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## ANALYSIS CURIOSITY AND ANALOGY ABILITIES OF COLLEGE STUDENT REVIEWED FROM A SCIENTIFIC APPROACH AT THE UNIVERSITY OF MUHAMMADIYAH BONE

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### Abstract:

Curiosity is an attitude and action that always tries to find out more deeply and broadly from something that is learned. Meanwhile, analogy is a thought process to draw conclusions based on similar processes or data. This is inversely proportional to the reality in the field based on the observations of researchers at University of Muhammadiyah Bone, researchers see that the curiosity and analogy skills of college student in the economic learning process are still classified as very low. Lecturers can strive for learning by using innovative, effective and creative learning, which can provide opportunities and encourage college student to have high curiosity in order to practice their analogical reasoning skills. In connection with this, the efforts made by researchers to build curiosity and analogy skills of college student in economic learning, namely the need for a scientific approach or a scientific process-based approach which is the organization of learning experiences in a logical order including the learning process by observing, questioning, collecting information, reason (associate) and communicate. The type of research used is quantitative research using experimental quantitative methods. The research design used, namely Quasi Experimental Design with the form of Non-equivalent Control Group Design. The results of this study are proven by the results of the analysis of the recapitulation of the student's analogy ability test which can be seen in the average final test in the experimental class, which is 7,621 and the initial test reaches a value of 6,961. While the results of the final test recapitulation of the analogy ability of college student in the control class reached a value of 6,276 while the initial test results reached a value of 7.5. While the results of student responses are in the valid and reliable category.

**Keywords:** curiosity; analogy; scientific approach

## PRELIMINARY

Dewi (2014:102); Ntim (2015:2) explained that reasoning is one aspect of higher-order thinking skills in the latest curriculum which is categorized as a basic competency that must be mastered by college student. Meanwhile, Muchsin & Khumaedi (2016:34) explained that, the ability to think analogy is very important for college student in forming a mindset to find solutions to problems faced in the learning process. Analogical thinking is a transformation of habitual thinking from a simple and spontaneous way to a more structured and systematic way. Rankhumise, Petrus & Imenda (2014:298) explained that analogous thinking is the center of learners' cognition in the learning process. Therefore, in the learning process the ability to think analogy is very important because analogy will sharpen the reasoning power of college student.

The analogy ability of college student will be honed or developed when accompanied by high curiosity by college student, because the seriousness of college student in learning depends on the desire that arises from within them. This desire that arises can be called curiosity. High curiosity can make college student follow the learning process better. Therefore, the success of the learning process carried out by the lecturer is determined by the curiosity and interest in learning of college student.

Curiosity is an attitude and action that always seeks to know more deeply and extends from something it has learned, seen, and heard (Kemdiknas. 2010:10). Curiosity makes college student more sensitive in observing various phenomena or events in their surroundings can also be used to show a sense of interest in something.

Curiosity is the initial capital for college student in the learning process. The existence of curiosity, will encourage college student to fulfill their curiosity. In order to fulfill his curiosity that will lead college student to the process of searching and then finding. The efforts that college student can make in the search process include asking directly to the lecturer, discussing with friends and looking for some material in several other book sources besides handbooks or the internet (Ameliah., Munawaroh & Muchyidin. 2016:10). Zetriuslita, Wahyudin, & Jarnawi (2017:65) stated that, curiosity has the characteristic of finding something, where college student are enthusiastic about learning and finding ways to investigate existing problems. Weible & Zimmerman (2016) stated that, curiosity is the most important aspect in the investigation process to solve problems.

Based on the observations of researchers at University of Muhammadiyah Bone, it was found that the college student' curiosity and use of analogy during the teaching and learning process in class were still relatively low. In the learning process, namely college student do not have motivation, interest in learning, are unable to cooperate, express opinions, ask questions, answer, are unable to express their understanding and the material presented by the lecturer is not able to last long, and there is no effort of college student in learning which refers to the activity of connecting what is already known with what you want to understand. This causes most college student to use less analogous reasoning.

This problem is caused because the habits of college student in learning are always fixated on the lecturer, so that college student do not have many ideas about the problems given by the lecturer. Therefore, the implementation of learning in class, the lecturer does not only convey information for the achievement of learning objectives but also creates learning experiences for college student, the lecturer must strive so that activities in the classroom can provide the widest possible opportunity for the experience of college student.

The lecturer's role is not only limited as a lecturer (transfer of knowledge), but also as a guide, trainer, developer and manager of learning activities that can facilitate student learning activities in achieving the goals that have been created. Therefore, lecturers must be able to find approaches that can support their role, so that teaching and learning activities can be carried out effectively and efficiently. If a lecturer does learning effectively and efficiently, this will affect the learning outcomes of college student.

Based on these problems, lecturers can strive for learning by using innovative, effective and creative learning, which can provide opportunities and encourage college student to have high curiosity in order to practice their analogical reasoning skills.

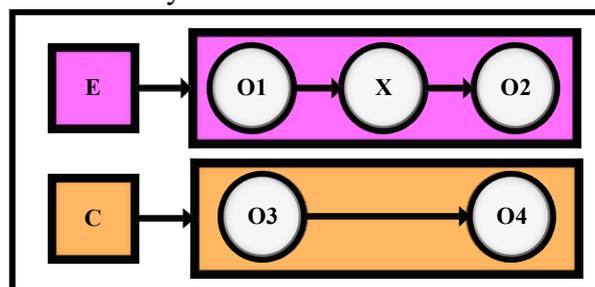
In connection with this, the efforts made by researchers to build curiosity and analogy skills of college student in economic learning, namely the need for a scientific approach or a scientific process-based approach which is the organization of learning experiences in a logical order including the learning process by observing, questioning, collecting information, reason (associate) and communicate.

Learning with a scientific approach is a learning process designed in such a way that college student actively construct concepts, laws or principles through the stages of observing (to identify or find problems), formulate problems, propose or formulate hypotheses, collect data with various techniques, analyze data, draw conclusions and communicate the concepts, laws or principles found (Sufairoh. 2016:120; Hamniati., Jufri & Syukur. 2019:109). Besides that, it can also attract college student' attention because the learning process involves college student in the mental activity process through a discussion of findings and makes college student not feel bored in the learning process Nur, et all (2018) and Nur, et all (2018).

## METHOD

This type of research used in this research is quantitative research. The quantitative research method can be defined as a research method based on the positivism philosophy, used to research on certain populations or samples, data collection using research instruments, statistical quantitative data analysis with the aim of testing predetermined hypotheses (Sugiyono, 2016:8).

The quantitative research design used in this research is Quasi Experimental Design. Sugiyono (2014:114) states that, Quasi Experimental Design is a design that has a control group, but cannot fully function to control external variables that affect the implementation of the experiment. The Quasi Experimental Design form used is the Non-equivalent Control Group Design. Sugiyono (2014:116) explained that, in the Non-equivalent Control Group Design, there was an experimental group and a control group that were not chosen randomly. The design patterns used in this study are as follows:



(Adapted from Sugiyono, 2016:79)

**Figure 1.** Non-equivalent Control Group Design Research Design

Information:

- O1 : Giving the initial test (pretest) to the experimental class
- O2 : Giving the final test (post-test) to the experimental class
- O3 : Giving the initial test (pretest) to the control class
- O4 : Giving the final test (post-test) to the control class
- X : Providing treatment (application of learning models) in the experimental class

## RESULTS

The results in this study, namely the grid of test and non-test instruments in the learning process in building college student' curiosity and analogy skills in the learning process using a scientific approach.

### A. Curiosity

Curiosity is an attitude and action that always seeks to know more deeply and extends from something it has learned, seen, and heard (Kemdiknas. 2010:10). Curiosity makes college student more sensitive in observing various phenomena or events in their surroundings can also be used to show a sense of interest in something.

Curiosity is the initial capital for college student in the learning process. The existence of curiosity, will encourage college student to fulfill their curiosity. In order to fulfill his curiosity that will lead college student to the process of searching and then finding. The efforts that college student can make in the search process include asking directly to the lecturer, discussing with friends and looking for some material in several other book sources besides handbooks or the internet (Ameliah., Munawaroh & Muchyidin. 2016:10). Zetriuslita, Wahyudin, & Jarnawi (2017:65) stated that, curiosity has the characteristic of finding something, where college student are enthusiastic about learning and finding ways to investigate existing problems. Weible & Zimmerman (2016) stated that, curiosity is the most important aspect in the investigation process to solve problems.

The existence of curiosity will certainly make college student try to find, find, and conclude natural problems that college student find in everyday life (Muhammad., Listiani & Adhani. 2018:113).

Curiosity as a scientific attitude has three components, namely belief, feeling, and action (AAAS, 2009; Mukhopadhyay, 2014). The first component of a scientific attitude is belief. Beliefs are the cognitive basis of scientific attitudes. Belief in what applies to shape cognitive learners. The second component is feeling, which is associated with college student' emotions about their scientific beliefs. The third component of a scientific attitude is action. Learners tend to act on scientific beliefs according to their feelings or opinions (Mukhopadhyay, 2014).

The indicators of curiosity in this study can be seen in table 1.1 below:

**Table 1.** Indicators of Curiosity

Concept Variables	Indicator	Operational Definition of Variables
Curiosity	Shows an attitude of interest or disinterest in the discussion of material	Having interests and interests in objects or subjects that are not the same. Usually Curiosity is a strong learner in one area, but rather weak or absolutely no curiosity in other fields (Salirawati, 2012:220). Curiosity makes college student more sensitive in observing various phenomena or events in their surroundings can also be used to show a sense of interest in something (Amalia &

Concept Variables	Indicator	Operational Definition of Variables
		<p>Pujiastuti. 2016:526).</p> <p>Interest can also be said to like or like each person in an activity, where interest is the cause of the activity being carried out by someone and is also the cause of participation in an activity. College student who have high or low interest will affect learning achievement (Muldayanti. 2013:17).</p> <p>Interesting learning can make college student motivated to learn (Hidayatiningsih &amp; Suprpto. 2013:336).</p>
	Ask lecturers and friends about the subject matter	<p>Ask or read sources outside the textbook about material related to the lesson. The lecturer must be able to present the learning process and learning conditions that are conducive to the growing curiosity of college student such as being patient in facing questions, always guiding and providing reinforcement, asking challenging questions, empathy and packaging material that contains hanging explanations, so that it makes college student curious to ask (Salirawati. 2012:220).</p>
	Looking for information from various sources about learning materials	<p>According to Kemendiknas (2010:10) curiosity is an attitude and action that always tries to know more deeply and extends from something that it has learned, seen and heard.</p> <p>College student who have high curiosity also have high motivation in finding answers to a problem (Hidayatiningsih &amp; Suprpto. 2013:336).</p>
	Seek information from various sources about general knowledge	<p>Ask the lecturer about something she heard from your mother, father, friend, radio or television. Arifin (2003) stated that, asking is an indicator of thinking that college student who have high learning motivation tend to ask more frequently than college student who have low motivation.</p>

(Adapted from daptasi Putri. 2013:20; Putri, Khanafiyah & Susanto. 2014:58)

## B. Analogy

The ability to think by analogy is the center of learners' cognition in the learning process which requires a continuous process as a cultural process. Culture is built through several stages, starting from building concepts to understanding what is learned, including building analogy skills. (Rankhumise, Petrus & Imenda. 2014:298). Gofur (2014:21-22) states that analogical reasoning is an activity and a process of concluding based on the similarity of data or facts.

Petkov (2017:90) explained that, analogy is the brightest manifestation of relational thinking which is the ability to see relationships, not only the relations of things but also the relationships between ideas which are then used to obtain other objects or ideas that speak of two things. different, one not the other, but two different things compared to one another. Jonane (2015:118) explains that, in the analogy that is sought is the similarity of two different things and draws conclusions on the basis of that similarity. Analogy can be used as an explanation or as a basis for reasoning (Magdas, 2015:1). Sementara Ningrum & Rosyidi (2014:22); Roesdiana (2016:173) explained that analogical reasoning is a thought process to draw conclusions based on similar processes or data. This shows that analogical reasoning skills play an important role in the success of college student in learning.

The analogy problem that will be discussed refers to the analogy ability indicator according to Azmi (2017: 104-107); Nur (2018: 234), namely :

- a. Seeking similar processes in an uncalculated economic task;
- b. Identify similar processes that occur between several economic materials on the same subject;
- c. Identify similar processes that occur between several economic materials on different subjects, and
- d. Looking for the similarity of processes between economic material if it is related to everyday life.

### C. Scientific Approach

The scientific approach is learning that makes college student motivated, makes learning more meaningful by creating a pleasant learning atmosphere and college student are directly involved both physically and mentally in the learning process. Learning with a scientific approach will encourage college student to find the information they need by themselves, they not only get information from the lecturer, but they can get information from various sources, for example from friends, from experience, from environmental observations and from the internet, so that this scientific approach will make college student more active and independent (Fatmawati., Sukidin & Suyadi. 2017: 138). Dewi (2019: 216) states that learning with a scientific approach aims to familiarize college student with using scientific methods or process skills in learning a material.

The scientific approach is the approach used in learning that is carried out through a scientific process (Fadlillah, 2014: 175). In the scientific process, college student construct knowledge by asking questions, making observations, making measurements, collecting data, organizing and interpreting data, estimating results, conducting experiments, concluding and communicating (Martin & David, 2006: 67).

Hamniati., Jufri, & Syukur (2019:109) states that, learning with a scientific approach is a learning process designed in such a way that college student actively construct concepts, laws or principles through the stages of observing (to identify or find problems), formulate problems, propose or formulate hypotheses, collect data with various techniques, analyze data, draw conclusions and communicate the concepts, laws or principles found.

The principles of the scientific approach in learning activities are student-centered learning, forming student self-concepts, avoiding verbalism, providing opportunities for college student to assimilate and accommodate concepts, laws and principles, encouraging increased student thinking skills, increasing student learning motivation and teaching motivation. lecturers, provide opportunities for college student to practice skills in communication, and there is a process of validation of concepts, laws, principles constructed by college student in their cognitive structures (Makmunah., Tripalupi & Haris. 2019:333).

**Table 2.** Table Description of Activities and the Role of Lecturers in Learning Activities using the Scientific Approach

Learning Steps	Activity Description	Lecturer's Role
Observe	Learning activities that college student can do for example reading, listening, listening, seeing (with or without tools). The competence that you want to develop through the learning experience to observe is to train sincerity, thoroughness, and the ability to find information	Facilitating college student to carry out the process of observing.

Learning Steps	Activity Description	Lecturer's Role
Ask	<p>Learning activities that can be done are creating and asking questions, question and answer, discussing information that is not yet understood, additional information that you want to know, or as clarification.</p> <p>The competencies developed are the development of creativity, curiosity, the ability to formulate questions for the development of critical thinking skills, and the formation of the character of lifelong learners (life long learner).</p>	Facilitating college student to do the questioning process.
Gather information/try	<p>This activity is conducting experiments, reading various other sources of information besides those found in textbooks, observing objects, observing events, and interviewing a source.</p> <p>The competencies that want to be developed include: college student will develop a conscientious, honest, polite attitude, respect other people's opinions, have the ability to communicate, have the ability to gather information in various ways, develop learning habits, and become a lifelong learner (life long learner) .</p>	Facilitating college student to do the process of gathering information/trying.
Reasoning/ associating	<p>Forms of learning activities that can be provided by educators include information processing ranging from a variety of information that deepens and expands information to mutually supportive information, even different or contradictory ones.</p> <p>Through this learning experience, it is hoped that college student will develop an honest, thorough, disciplined, obedient to the rules, work hard, are able to apply a procedure in thinking deductively or inductively to draw a conclusion.</p>	Facilitating college student to do the process of reasoning / associating.
Communicate	<p>Providing learning experiences to carry out learning activities in the form of conveying the results of the observations he has made, the conclusions he obtained based on the results of the analysis, carried out either orally, in writing, or other methods and media. This is intended so that college student have the opportunity to develop their competence in terms of developing an honest, thorough, tolerant attitude, thinking systematically, expressing opinions in a concise and clear way, so that they are able to speak properly and correctly.</p>	Facilitating college student to do the process of communicating.

The characteristics of the scientific approach according to Kurniasih & Berlin (2014: 33) are:

- a. Child-centered;
- b. Involves science process skills in constructing concepts, laws or principles;
- c. Involving cognitive processes that have the potential to stimulate the development of the intellect, especially college student' higher order thinking skills , and
- d. Can develop student character.

The advantages and disadvantages of the scientific approach according to Aprianita (2015: 691-692), namely:

**a. Excellence**

1. Guide college student to solve problems through careful planning, data collection, data analysis to produce conclusions;
2. Guide college student to think systematically, critically, creatively, carry out research activities and build knowledge conceptualizations;
3. Fostering student sensitivity to problems that occur in their environment;

4. Familiarize college student with learning risks;
5. Fostering college student' abilities in argumentation and communication, and
6. Developing student character.

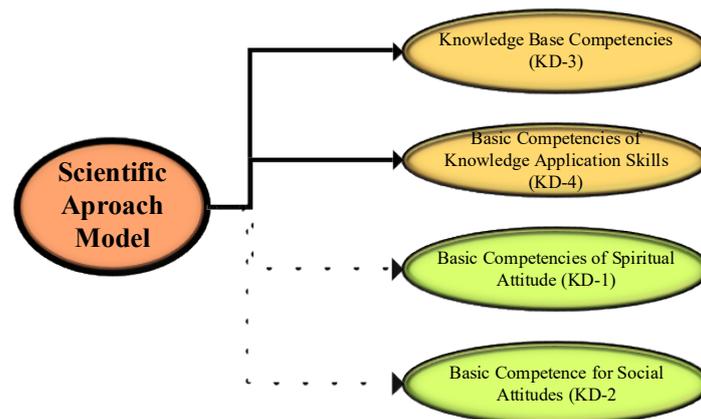
**b. Weakness**

1. Can inhibit the time-consuming pace of learning;
2. Failure and errors in conducting experiments will result in errors in conclusions, and
3. If there are college student who are less interested in the material being studied, it can cause learning to be ineffective.

Learning objectives with a scientific approach are based on the advantages of this approach. Where, the advantages of the scientific approach according to Machin (2014: 28-29) are as follows:

1. Increase intellectual abilities, especially higher order thinking skills;
2. To shape college student' abilities in solving a problem systematically;
3. The creation of learning conditions in which college student feel that learning is a necessity;
4. Obtaining high learning outcomes;
5. To train college student in communicating ideas, especially in writing scientific articles, and
6. To develop student character.

As for the impact of instructional and impact Bridesmaids approach to scientific in the study of this, can be seen in the image below:



**Figure 2.** Schematic The instructional impact and accompanying impact of the scientific approach

—————▶ Instructional Impact  
 .....▶ Accompaniment Impact

**D. Accompaniment Impact**

The instrument is a tool used by researchers to obtain data, process and interpret information obtained from respondents using the same measurement pattern (Siregar, 2014: 75). The research instrument used in this study was an *essay* test. The instruments in this study used:

### 1. Written test

The written test is a test of learning outcomes of college student. Achievement test used to measure the extent to which an understanding of learners against the material being studied, as well as curiosity and ability analogy learners in the learning economy. The test was conducted by the researcher twice, the first was a *pretest* or te test before applying a scientific approach to the learning process. The test used in this research is in the form of a test description. The second test is the *post-test* or after applying the scientific approach in the learning process

The assessment rubric in this study is used as a reference in the tests used. The scores used are between 1-4 according to the indicators determined by the researcher.

The written test used by the researcher in this study was inseparable from the test instrument grid to support the researcher in making the questions to be given to college student. The test instrument grid used by the researcher can be seen in the following table:

**Table 3.** Grid Test Instrument

No.	Aspect	Definition	Indicator	Problem Indicators	Instrument's Shape	Question Number
1			Looks for similar processes in an economic task without calculations.	College student are able to find alternative answers about the similarity of processes in economic assignments without calculations based on the right solutions then share the knowledge they get accompanied by accurate explanations and have been able to write five Lontara characters correctly	Description	1-3
2	Analogy	Ningrum & Rosyidi (2014: 22); Roesdiana (2016: 173) explains that analogical reasoning is a thought process to draw conclusions based on similar processes or data.	Identify similar processes that occur between several economic materials on the same subject.	College student are able to identify source problems, target problems and build correspondence between source problems and target problems and make conclusions about what analogies are used correctly and have been able to write five Lontara characters correctly	Description	4-6
3			Identify similar processes that occur between several economic subjects on different subjects.	College student are able to identify similar processes that occur between several materials and describe various examples accompanied by appropriate explanations on different subjects and	Description	7-8

No.	Aspect	Definition	Indicator	Problem Indicators	Instrument's Shape	Question Number
4			Looking for the similarity of processes between economic material when linked to everyday life	have been able to write five Lontara characters correctly College student can look for alternative answers according to the concept and are able to combine examples contextually and have been able to write five Lontara characters correctly	Description	9-10

The following is a rubric table for assessing college student' analogy skills:

**Table 4.** Rubric analogy student assessment abilities

Indicators / Aspects	Scoring Thesis	Score	Score Max
Looks for similar processes in an uncalculated economic task.	Didn't identify anything (no answer)	0	4
	College student are not able to find alternative answers about the similarity of processes in economic tasks without calculations based on the right solution and then share the knowledge they get accompanied by accurate explanations	1	
	College student have not been able to find alternative answers about the similarity of processes in economic tasks without calculations based on the right solution and then share the knowledge they have gained accompanied by inaccurate explanations	2	
	College student are able to find alternative answers about the similarity of processes in economic tasks without calculations based on the right solution then share the knowledge they have gained accompanied by inaccurate explanations	3	
	College student are able to find alternative answers about the similarity of processes in economic assignments without calculations based on the right solutions then share the knowledge they get accompanied by accurate explanations and have been able to write five Lontara characters correctly	4	
Identify similar processes that occur between several economic materials on the same subject.	Didn't identify anything (no answer)	0	4
	College student are not able to identify source problems, target problems and are unable to build a correspondence between source problems and target problems and not draw conclusions about what analogy to use correctly	1	
	College student have not been able to identify the source problem and the target problem and have not been able to build any correspondence between the source problem and the target problem by making conclusions about what analogy is used correctly	2	
	College student are able to identify source problems, target problems and build correspondence between source problems and target problems but have not been able to make conclusions about what analogies are used correctly	3	
	College student are able to identify source problems, target problems and build correspondence between source problems and target problems and	4	

Indicators / Aspects	Scoring Thesis	Score	Score Max
Identify similar processes that occur between several economic subjects on different subjects.	make conclusions about what analogies are used correctly and have been able to write five Lontara characters correctly		
	Didn't identify anything (no answer)	0	
	College student are not able to identify similar processes that occur between several materials and do not describe various examples accompanied by inappropriate explanations on different subjects	1	
	College student have not been able to identify the similarity of processes that occur between several materials and describe various examples accompanied by inaccurate explanations on different subjects	2	4
	College student are able to identify similarities in processes that occur between several materials and describe various examples accompanied by explanations that are not yet precise on different subjects	3	
Looking for the similarity of processes between economic material when linked to everyday life	College student are able to identify similar processes that occur between several materials and describe various examples accompanied by appropriate explanations on different subjects and have been able to write five Lontara characters correctly	4	
	Didn't identify anything (no answer)	0	
	College student cannot find alternative answers according to the concept and are not able to combine examples contextually	1	
	College student can look for alternative answers but are not yet in accordance with the concept and have not been able to combine examples contextually	2	4
	College student can look for alternative answers in accordance with the concept and have not been able to integrate examples contextually	3	
	College student can look for alternative answers according to the concept and are able to combine examples contextually and have been able to write five Lontara characters correctly	4	

(Adapted from Nur, 2018 : 155-156)

## 2. Questionnaire

The questionnaire is an information collection technique that allows the analysis to study the attitudes, beliefs, behavior and characteristics of several people (Siregar, 2014: 44). The questionnaire data obtained from this study were used to determine the response of college student to learning Economics with a scientific approach. The questionnaire used refers to the indicators of curiosity and analogy of college student.

The non-test instrument grid (questionnaire) used by researchers can be seen in the following table:

**Table 5.** Grating Non Test Instrument (Questionnaire)

Concept Variables	Indicator	Sub Indicator	Statement Items
Curiosity	Shows an attitude of interest or disinterest in the discussion of material	1. Trying even if it's wrong	13,9
		2. Work on problems	14,12
		3. Active thinking	18,5
	Ask lecturers and friends about the subject matter	1. Spirit	15,6
		2. Never give up	10,2
		3. Discipline	7,3
Looking for information from various sources about	1. Seek to find out more	19,20	
	2. Have high motivation		

Concept Variables	Indicator	Sub Indicator	Statement Items
	learning materials		21.22
	Seek information from various sources about general knowledge	1. Searching for information 2. Read 3. Asking	17.8 11.14 16.1

## DISCUSSION

The purpose of this study was to analyze the taste wanted to know and the ability analogy participant college student in terms of approach to Scientific University of Muhammadiyah Bone measured by the results of tests the understanding of the economic subjects. P there is a class experiment in give treatment to approach scientific, while the grade control only given direct instruction.

### A. Curiosity

Instruments non test (questionnaire), which consists of 22 items statement first advance researchers did test the validity and reliability. P roses development to get the prototype final, which is the instrument of research that is val id, practical and effective to be implemented.

#### 1. Validity Test

Asfar & Aspikal (2017); Asfar, et all (2018) and Asfar, Asfar & Sartina (2018) Stated that, before validating models and learning tools, research instruments were first developed. The development of learning models and tools is an effort to provide an alternative learning model that is practical, meaningful, and fun. Therefore, in this study, the researcher validated the learning device (questionnaire) before applying the learning model to the research sample.

The test results of non-test instruments were analyzed to determine the validity of each item of the statement. Analysis of the test instruments in this study used Microsoft Excel and SPSS. The results of testing the validity of the questionnaire given to college student who were not the research sample, namely the 1th semester college student of class B of the Economic Education Study Program. The results of the validity calculation are discussed in the following table:

**Table 6.** The decision to test the validity of the questionnaire

No. Statement item	Correlation coefficient / r count	t Count	t Table	Decision
1	0.4732056	2.89265	1,69913	Valid
2	0.175757	3.96145	1,69913	Valid
3	0.662183	4.75879	1,69913	Valid
4	0.700666	4.35494	1,69913	Valid
5	0.5606163	3,64582	1,69913	Valid
6	0.3681629	2.13239	1,69913	Valid
7	0.568231	3,71872	1,69913	Valid
8	0.5613517	3.6528	1,69913	Valid
9	0.4204592	2.49555	1,69913	Valid

No. Statement item	Correlation coefficient / r count	t Count	t Table	Decision
10	0.6623203	3.09339	1,69913	Valid
11	0.6205106	4.26111	1,69913	Valid
12	0.3109667	1.76196	1,69913	Valid
13	0.4330694	2,58737	1,69913	Valid
14	0.7192424	5.57494	1,69913	Valid
15	0.904982	4.15064	1,69913	Valid
16	0.4485522	2.70267	1,69913	Valid
17	0.6205106	4.26111	1,69913	Valid
18	0.6488948	4.59259	1,69913	Valid
19	0.7271363	5,70399	1,69913	Valid
20	0.3170779	1,80042	1,69913	Valid
21	0.3227013	1.83603	1,69913	Valid
22	0.3423486	1,96217	1,69913	Valid

(Adapted from processed research data)

Based on the results of testing the validity of the questionnaire used by researchers, it can be concluded that every item statements are contained in the questionnaire were in the category valid. So that each item statements were used in the study is appropriate to use to measure the opinion of participants of the college student on the use of approach to scientific to build a sense of want to know and the ability analogy participant college student in the process of learning.

## 2. Reliability Test

The test results of non-test instruments were analyzed to determine the reliability (consistency) of each item of the statement. Analysis of the test instruments in this study used Microsoft Excel and SPSS. The results of the questionnaire reliability test were given to college student who were not the research samples, namely the 1th semester college student of class B of the Economic Education Study Program. The results of the validity calculation are discussed in the following table :

**Table 7.** Questionnaire reliability testing decisions

No. items per nyataan	r count	r table	Don't count	r11	Decision
1	0.4732056	0.374	2.892655	0.6424162	Reliable
2	0.475757	0.374	4.961447	0.2989682	Reliable
3	0.662183	0.374	4.758793	0.796763	Reliable
4	0.400666	0.374	2,35494	0.5721079	Reliable
5	0.5606163	0.374	3,645815	0.718455	Reliable
6	0.3681629	0.374	2.132395	0.5381858	Reliable
7	0.568231	0.374	3,718717	0.7246777	Reliable
8	0.5613517	0.374	3.652796	0.7190586	Reliable

No. items per nyataan	r count	r table	Don't count	r11	Decision
9	0.4204592	0.374	183.9943	0.5920046	Reliable
10	0.3623203	0.374	2.093393	0.5319165	Reliable
11	0.6561126	0.374	4.681924	0.7923527	Reliable
12	0.3109667	0.374	1.761964	0.4744082	Reliable
13	0.4330694	0.374	2,587366	0.6043942	Reliable
14	0.7192424	0.374	5.574937	0.8366969	Reliable
15	0.504982	0.374	3.150639	0.6710804	Reliable
16	0.4485522	0.374	2.702668	0.6193111	Reliable
17	0.6205106	0.374	4.261107	0.7658211	Reliable
18	0.6488948	0.374	4.592595	0.7870663	Reliable
19	0.7271363	0.374	5.703988	0.8420138	Reliable
20	0.3170779	0.374	1,800419	0.4814869	Reliable
21	0.3227013	0.374	1.836025	0.4879428	Reliable
22	0.3423486	0.374	1,962172	0.5100741	Reliable

(Adapted from processed research data)

Based on the results of testing the reliability of the questionnaire used by researchers, it can be concluded that each item statements were used in the study is located in the categories reliable. Thus, the statement reliable fit for use to measure the opinion of participants of the college student about the approach scientifically to build a sense of want to know and the ability analogy participant college student in the process of learning.

### B. Analogy

Before the questions were given to the two sample groups, a trial was conducted for the questions to be used as a test tool. The questions were tried out in a class that was not the research sample but still had the same level of education as the research sample, namely the 1th semester college student of class B of the Economic Education Study Program at the University of Muhammadiyah Bone with a total of 10 questions.

Based on the results of the recapitulation of the experimental class student scores on the aspect of the student's analogy ability indicator, it can be seen in the following table:

**Table 8.** The results of the recapitulation of the experimental class college student' scores

Indicator	Pre Test			Post Test		
	Average of each question item	Average per indicator	Total average	Average of each question item	Average per indicator	Total average
Looks for similar processes in an uncalculated economic task.	7.85	6.95	6.961	8.76	7.88	7.621
	6.38			7.59		
	6.62			7.29		
Identify similar processes that occur between several economic materials on the same subject.	5.88	6.94	6.961	6.18	7.575	7.621
	8.00			8.97		

Indicator	Pre Test			Post Test		
	Average of each question item	Average per indicator	Total average	Average of each question item	Average per indicator	Total average
Identify similar processes that occur between several economic subjects on different subjects.	6.91	7.44		7.12	7.69	
	7.97			8.26		
Looking for the similarity of processes between economic material when linked to everyday life	7.00	6.515		7.21	7.34	
	6.03			7.47		

(Adapted: From processed research data)

Based on the results of the calculation of the test indicators above, it appears that the total average in the *pre-test* reaches a score of 6.961 and at the time of the final test (*post test*), namely 7,621 which means that the student's score during the final test (*post test*) has increased. This is evidenced by the enthusiasm of college student when following the learning material with the scientific approach applied by the researcher.

Meanwhile, based on the results of the recapitulation of the control class student scores on the aspect of the student's analogy ability indicator, it can be seen in the following table:

**Table 9.** The results of the recapitulation of the control class student scores

Indicator	Pre Test			Post Test		
	R average each item questions	Average per indicator	Total average	Average of each question item	Average per indicator	Total average
Looks for similar processes in an uncalculated economic task.	7.29	7.28		6.77	5.48	
	6.97			5.06		
	7.58			4.61		
Identify similar processes that occur between several economic materials on the same subject.	8.00	8.16	7.5	6.03	6.32	
	8.32			6.61		
Identify similar processes that occur between several economic subjects on different subjects.	7.19	6.935		6.29	6.42	6.276
	6.68			6.55		
Looking for the similarity of processes between economic material when linked to everyday life	7.19	7.625		6.19	6.885	
	8.06			7.58		

(Adapted: From processed research data)

Based on the results of the calculation of the test indicators above, it appears that the total average in the *pre test* reached a score of 7.5 and in the final test (*post test*), which is 6.276 which means that the results of the final test (*post test*) given by college student have decreased significantly, because it is lower than the *pre-test* scores that have been

given. This is evidenced by the lack of enthusiasm of college student when participating in learning material with the direct learning model applied by the researcher.

The analogy ability of control and experimental class college student in the learning process can be described in the following table 10:

**Table 10.** Percentage score ability analogy college student

Category	Student analogy skills				
	Very Low	Low	Enough	Good	Very good
Pre test control	5	20	2	2	1
Post test control	-	10	15	5	-
Pre test experiment	10	12	10	2	-
Post test experiment	-	4	10	15	5

Adapted: From processed SPSS research data

Based on the results of the percentage score ability analogy to college student at the top, can be concluded that, the value of the ability analogy to college student about pre- test the majority located on the ability analogy low . Ability analogy participant learners based on the value of the pre-test grade control the majority are in the category of low, while the results of the test post test experience an increase of category " low " to the category of " enough ". While based on the results of the test pre test class experiment shows that the ability analogy participant college student also were on katerori low, while based on the results of post- test experience an increase, from the category of " low " to the category of " good ". It is proved that the approach is scientifically capable of improving the ability of the analogy of the participant college student in the process of learning.

## CONCLUSION

Based on the discussion of the results of research and computation analysis of data obtained by the researchers can be concluded that, approach to scientific is one of the approaches in the process of learning that can improve the flavor wanted to know and the ability analogy participant college student in the process of learning. It is in proved by the results of the analysis of recapitulation test the ability of the analogy of college student who can be seen in the average test end (post-test) on a class experiment, which amounted to 7,621 and test the initial (pre-test) reached a value of 6,961. While the results of recapitulation test end (post-test) the ability analogy to college student in grade control reached a value of 6.276, while the results of the test early (pre-test) reached a value of 7.5. By because it's, approach to scientific is one of the alternative solutions to improve the taste wanted to know and the ability analogy college student.

Curiosity of college student can be seen from the response of college student to the process of learning that is applied by the lecturer. It is can be seen by the results of the test try that applied by the researchers on the results of test validity and reliability. The result of the validity of the study is, shows every item statement is in category valid. Meanwhile, based on the reliability results, it shows that each statement item is in the reliability category. So that the questionnaire that had been tested experimented researchers can be in use without any item statements were wasted.

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