ANALYSIS OF STUDENTS LEARNING STYLE OF PROSPECTIVE MATHEMATICS TEACHERS IN UNIVERSITAS PGRI SEMARANG

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Learning style
Audio
Visual
Kinesthetic

ABSTRACT

The purpose of this study is to provide an overview of the classification of student learning styles class of 2015 in mathematics education University of PGRI Semarang. Data collection in this research using questionnaire and observation method with steps: 1) instruments preparation; 2) data collection; 3) data valid itu; and 4) data analysis. The results of legibility test states that the questionnaire learning style is good. The result of empirical validation shows 99% valid and has high reliability. The subjects of the study were 92 students with the results of the study: 1) 33,70% students have visual learning styles; 2) 47,83% students have Auditory learning styles; and 3) 18,48% students have kinesthetic learning styles. Data show that student learning style is dominated by visual learning style

INTRODUCTION

Education is a process of making someone become himself, growing up in line with his talent, character, ability, and his self-conscious intact. Student becomes the main concern and main problem in all the process of transformation, which is called education. There are some things which affect the progress of someone's academic during the process of education. According to Entwistle (1988) the achievement of the progress in academic depends on the pattern of behavior and the self-learning of the student. Prashign (2007: 29) explained that the key to success in either learning or working is the unique style, which is possessed by every person, he used that in either learning or working, not only he embraced the strength but he also accepted his weakness and adaptive behavior in every learning situation, examining and working. The pattern of behavior in learning is called learning style. Nasution (2010:93) said that the adjustment of teaching style and learning style can uplift the effectiveness of learning. This fits with the Freedom of Learning theory which is invented by Roger (1969), it was about the freedom of learning in which depends on how the student prefer to learn. According to a research conducted by Dwijayanti (2014) said that humanistic class which is designed with the freedom that student possessed to choose the learning style whatever they prefer has significant influence with the achievement of the student in learning process. The result of the former observation with some of courses shows that selection of the strategy in a lecture has not seen in the point of student learning style. This affects the effectiveness of the effort in achieving the aim of the lecture which is not maximal yet, for instance there are some students who join the remedial program every semester and the minimum passing point is still in 65.

According to the explanation above, the problem that is introduced by the author is how is the picture of learning style which the teacher candidates of University of PGRI Semarang have?

In the following explanation, there will be explained the theories which are used to

explain the learning style of students. Learning style is defined as the characteristic of cognitive, affective, social and physiology behavior which take part as the relatively stable indicator in how will the student perceive, interact and respond the learning environment (MacKeracher, 2004). Hall (2008) defined learning style as a way which students start to concentrate in internalization process and remembering the new and difficult academic information. The same thing defined by Ma (2014) that learning style is a way which students start to concentrate in internalization process and remembering the new and difficult academic information.

Gunawan (2006) in his book "*Genius Learning Strategi*", he had divided the way to determine the learning style into 7 approaches: (1) Approach based on the processing of information: determining the different way to see and process new information; (2) Approach based on the personality; determining the type of different characters; (3) Approach based on the sensory modality; determining the dependency level of certain sense; (4) Approach based on the environment; determining the different responses to physical, psychological ,social and instructional condition; (5) Approach based on the social interaction; determining the different ways in communicating with other people; (6) Approach based on the intelligence; determining the different talents; and (7) Approach based on the cortex area; determining the relative domination from every part of the brain, for example left brain and the right brain.

DePorter & Hernacki (2000) said that in order to recognize the learning style of students, one step among the first step is that it is better for the teacher to recognize modality of the student in learning as visual, auditoria or kinesthetic modality (V-A-K). The approach that is used to recognize the learning style of the student can be called as the approach of sensory preference.

RESEARCH METHOD

1. Type of The Research

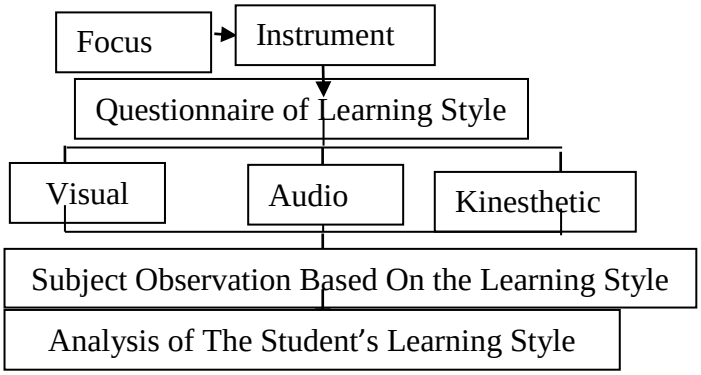
The type if this research is qualitative-descriptive research. Sudjana and Ibrahim (2001: 64), said that the aim of descriptive method is to describe the characteristic of a temporary situation the moment the research is conducted and find out the reasons for particular things or indications happen. The research reveals and clarifies the tendency of learning style which students of Mathematic Education Department University of PGRI Semarang Year 2015 have.

2. Research Subject

The selection criteria which is used to determine the subject of research is using the selection test, quota selection, network and the comparative among the cases selection (Sutopo, 2002: 28). The subject of the research is the student of Mathematic Education University of PGRI Semarang Year 2015. The subject consists of 4 classes which are in the 4th semester.

3. Procedure

The procedure of research used in this research can be seen from the diagram below.



Picture 1. Procedure of Research

4. Data, Instrument dan Technique of Data Collection

This research reveals and classifies the tendency of student of Mathematic Education Department of University of PGRI Semarang Year 2015 in their learning style. The main instrument of

the research is the researcher, while the additional instrument which is used is questionnaire, the manual of the observation and a recorder. So, the technique of collecting the data used the questionnaire and observation.

5. Data Analysis Technique

In this research, the researcher used interaction analysis model (Miles and Huberman in Rachman, 2000: 20). The procedure of interaction analysis model as follows:

a. Collecting Data
b. Reducing Data
c. Presenting Data or *Display Data*
d. Verification Data

FINDINGS AND DISCUSSION

1. Development of Research Instrument

As what have explained above that instrument which is used in this research are questionnaire and the observation manual learning style questionnaire. The indicators which exist in both of the instruments have the same meaning, which is digging the tendency of student's learning style of Mathematic Education Department in University of PGRI Semarang. The questionnaire is developed based on the learning style of Visual-Audio-Kinesthetic invented by DePoter. The development is conducted from the perspective of language with adjustment to the subject of the research. The result of the development has been validated by the language experts with the background of Doctor of Bahasa Indonesia, graduated from the University of Gajah Mada. The result of the validation from the language experts said that overall the questionnaire which are developed have language fitted with the student's own language with some input, such as:

a. The options or choices are "kadang-kadang (sometimes)" dan "sering (usually)", almost has the same meaning. Respond, change into "tidak pernah (never)", "jarang (seldom)", "sering (usually)", and "selalu (always)"
b. The writing of capital letter need to be concerned
c. The world "Anda" needs to be changed into "Saudara" because it is for the students of university
d. In statement number 1, the meaning of neat and organized is still unclear
e. In the statement number 27 it is better to change "berdiri dekat-dekat" into "berdiri dengan dekat"

In addition to that statement, it has been conducted the test of readability in some students with the result overall the questionnaire which is developed has the high level of readability with the indicator only some sentences with ambiguous meaning. There are some feedbacks from the readability test:

a. There are some comprehension on the message and the unclear information like number 1 on how the neat and organized is, number 9 on preference of scratching and 26 on the meaning of touching
b. The language for question number 10 lacks of communicative which is in the word "demonstrasi (demonstration)"
c. The context of the precision in grammar which refers to the rules of the Bahasa Indonesia grammar about the good and the correct is not exactly balance like in number 23 the explanation is very long yet not understandable
d. The statement no 27 is not exactly correct in using the grammar, for example the word "dekat-dekar" is changed into "jarak dekat"
e. The statement number 30 is not the basic or standard word for example the word "bisa" can be replaced with "dapat"
f. The statement number no 33 is less of conjunction for example "duduk dengan tenang" and not the basic or standard word for example "bisa" is changed into "dapat"

g. Suiting or adjusting the sentences with one another.

2. *The Result of Instrument Tryout*

The next steps that are going to do in developing of instrument are the validity test and reliability about the questionnaire.

a. Validity Test

The validity of every instrument which is used to analyze the points using the formula of correlation product moment. An instrument is valid when the coefficient r_{xy} (hitung) that is earned is bigger than from r the table in the level of significance 5%. The result of the price r is smaller from r table then the instrument point is not valid. With the subject new (N) there are 92 students in learning style gain r table 0.21 in significance of 5%. The summary of calculation of validity points can be seen from table 1.

Table 1. The result of Validity Test

Learning Style	The number of valid points	The number of invalid points	No of point of invalid
Visual	11	1	6
Audio	12	0	-
Kinesthetic	12	0	-

b. Reliability Test

Reliability of questionnaire in learning style uses the Alpha formula. From the calculation which the result is reliability coefficient Alpha = 0.66 shows reliability in high criteria.

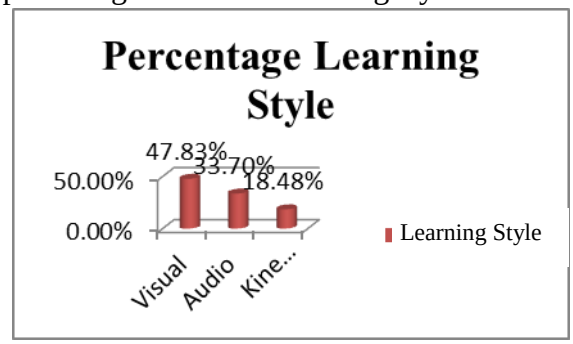
3. *Classification Learning Styles of Student Teachers*

The questionnaire results in 92 mathematics education students that consist of 4 classes, get the results as in table 2 below.

Table 2.The distribution of student learning style

Class	Visual	Audio	Kinesthetic
A	11	10	8
B	13	9	2
C	10	6	5
D	10	6	2

For details, this tabledescribe in figure percentage of student learning style.



Picture 2.Percentage of Student Learning Style

Furthermore, the distribution of learning styles based on cognitive level is shown in table 3.

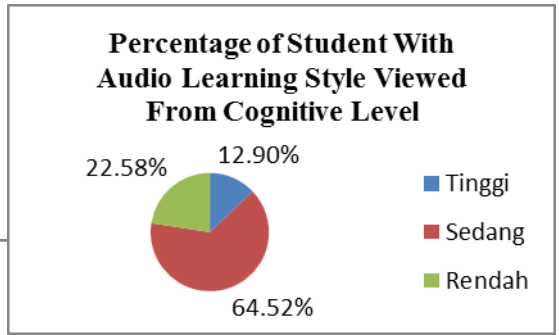
Table 3.Distribution of learning styles based on students cognitive level

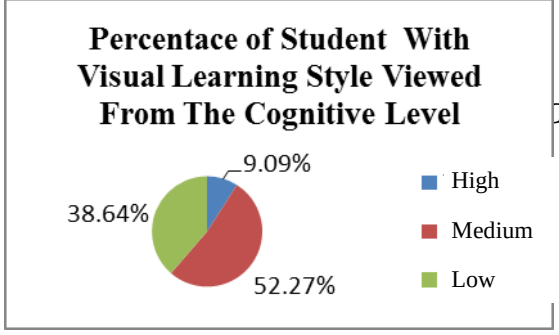
Cognitive Level	Visual	Audio	Kinesthetic
High	4	4	0
Medium	23	20	11
Low	17	7	6

For details, that table is outlined in the percentage of visual learning style in terms of student's cognitive level.

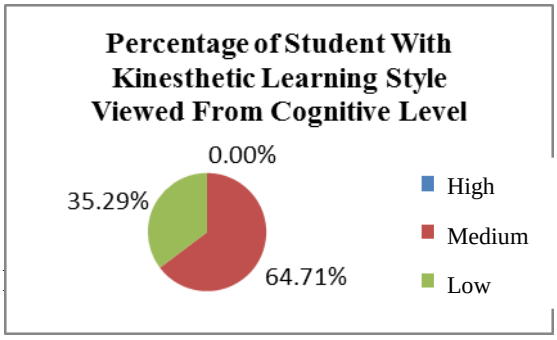
Picture 3.Percentage of visual learning styles viewed from the cognitive level of students.

As for the learning style of audio and kinesthetic respectively can be seen on the picture 4 and 5





Picture 4.Percentage of audio learning style viewed from the cognitive level of students



cognitive level of students.

4. *Discussion*

The result showed that the majority of students have a tendency to learn visual style, that is as big 47,83%, followed by learning style of audio and kinesthetic with successive percentage that is 33,70% and 18,48%. This shows that most of students are accustomed to learning by seeing and hearing. Only 18,48% students who have a habit of learning by imitating or doing. This reflects that the method of learning that they have acquired more class on the lecture method, as the results of observations in the classroom that found the lecturer using lecture and training methods about the class. This is in line with theorywhich put forward by Singh & Agwan (2000) character is a system of beliefs and habits that direct the actions of an individual. Because that, if the knowledge of one's character can be known, so it can be known also how the individual will behave for certain conditions, vice versaincluding learning habits or student learning styles. Students who have tendency to possess the visual learning style prefer to the things that look neatly reflected from a neatly written notebook (Deporter, 2000). This is the same with Rose and Nicholl (2002) that the characteristics of visual learning styles rely heavily on vision. Students with a predisposition to the majority of the audio learning style prefer to listen and remember what is being discussed with their friends (Deporter, 2000). It is the same that suggested by Hamzah (2010:181) characteristics of the auditorial learning style of all information can only be absorbed through the sense of hearing. Students with a tendency of auditory learning style are very fond of discussion situations in the learning process. Students who have a tendency kinesthetic learning style majority prefer to do physical activity (Deporter, 2000). In learning this, students prefer to try everything that is explained by lecturer. He seems busy trying to do his own questions when the lecturer asks the students to be involved in classical problem solving. So that the supervision of lecturers should be obtained the knowledge is not wrong.

Another thing that can be seen from the results of research is the distribution of learning styles based on the level of cognitive owned, among others:

a. 47,83% visual style learning students consists of 9,09% high cognitive level; 52,27% moderate cognitive level and 38,64% students who have low cognitive.
b. 33,70% visual style learning students consists of12,90% high cognitive level; 64,52% moderate cognitive level and 22,58% students who have low cognitive.
c. 18,48% visual style learning students consists of0% high cognitive level; 64,71% moderate cognitive level and 35,29% students who have low cognitive.

Based on these results, it is seen that the learning style does not significantly affect the cognitive level of a person. That is,

no learning style is better than others. This is exactly what is says by Ken and Rita Dunn (Gordon, Jeannette, 1999:340) that there is no style better or worse that other learning styles.

CONCLUSION AND SUGGESTION

Based on the results of research and discussion can be concluded that the majority of students have a tendency to learn visual style, that is as big as 47,83%, follow the audio and kinesthetic learning style with successive percentages is 33,70% and 18,48%. With the distribution of learning styles viewed from the cognitive level: (a) 47,83% visual style learning students consists of 9,09% high cognitive level; 52,27% moderate cognitive level and 38,64% student who have low cognitive; (b) 33,70% visual style learning students consists of12,90% high cognitive level; 64,52% moderate cognitive level and22,58% student who have low cognitive; dan (c) 18,48% visual style learning students consists of0% high cognitive level; 64,71% moderate cognitive level and 35,29% student who have low cognitive. That is, no learning style is better than other.

Based on it then in designing the strategy of the next lecture is required collaborationbetween learning by seeing, hearing, and doing/trying.

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