
CHARACTERISTICS OF SPATIAL CAPABILITY OF GEOGRAPHIC STUDENTS OF PGRI PALEMBANG UNIVERSITY

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ABSTRACT

Spatial ability is an important spatial intelligence possessed by geography education students. with this ability, students' thinking can develop while learning geography. The characters of spatial ability of students differ from one another. In this research the researcher will discuss the character of the spatial ability of geography education students, amounting to 27 students. The method used in this research is descriptive qualitative method. Characteristics of students' spatial ability are seen from the results of tests on basic cartography courses. The test was made with 12 essay questions with criterion questions from the cognitive domain according to Taxonomy Bloom. Of the six cognitive criteria, three criteria were taken, namely remember, understand, and apply. The results on the criteria remember all students can answer correctly, then on the criteria to understand the average value has decreased by 17, and the criteria to apply the average value to 13.

Keywords: *characteristics, spatial capability, geography education*

A. INTRODUCTION

The purpose of education is to develop students' intellectual abilities. Intellectual ability in question is cognitive ability, as well as in learning geography. There are three aspects to geography learning, namely the spatial approach, the ecological approach, and the regional complex approach. Spatial approach in this case the ability to think spatially is one of the abilities that geography education students must have. Geographers assume that spatial thinking is part of geographic thinking. This is based on the reason that spatial is just one part of the

geographic approach, in addition to the ecological and complex approaches of the region. Because spatial thinking is part of geographic thinking, spatial thinking can help geographical thinking (Metoyer & Bednarz, 2017). Spatial thinking influences academic and career success in geography and spatial thinking ability is easily forged with education and training. Spatial thinking is arguably one of the most important ways of thinking for students to develop as they learn geography, earth and environmental sciences. Spatial thinking involves knowing and understanding spatial

concepts and relations, how we represent those concepts and relations in different ways, and also how we can reason with spatial information (National Research Council, 2006).

Training to improve spatial ability has been carried out in geography education study programs. The training is to carry out direct practice in the field to measure the distance of a place, explain the condition of a place, determine the scale, determine the absolute location, relative location, calculate the degree of bearing angles, azimuth angles, and back azimuth angles. In the learning process, students' spatial abilities have different characters. In this study the authors describe the character of students' spatial abilities from three types of cognitive problems according to Bloom's taxonomy. According to Ramirez taxonomy is a framework that helps to organize and systematize curriculum and teaching activities in personality assessment. Bloom's Taxonomy is a pedagogical tool that can help instructors assess personality to develop effective and student-centered learning designs. Bloom's Taxonomy provides a progressive sequence of educational goals that are used for planning lessons, needs

assessments, and measuring learning outcomes (Ramirez, 2017).

In the taxonomy concept Bloom cognitive domain emphasizes intellectual aspects such as knowledge and thinking skills. The process of cognitive domains in the revised Bloom taxonomy include remembering, understanding, applying, analyzing, evaluating, and creating (Krathwohl, 2002). Remembering consists of recognizing and remembering relevant information from long-term memory. Understanding is the ability to make students' own meanings from educational material such as reading and teacher explanations. Sub-skills for this process include interpreting, modeling, classifying, summarizing, summarizing, comparing, and explaining. The third process, applying, refers to using procedures that are learned either in familiar or new situations. The next process is analysis, which consists of breaking up knowledge into parts and thinking about how the parts relate to the overall structure. Students analyze by differentiating, organizing, and connecting. The evaluation, which is above the original taxonomy, is the fifth of six revised versions of the process. This includes checking and

criticizing. Creating, a process that was not included in the previous taxonomy, is the highest component of the new version (Mohammad & Soozandehfar, 2016).

Each student has a diverse character of spatial understanding. The characteristics of spatial understanding will be measured by essay questions that have different cognitive aspects. These cognitive aspects include remembering, understanding, and applying.

B. MATERIALS AND METHODS

This research was conducted at the University of PGRI Palembang, Jl. Yani Lorong Gotong Royong Seberang Ulu II Palembang City. The subject of this study was the even semester students of the 2018/2019 Learning Year of the Geography Education Study Program at the PGRI University of Palembang in the basic cartography courses totaling 27 students. This research method is a qualitative descriptive study. To find out the characteristics of students' spatial ability seen from the test results. The form of the test is in the form of essay questions consisting of 12 questions with a level of questions to remember, understand and apply. Analysis of the ability seen from the

students' answers based on the criteria for evaluating the questions. The criteria for evaluating the questions are as follows; point 5 if the student answers completely, clearly and correctly, point 4 if the student answers incompletely but correctly, point 3 if the student answers not too clear, point 2 if the student answers completely but but incorrectly, point 1 if the student answers but is incorrect , point 0 if the student does not answer.

C. RESULTS AND DISCUSSION

As explained earlier, there are six cognitive taxonomic domains. However, the character analysis of students' spatial ability is seen from the cognitive abilities of students who have been measured from three cognitive aspects, namely remembering, understanding, and applying. Remembering is the ability to retrieve relevant knowledge from long-term memory that is identifying and recalling. Given placing knowledge in long-term memory that is consistent with the material presented, for example recognizing important dates and events in history (Anderson & Krathwohl, 2001). Remembering is an important learning in learning because remembering will make it easier for students to solve

more complicated problems or tasks. By remembering students can build new knowledge and solve new problems.

From the test results in the form of 4 C1 type essay questions, 27 students were able to work on the questions correctly. That means the ability to remember students is good. In the essay test questions, students determine the relative location of several places around the Palembang PGRI University campus. As with the ability to understand, this ability is

more complex than the ability to remember. But different from (Garavalia et al., 2000), from the results of his research states that students can better remember when they learn to handle topics at a higher taxonomic level. Therefore more elaboration is needed, which is a principle of learning based on findings from the information processing approach to learning. Test results on the remember criteria can be seen in the following chart:

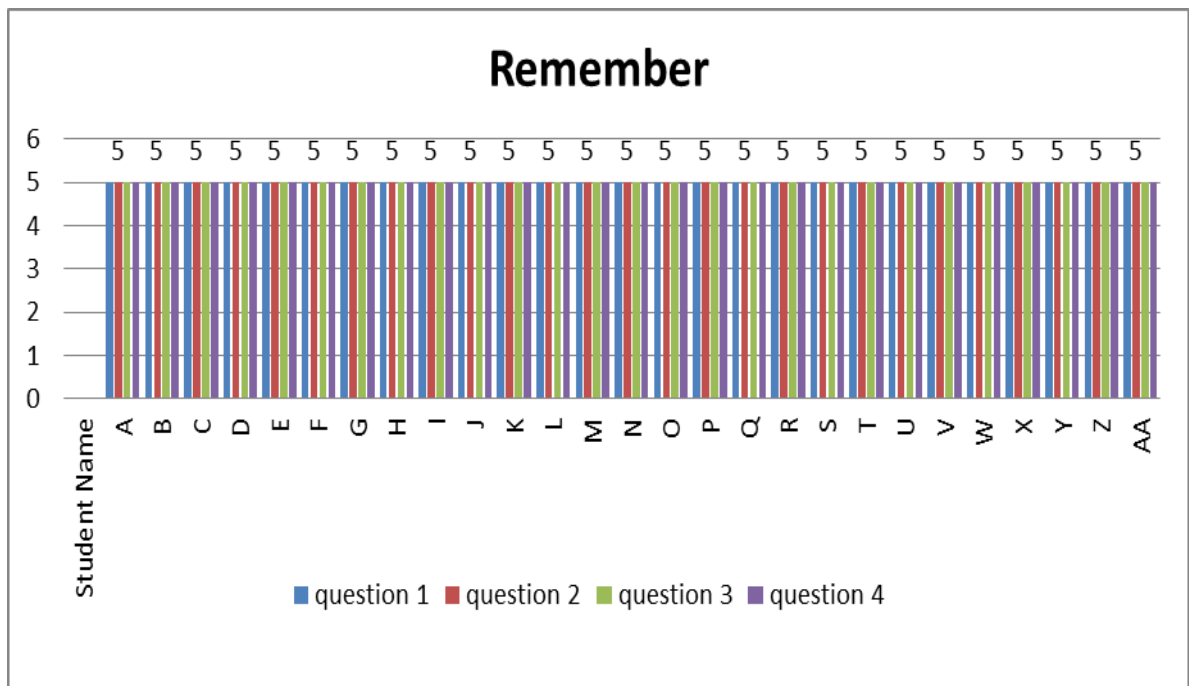


Figure 1. Test results on the remember criteria

Understanding is an effort to build meaning from instructions or instructions including oral, written, and graphic communication

(Anderson & Krathwohl, 2001; Juliane, Armant, Sastramihardja, & Supriana, 2018). Students can be called understood if the student can

explain the meaning of instructions from messages such as oral communication, written, or graphical. Cognitive processes in the understanding category include interpreting, modeling, classifying, summarizing, summarizing, comparing, and explaining. From the results of the comprehension category test (C2), there are some students who cannot complete the questions thoroughly. Of the 4 questions in the category of understanding as many as 27 students had an average value of 17, the highest value of 20 and the lowest value of 15. The essay question in the category of understanding, students were asked to explain how

and explain. This result has decreased when compared with the results of the recall assessment. This is because the category of understanding is more complicated than the category of remembering. Cognitive processes in the category of understand include interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining (Anderson & Krathwohl, 2001). The process of interpretation is the process of changing one form of representation to another. For example from the form of numbers to verbal. The following graphs the test results on the understand criteria:

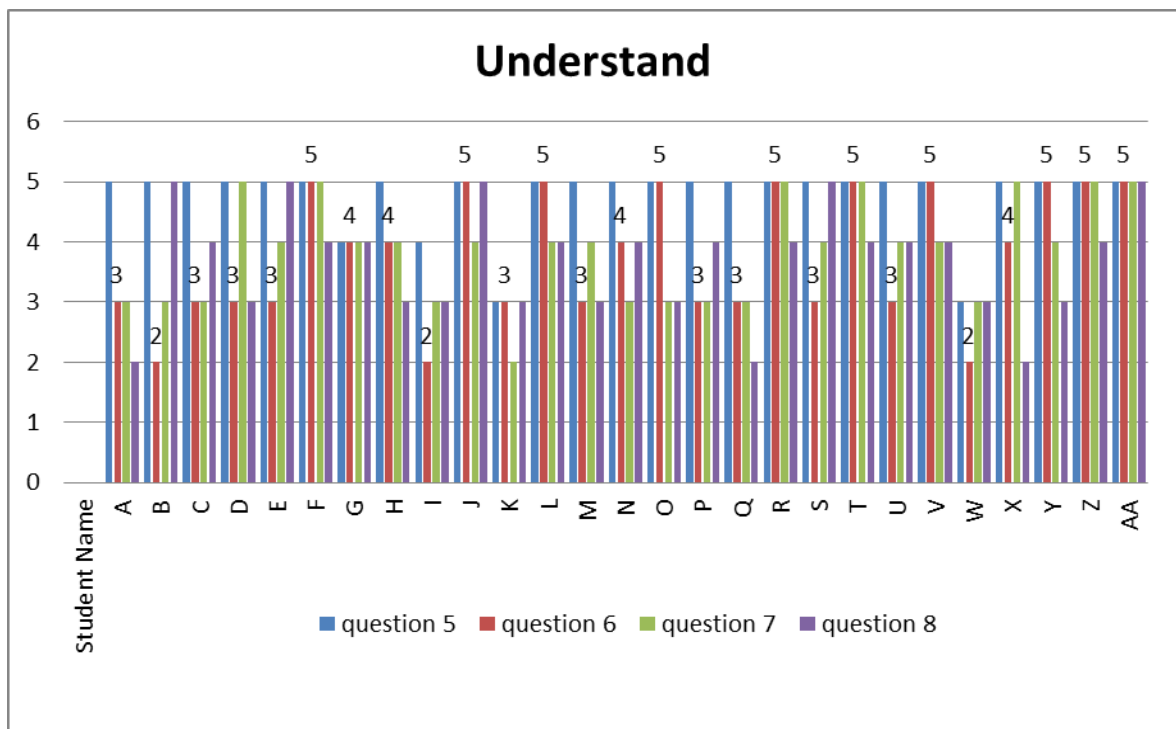


Figure 2. Test results on the understand criteria

The Apply category consists of two cognitive processes: executing-when the task is an exercise (familiar)-and implementing-when the task is a problem (unfamiliar) (Anderson & Krathwohl, 2001). Applying is ability to do something and applying the concept in certain situation (Juliane et al., 2018). In the apply category question with a total of 4 questions, the average value of 27 students is 13, the highest value is 18 and the lowest value is 10. This means that of the 3 categories of cognitive, remember, understand, and apply; the value in the apply category has a

lower score than the two previous categories. In the apply category, students carry out procedures in certain situations. For example in the test students are asked to redraw the map after carrying out measurements in the field. According to (Juliane et al., 2018) in applying the keywords used are selecting, applying, implementing, changing, using, demonstrating, modifying, interpreting, showing, proving, describing, operating, running, programming, practicing, starting. Test results on the apply criteria can be seen in the following chart:

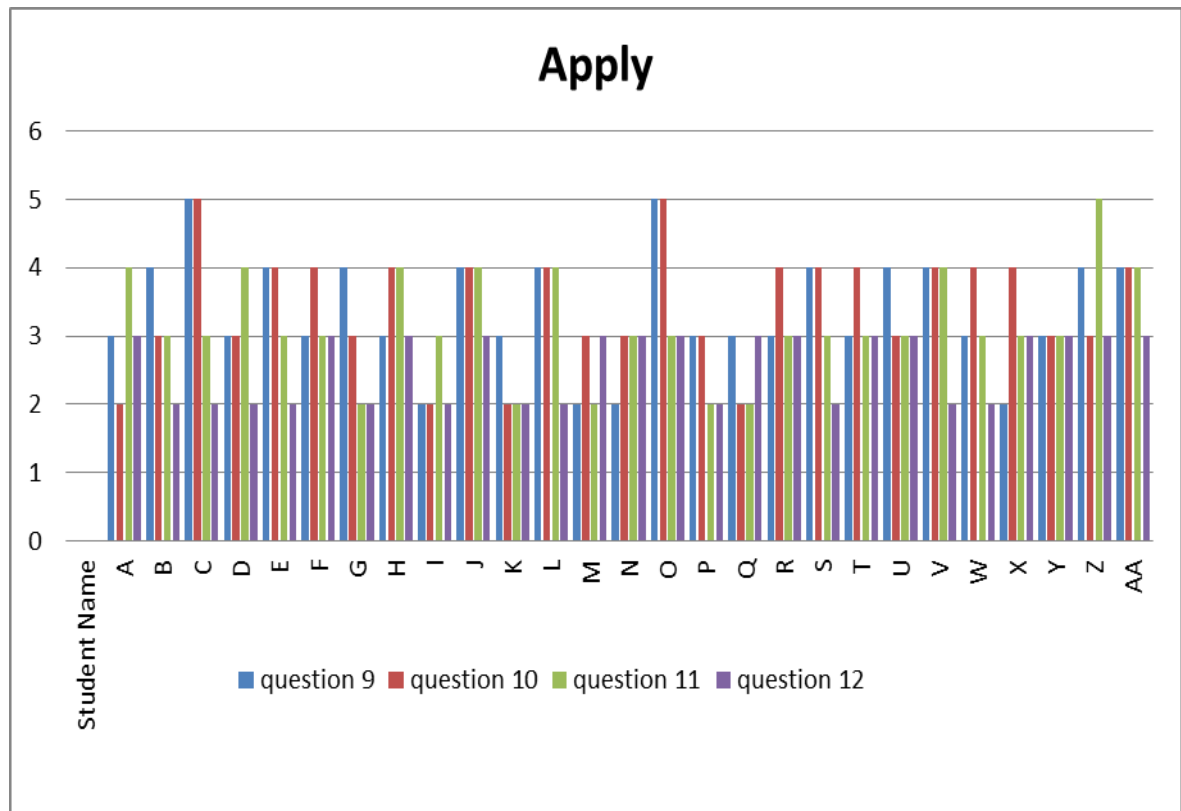


Figure 3. Test results on the apply criteria

Overall, the three cognitive domains that have been tested with students experience differences in each domain. Cognitive domains are those related to intellectual learning outcomes which include six aspects of the teaching, namely: knowledge or memory, understanding, application, analysis, synthesis and evaluation. The first two aspects are called low-level cognitive and the next four aspects include high-level cognitive (Sudjana, 2010). In the aspect of

remembering all students achieve maximum value, in the realm of understanding aspects of the value has decreased, and in the aspect of applying has decreased again. This is because the higher cognitive criteria require students to think more complex.

The following character analysis of the spatial abilities of three cognitive domains in students of the Geography Education Study Program at PGRI University Palembang:

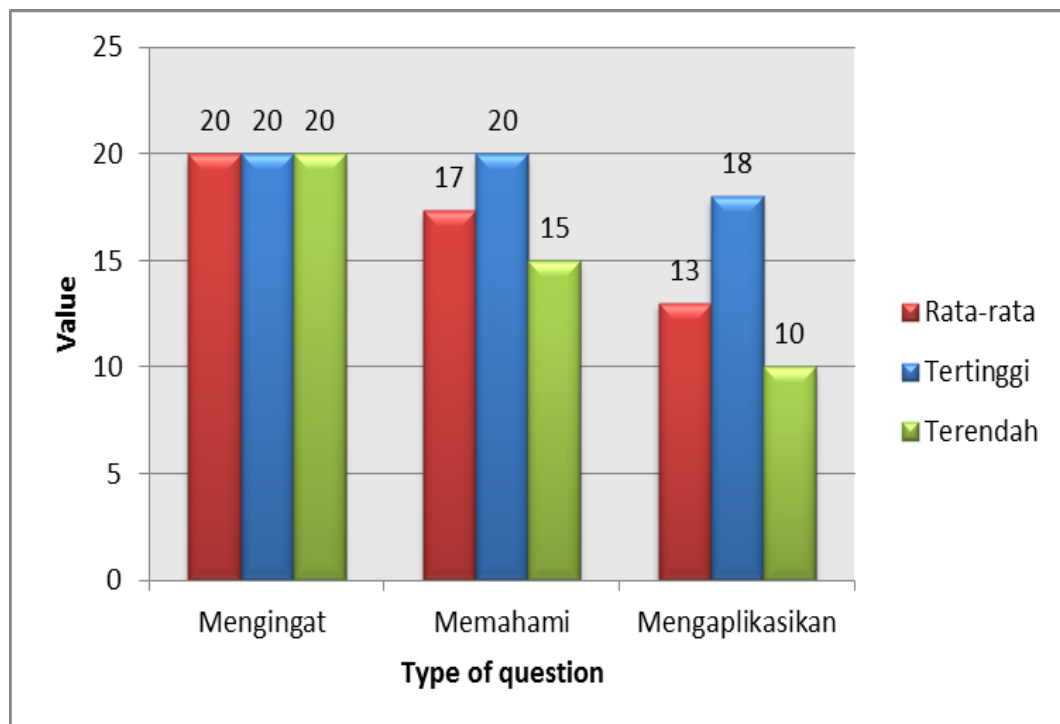


Figure 4. Graphic of value

From the graph above it can be seen that the higher the cognitive criteria the lower the results obtained by students. This means

that the quality of the learning process must be improved so that students' cognitive abilities improve.

D. CONCLUSIONS

From this study it is known that the characteristics of students' spatial ability from cognitive assessment are for the remembrance criteria, students answer the questions thoroughly, then for the criteria to understand and apply the results decrease.

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