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The Effect of Guided Inquiry Method Toward Rational Thinking Ability with Learning Style Moderator Variable

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Abstract: The aim of this study is to find out the effect of learning method, learning style, and interaction of those two variables toward students' rational thinking ability in economy subject in Class XI at SMAN 11 Bandung. This study is quasi experiment research with factorial research design. The participants of this study are all students of Class XI IIS which consist of 3 classes with total of 115 students. The study is conducted three times for basic competition namely describing capital market in economic industry. Instrument of this study in the form of questionnaire and rational thinking ability. Data analysis technique use two-way ANOVA. The result of data analysis show that learning model, learning style and interaction between learning method and learning style is effected on variability in students' rational thinking ability in economy subject. Guide inquiry method is more suitable to be used for students who have kinesthetic and visual learning style, whereas lecture method is suitable for students who have auditory learning style.

Key words: Guided inquiry method, learning style and rational thinking ability, SMAN, ANOVA, economic industry

INTRODUCTION

The newest result study of Program for International Student Assessment [PISA] in 2012 showed that Indonesia is in 64th rank of 65 participant countries. This ranking is obtained because Indonesian students are unable to solve the problems which mostly require higher order thinking to solve it.

The result of pre-study is at SMAN 11 Bandung in January, 2016. Researcher obtain the information that economy learning still use conventional method and learning activity often inhibited if students are confronted with economical problem solving and mathematical calculation. To find out students' rational thinking level, researcher administered introductory test with indicator of Novak rational thinking skill (1979). The result is following:

Table 1 show that students' rational thinking ability is still low. Students only able to solve problem with low rational indicator. One factor which become the problem here is students are given less space and opportunity to explore the information, discover experience, try to solve the problem and develop thinking creativity. Based on the background above, then the problem formulation of this study are:

Table 1: The accomplishment of students' rational thinking

Indicator of rational thinking ability	Class XI_1	Class XI_2	Class XI_3
Memorizing	83	80	78
Imagining	80	78	78
Classifying	78	75	68
Generalizing	75	68	64
Comparing	52	62	50
Evaluating	45	52	45
Analyzing	45	50	43
Synthesizing	40	45	40
Deducting	40	43	40
Drawing conclusion	30	30	30

- Is there effect of guided inquiry method toward students' rational thinking ability
- Is there effect of learning style toward students' rational thinking ability
- Is there effect of interaction toward students' rational thinking

Underlying theory

Rational thinking ability: Rational thinking is one's thinking ability to analyze information with certain consideration to make a decision. Generally, students who have rational thinking will use principle and understanding base in answering the question "how" and "why". Students are demanded to use the logic to determine causal-effect, to analyze the problem, to draw conclusion and even to create the laws (theoretical theorem) and prediction.

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Indicator which describe rational thinking ability is issued by The Educational Policies Commission, is explained by Novak (1979) as follow:

- Memorizing
- Imagining
- Grouping
- Generalizing
- Comparing
- Evaluating
- Analyzing
- Synthesizing
- Deducting
- Draw conclusion

The thinking process as described by 10 indicators above is called rational power which enable us to apply logic and proof available for ideas expressed, determine attitude and action by the ways which can be accepted by others.

Guided inquiry method: Guided inquiry method is one of several methods which can be applied by teacher to enhance students' inquiry ability, by invoke students' curiosity through guidance. According to Colburn (2000) "In guided inquire, teacher provides only material and problem to investigate. Students devise their own procedure to solve the problem given."

Teacher always guide and direct learning process from beginning until the end. According to Sanjaya its implementation steps are as follow:

- Formulate the problem, examine the problem proposed by teacher to be investigated and studied
- Make hypothesis, students are asked to give temporary answers
- Collect the data, students search information from books, internet, news, newspaper and magazine
- Analyze the data, information which had been collected is studied and clarified in order to clarify the background of problem
- Draw conclusion, make conclusion and generalize the finding result

Learning style: The term learning style refer to assumption that the different people will learn same information with different way. According to Gunawan (2007): "learning style is a way preferred by someone in doing activities of thinking, processing and understanding the information.

Gilakjan explained that there are three learning styles which at least can explain how students can receive the information quickly as following:

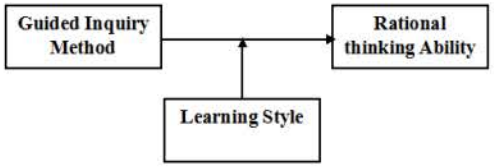

Fig. 1: Research model

- Visual learners think about pictures and learn best in visual images. They depend on instructor's or facilitator's non-verbal cues such as body language to help with understanding
- Auditory learners who discover information through listening and interpreting information by means of pitch, emphasis and speed
- Kinesthetic learners who learn best with active "hands-on" approach

Hypothesis

Main effect:

- There is effect of learning method toward rational thinking ability
- There is effect of learning style toward rational thinking ability

Interaction effect: There is effect of interaction toward rational thinking ability.

MATERIALS AND METHODS

This study is experiment quasi with factorial design 2×3. Figure 1 Participants of this study are all students of Class XI IIS SMAN 11 Bandung, which consist of 3 classes with total of 115 students. This study is conducted for three times for basic competence which discuss describing capital market in economic industry. Instrument of study is in the form of questionnaire and rational thinking ability. Analysis of parametric inferential statistic use two-way ANOVA to test main effect and interaction effect, with testing criteria if sign. < 0.05 then H_A is accepted. Whereas if value of sign. > 0.05 then H_A is rejected.

RESULTS AND DISCUSSION

Based on hypothesis testing, the findings are obtained as follow: Learning method variable with value of F = 6.060 and p = 0.016 <0.05, first hypothesis is accepted. It means that there is effect of guided inquiry and lecture learning method toward variability of

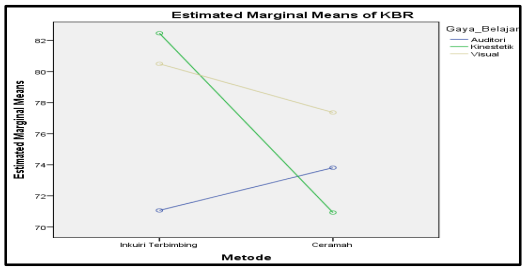

Fig. 2: Profile plot estimated means of rational thinking ability

students' rational thinking ability in economy subject. Learning style variable with value of F = 5.756 and p = 0.005 <0.05, second hypothesis is accepted. It means that there is effect of learning style toward variability of students' rational thinking ability in economy subject.

Interaction variable with value of F = 7.868 and p = 0.001 < 0.05, third hypothesis is accepted. It means that variability of students' rational thinking ability in economy subject significantly is effected by interaction between learning method and students' learning style. Interaction between learning method and students' learning style related with variability of rational thinking ability is seen clearly in Fig. 2.

In a whole, theories which are proposed in this study can be proved in field. The application of guided inquiry method to enhance rational thinking ability is considered sufficient because essentially rational thinking is tightly related with problem solving and decision making. In daily life, students always encounter problems which require logical thinking to search the solution. Rational thinking ability develop with students' cognitive development, therefore teacher role in class is very needed to provide learning experience which demand active involvement and thinking creativity.

According to Piaget's cognitive development, cognitive development is largely determined by manipulation and active interaction of students with their learning environment. Learning is not merely information acquisition but students give meaning to their experience through assimilation and accommodation process which end in their cognitive structure. Students not only passively receive information, but actively involve in organize the knowledge about reality surrounding them.

The choice of learning method which is appropriate is very influenced. Teacher should be able to apply the method that shape learning situation to challenge thinking creativity. As guided inquiry, teacher habituate students to study a problem and learn to search its solution. Through teacher guidance in each learning stage, students are habituated to ask question and express their ideas logically. Through guided inquiry, students' rational thinking ability continually will enhance, because the basis in solving rational ability problem is logical and reasonable whereas the basis in guided inquiry is logical, real and reasonable discovery.

Variability of rational thinking ability which occur in this study beside influence of learning method, there is another factor which is impossible to be ruled out, that is learning style. Learning style influence students' interest toward learning activity. Almost most of students will become active in class when they like the way their teacher deliver the material.

Rational thinking ability in economy subject of students group who have auditory learning style and taught by lecture method is higher compared with students who have the same learning style but taught by guided inquiry learning. In accord with opinion of Gilakjai (2012) that children who have auditory learning style will easier to understand information they hear. Group of auditory children prefer to become information receiver. During learning by using lecture method, students only listen and note information delivered by teacher. But in guided inquiry method, students are demanded to be able to analyze the problem and work in group. This is more likely not preferred by auditory students.

Furthermore, students' rational thinking ability in economy subject of students group who have kinesthetic learning style and taught by guided inquiry method is higher compared with students group who have the same learning style but taught by lecture method. This is in accord with Gilakjai (2012) who stated that kinesthetic students tend to prefer learning activity which involve them. In guided inquiry learning, students are positioned as researcher and guided to formulate problem and hypothesis, then asked to search and analyze the information in group. This kind of learning activity is very suitable with criteria of kinesthetic learning style, whereas in lecture method, they must sit silently and listen teacher explanation all the time in which naturally, kinesthetic individual cannot sit silently in the long time.

Furthermore, Gilakjai (2012) explained that students who have visual learning style prefer to learn by video and picture. As for rational thinking ability in economy subject of students group who have visual learning style and taught by guided inquiry is higher compared with group who have the same learning style but taught by lecture method. In an effort to solve the problem, students in guided inquiry class will encounter various kind of

information in the form of video, picture in reading which is different from book, internet and magazine. This will facilitate learning skill of visual children. Visual children prefer reading and study the book independently than should be sit and listen teacher explanation. Therefore, lecture method is not suitable with type of visual learning style.

CONCLUSION

Based on result of study and discussion, it can be concluded that:

- There is effect of learning method toward variability in students' rational thinking ability in economy subject
- There is effect of learning style toward variability in students' rational thinking ability in economy subject
- There is effect of interaction between learning method and learning style toward variability in students' rational thinking ability in economy subject
- Guided inquiry method is more suitable for students who have kinesthetic and visual learning style, whereas lecture method is suitable for students who have auditory learning style

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