to pay attention to learning, namely that all attention is directed to the explanation of the material. In the High Group, from the beginning of the use of the device, attention had a Very Good value, whereas in the medium and low groups there was a slight change but still in the CK interval. For observations "Asking and Issuing Opinions" High Groups from the beginning of the use of observations still make a very good contribution, while in the medium group the use of devices provides increased activity to ask and issue opinions even though it is not yet significant, so in the low group the use of assessment devices has not changed which means to improve the ability to ask and express opinions. For aspects of correcting, and giving and appreciating, the use of assessment tools has not given a meaningful effect, this means that the device has not made a good contribution to improve the

response to positive criticism, pay attention to what others say and admit mistakes.

The results of observations of critical thinking skills indicate that based on the predicate of students' critical thinking abilities, students' critical thinking skills in the High Group are categorized as Very Critical (SK), while those in the Medium and Low Groups are categorized as Critical (CK). This means that at the High Group, the use of assessment can improve attention, increase motivation to ask questions and express opinions, want to correct mistakes and admit mistakes. While in the medium and low groups, the use of assessment is only able to improve critical thinking skills in the Enough category.

Results of test I, showed that the High Group obtained the average value in the Critical Quite (CK) criterion, the best value was given to evaluate the argument and the lowest value was the ability to formulate the points of the problem. In Test II, critical thinking skills decreased and included in the category of Not Critical, it happened because almost all students in the High group were unable to complete the test of critical thinking skills on the indicators formulating the main

problems, determining the consequences of a provision, detecting bias, revealing data and evaluate the argument, only to identify the assumptions of high-ability students who are able to solve it. In Test III, the critical thinking skills of High group students experienced a good increase, almost all indicators could be resolved well, the average obtained by the high group in Test III which was included in the criteria of Very Critical (SK).

The average score of Test I in the Medium Group is included in the No critical criterion. The lowest value is in the indicator formulating the Disaster Cause and the highest in the indicator evaluates the argument, as well as in Test II, almost the same as the High group almost all indicators cannot be resolved properly. But in Test III, the average group value is included in the Critical criterion (K). This means that there is a good change in students' critical thinking abilities. The test results in the low group experienced changes. Tests I, Tests II, and Tests III are low groups, which are included in the criteria of Critical (TK), Self Critical (CK) and Critical (K). So in the low group, the use of critical thinking assessment tools has a good influence

on the development of students' critical thinking skills.

Test II results which decreased in the High and Low groups were influenced by the level of the questions given and also the reduced exercise. This is consistent with that found by (Juita et al., 2018) which states that students' critical thinking can be successfully encouraged and developed in basic geography education by selecting content (assignments), but this result is certainly also influenced by student attitudes in learning geography.

The results of interviews with students, the use of assessment tools make them more careful and increase accuracy to understand the problem. Especially must know the reason for the argumentative statement or opinion of the resolution of the problem at hand, so that students in solving the problems given are more focused on focusing on the explanation. In solving problems the thinking process is more important than the knowledge that is owned, even though basic knowledge is also a factor that is no less important in solving a problem (Carson, 2007).

Students state that in carrying out their assignments they increase their attention and deep thinking to take action on solving problems, and also

better understand the purpose of doing something. This is certainly very influential on increasing students' critical thinking in learning Geography. Realizing the weaknesses and strengths of the work assigned to them gives a positive effect on the execution of the next task.

#### **D. CONCLUSIONS**

From the results of the study, it was found that the critical thinking ability of students in the High Group was categorized as Very Critical (SK), whereas in the Medium and Low Groups was categorized as Quite Critical (CK). The results of observations of critical thinking skills indicate that based on the predicate of students' critical thinking abilities, students' critical thinking skills in the High Group are categorized as Very Critical (SK), while those in the Medium and Low Groups are categorized as Critical (CK). The results of interviews with students, the use of assessment tools make them more careful and increase accuracy to understand the problem. Especially must know the reason for the argumentative statement or opinion of the resolution of the problem at hand, so that students in solving the problems given are more focused on focusing on

the explanation, also students state that in the execution of tasks they increase attention and deep thinking to take action against problem solving, and also better understand the purpose of doing something

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