Study of Learning Style and its Relation to the Biology Learning Competence of Student in Rumbai District in Academic Year 2017/2018

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ABSTRACT

Learning style is one of the students' characteristics that must be considered by the teacher. Learning style is ability of a person to absorb and manage knowledge or information in order to achieve learning achievement and improve the competence of students. One of the causes of low competency students is the students do not know the learning style that they have and educators pay less attention to the learning styles. This study aims to show the students' learning styles of audio, visual and kinesthetic in MtsRumbai and show the relationship between students' learning styles in Biology to the students' learning competencies. The type of this research is correlation descriptive study. The data is qualitative and quantitative data. Quantitative data obtained from questionnaires, observation and documentation of student learning outcomes, while qualitative data obtained from interviews with Biology teachers. The sample in this study was the eighth grade students of MTs Rumbai consist of 3 MTs and 2 Islamic Boarding Schools with 348 students of 14 classes. The data were analyzed by using simple regression analysis to explain the effect of learning styles toward learning outcomes of students. The result of this study showed that the students' learning styles of MTs Rumbai in visual category is 15.8 (57.4%) in the auditory category is 14.5 (24.9%) and in kinesthetic category is 13.6 (18.2%). Based on the simple regression correlation test, it is known that there is a strong relationship between learning styles and students' learning outcomes of Biology in MTs Rumbai. Teachers should pay attention to the learning styles of students so that learning activities become more interesting and useful for the students.

Keywords: Learning style, biology, learning competence

1. INTRODUCTION

Students can achieve optimal learning competencies, so they must be actively involved in learning activities, one of the ways students can be involved in learning activities is to consider learning styles in each learning activity. The suitability of learning styles with structured teaching styles for learners influences learning outcomes, so students look much better on exams compared to other students whose learning styles do not fit the teaching style structured by educators [1]. Most students do not recognize the type of learning style themselves, so they cannot optimize the process of absorbing information on Natural Sciences so that their mathematical reflective thinking skills are also not good. In addition to educator students must also understand and recognize the learning styles of their students so that educators can create learning that is close to the three types of learning and can guide students in optimizing their learning styles to understand learning goals.

[2] states that knowing different learning styles has helped educators everywhere to be able to approach all or almost all students simply by conveying information in different styles. If educators know the learning styles of

each student, the purpose of the educator will be more easily understood by students, thus giving a positive perception for students about how the educator teaches. Learning activities can be achieved in accordance with the desired goals, the learning style of students must be understood by educators. Learning styles are the key to developing performance in school work and in interpersonal situations, so learning styles will influence someone in absorbing and processing information so that it will affect the achievements. Educators and schools are faced with the challenge of reaching the needs of all students, regardless of the level of academic, social and level of progress of students. Classes in each school contain a mixture of students with different levels of ability and needs. This reason is important learning style to know because each student basically has a difference in the ability to receive lessons.

The task of educators is to recognize the learning styles of different students and use them in learning to produce effective learning. Educators as facilitators and motivators in optimizing the learning process of students must understand the learning styles of students who can activate learning so that they can improve the competency of

students and can meet the three types of learning styles, so that students are actively Based on the description, the research was carried out with the title **"Study of Learning Style and Its Relation to Biology IPA Learning Competencies MTS Students in Rumbai District 2018/2019 Academic Year"** involved in learning activities and increasing competency students, both those with visual, auditory and kinesthetic learning styles.

2. LITERATURE REVIEW

2.1 Learning Style

Learning styles are the key to developing performance in school work and in interpersonal situations. When we realize how this self and other people absorb and process information, we can make learning and communicating easier with our own style [2], learning style is a combination of how one absorbs and then organizes and processes information.

2.2 Implementation of Learning Styles in PBM

Learning styles are a combination of three factors as follows [3].

2.2.1 The way to get information easily, mostly in visual, auditory, kinesthetic, then implemented in vision, hearing and vision, hearing and movement.

2.2.2 The dominant way of organizing information here is the left brain (analytical) and right brain (systematic).

2.2.3 How to create conditions that can help absorbinformation (emotional, social, physical and environmental).

2.3 Factors Affecting Learning Style

The learning style used is the key to developing performance in learning. It should be realized how one with the other absorbs, digs up information and can make learning, communicating easier with his own style. Some students can learn well with bright lighting, while other students with gloomy lighting. Students like to study in groups while others choose to study with an authoritarian figure such as educators or parents, others feel learning alone is the most effective for them. Some require music as a learning accompaniment while others cannot concentrate except in a quiet state. Students who need a regular and neat learning environment but there are those who prefer to lay out everything so that it can be seen [4].

2.4 Learning Competence

In essence, competence is a change in behavior shown by students after attending learning. Changes in behavior can be in the form of knowledge competence, affective or psychomotor. According to [5], competence is an ability obtained by students after going through learning activities.

Learning success is measured by how far learning outcomes are achieved by students. [6], learning outcomes are an illustration of actions, values, attitudes, appreciation, abilities and skills. To find out the learning outcomes or learning competencies of students, the educator must make an assessment. In the 2013 curriculum, the assessment of student learning competencies includes knowledge competencies (knowledge), attitudes (affective) and skills (psychomotor).

3. RESEARCH METHODS

This type of research is a mixed / combined method (mixed method) which is a study that involves the use of two methods, namely quantitative methods and qualitative methods in a single study (one study). The use of these two methods is seen to provide a more complete understanding of research problems than the use of one of them. Mixed methods research is an approach that combines or associates qualitative and quantitative forms and involves philosophical assumptions, the application of qualitative and quantitative approaches, and mixing.

3.1 Data analysis Technique

In this study the data obtained were analyzed using data analysis methods according to [5] stating that data analysis consisted of four lines of activities that occurred simultaneously,

3.1.1 Data collection

Data collection is done through observation, interviews and questionnaires.

3.1.2 Data reduction

Data reduction is the selection process, focusing on simplifying, abstracting and transforming rough data that appears from written records in the field. Starting from taking research subjects and looking for research information such as.

See the results of the odd semester exam of students at Rumbai MTs in Pekanbaru who have studied Biology Science students.

Provide learning style questionnaire sheets to the research sample to find out the Biology science learning styles of students.

Provide interview sheets to research subjects and Biology study educators.

3.1.3 Data presentation

The data presentation stage in this study is as follows.

Presenting learning style questionnaire data for MTs students and Rumbai Islamic boarding schools

Presents a table of percentage of learning styles and the number of scores given by each student. Statistical analysis techniques use the following formula.

Percentage of learning style =

$$\frac{\text{(Frequency of student answers)}}{\text{(Number of sample data)}} \times 100$$

3.1.4 Normality test

The normality test aims to see whether the data is normally distributed or not. To determine the normality of the sample, the Kolmogorof Smirnof test is used with the statistical hypothesis as follows: with the following steps.

H_0 : Data follows something normal distribution.

H_1 : Data does not follow normal distribution.

In this study the normality test was carried out using the SPSS software. The test criteria is accept H0 if the value is Sig. > real level (α = 0.05) and reject H_0 if the opposite is true.

3.1.5 Homogeneity Test
Homogeneity of learner learning style data Homogeneity test aims to see whether the two groups of data have homogeneous variances or not. This test is carried out using the Levene test with the statistical hypothesis as follows.
$H_0: \sigma_1 = \sigma_2$
$H_1: \sigma_2^2 \neq \sigma_2^2$
In this study, the variance homogeneity test was carried out with the help of the SPSS software. The test criteria is accept H0 if the value is Sig. > real level (α = 0.05) and reject if the opposite is true.

Looking for factorial Anova to determine the effect of an independent variable (influencing variable) on the devendent variable (the variable that is affected) using SPSS 16.

Look for Duncan's multiple distance follow-up test or the DMRT (Duncan Multiple Range Test) test to see the influence between the treatments tested.

3 RESULTS
After a series of studies were carried out, an analysis was then carried out to reveal the learning styles of visual, auditory and kinesthetic learners obtained during the study, namely "Study of learning styles and theirrelation to science learning competencies of MTs Subdistrict Rumbai students in the academic year2017-2018". Each sample is measured separately through a research instrument made in the form of a statement that uses a measurement scale with four alternative answers available.

3.1 Description of Data
The description of the research data is presented in order to provide a general description of the distribution of data which is processed from raw data using descriptive statistical techniques that aim to provide an overview of the distribution of data presented in the form of total scores and average scores. Each variable in sequence will be presented as a Visual, auditory and kinesthetic learning style.

3.1.1 Description of Knowledge, Attitudes and Skills Data
The data of these students was obtained from the results of the science educator's observation by taking the results of the students' natural science learning such as the value of knowledge, the value of attitudes and skills values in even semester 2017/2018.

3.1.2 Description of Data Learning Styles of Students
This data was obtained by distributing learning style questionnaire questionnaires separately for each Madrasah Tsanawiyah and Rumbai Islamic boarding school after the questionnaire was distributed and filled out and returned by students, the data on students' learning styles were obtained and statistical tests were continued.

3.2 Testing Requirements for Analysis
The first test conducted was the normality test using the Kolmogorof Smirnof test and the variance homogeneity test using the leven test with the help of SPSS software.

3.2.1 Normality test
The normality test on visual, auditory and kinesthetic values with knowledge of Biology science students is carried out by Kolmogorof-Smirnof test with the help of SPSS software. The test criteria are accepted H0 if the value of Sig. > real level (α = 0.05).
3.2.2 Homogeneity Test
The homogeneity test of the variance of visual, auditory and kinesthetic values using the Levene test with the help of SPSS. The test criterion is accept H_0 if the Sig > level is real (α = 0.05) and reject H_0 if the opposite is true.

3.3 Percentage of Learning Styles of Learners
Based on the data obtained from the student learning style questionnaire in Annex 8. MTs Muara Fajar class VIII A obtained a visual percentage of 60%, auditory 30% and kinesthetic 10% with an average IPA score of 82.2 and an average learning style of 57, 2. Class VIII B obtained a visual percentage of 41.9%, auditory 35.5% and kinesthetic 22.6% with an average IPA value of 80.1 and an average learning style of 52. Class VIII C obtained a visual percentage of 63.3%, auditory 16.7% and kinesthetic 20% with an average IPA value of 87.6 and an average learning style of 53.9. Class VIII D Class VIII C obtained a visual percentage of 53.3%, auditory 30% and kinesthetic 16.7% with an average IPA value of 81.7 and an average learning style of 59.1.

MTs-Taufik Class VIII A has a visual percentage of 68.2%, auditory 9.09% and kinesthetic 22.7% with an average IPA score of 86.9 and an average learning style of 66.5. Class VIII B Classes obtained a visual percentage of 45.8%, auditory 37.5% and kinesthetic 16.7% with an average IPA value of 85.5 and an average learning style of 58.3. Class VIII C obtained a visual percentage of 56%, auditory 28% and kinesthetic 16% with an average IPA score of 86.7 and an average learning style of 54.1. A'yun Class VIII MTs Qurrata A'yun obtained a visual percentage of 50%, auditory 30% and kinesthetic 20% with an average IPA score of 84.9 and an average learning style of 62.9.

MTs Imam Ibn Kathir Class VIII A has a visual percentage of 64%, auditory 12% and kinesthetic 24% with an average score of IPA 88 and average learning style 54.5. Class VIII B obtained a visual percentage of 64%, auditory 20% and kinesthetic 16% with an average IPA value of 89.3 and an average learning style of 54.8. Class VIII C obtained a visual percentage of 65.4%, auditory 23.1% and kinesthetic 11.5% with an average IPA score of 76.7 and an average learning style of 55.6. Class VIII D has a visual percentage of68.7%, auditory 26.6%, and kinesthetic 4.76% with an average IPA value of 77.5 and an average learning style of 55.3.

MTs Darul Muqomah Class VIII A obtained a visual percentage of 60.7%, auditory 21.4% and kinesthetic

17.9% with an average IPA value of 84.5 and an average learning style of 54.3. Class VIII B obtained a visual percentage of 45.5%, auditory 27.3% and kinesthetic 27.3% with an average IPA value of 84.2 and an average learning style of 57.

3.4 Test the Hypothesis
3.4.1 First Hypothesis
This hypothesis test is used to determine the effect of student learning styles on Biology science subjects and their relation to students 'learning competencies, because the data are normally distributed and have homogeneous variances, so the tests used variance analysis (ANOVA) are two pathways to determine the influence of participants' learning styles student.

3.4.2 Second Hypothesis
Data analysis at this stage used the Duncan Multiple Range Test to find out the best type based on its ranking because there were significant differences in the results of analysis of variance. This hypothesis test is to find the correlation between the learning styles of students and the Biology science learning competencies as shown in Table 1.

Table 1. Results of DMRT Calculation.

Duncan Interaction	N	Subset	
		1	2
66	4	74.7500	
69	2		83.0000
70	4		84.5000
71	2		86.5000
73	2		86.5000
Sig.		1.000	.074

Groups in the homogeneous subset are displayed. Based on the method observed. The term error is the average square (error) =, 500.

From the calculation of Table 1. It is known that Duncan's further test results show that there are differences in the middle values of each other. Two-way ANOVA analysis has also shown this difference but the Duncan test is also the same, in this test the sig value> 0.05 is 0.074 which means the learning style has a relationship with the learning outcomes of Biology science students.

3.5 Average Recapitulation of Classical Completeness
Based on the data obtained from the calculation of learning style questionnaires and learning competencies in the realm of knowledge from MTs / PonpesRumbai.

4 DISCUSSION
4.1 Learning Style Questionnaire
Based on the data, MTs-QurrataA'yun can be seen the average completeness of learning outcomes based on visual learning styles 14 and 50%, auditory learning styles 13.1 and 30%, kinesthetic learning styles 11.9 and 29%

with the acquisition of knowledge learning outcomes average of 84.9. Visual learning style is one of the learning styles that influences achievement, meaning that the higher the use of visual learning styles, the higher the learning competence of students. The results of this study indicate that students' visual learning styles of learning competencies are in a strong category [7].

The MTs/Ponpes-Darul Muqomah can be seen as the average completeness of learning outcomes based on visual learning styles 12.3 and 53%, auditory learning styles 10.7 and 24%, kinesthetic learning styles 10.75 and 22.5% with the acquisition of learning outcomes average knowledge of 84.4. The results of this study are in line with the opinion of [3], everyone usually has the dominant power, in traditional classes, kinesthetic students are the most at risk of failure because they move, feel, touch or act to meet these learning needs must be multisensory and full of variations. Educators must understand differences in behavior with respect to different learning styles that help educators in determining ways to teach and develop different learning styles. This is supported by the opinion of Bobbi DePotter and [4], stating that knowing different learning styles has helped students, thus providing positive perceptions for students about the way educators teach.

MTsN Muara Fajar can be seen the average completeness of learning outcomes based on visual learning styles 18.8 and 54.6%, auditory learning styles 18 and 28%, kinesthetic learning styles 15.7 and 17.29% with the acquisition of knowledge learning outcomes average of 82.9. The results of this study are in line with opinions (Ula, 2013),visual learning styles make students learn through seeing, watching, observing and the like. More precisely the visual learning style is learning by seeing things either through pictures or diagrams, shows, shows or videos. The results of this study are also in line with [8], people learn in different ways and all the same ways. Every way has its own strength, in fact we all have all three learning styles, but usually one style dominates it. Educators by recognizing learning styles will be able to determine student learning styles that are more effective in the classroom, utilizing learning abilities to the maximum so that learning outcomes can be optimal. Learning success is determined by the ability to develop the most effective way of processing information in accordance with learning styles.

Imam Ibnu Katir's MTs/Ponpes can be seen as average completeness of learning outcomes based on visual learning styles 15.3 and 65%, auditory learning styles 13.3 and 21%, kinesthetic learning styles 13.15 and 14.2% with learning outcomes. average knowledge of 82.8. The results of this study are also in line with the opinion of [9], by knowing the learning styles of students, educators will be able to adjust their teaching style to the needs of students, for example by using various teaching styles so that all students can obtain effective ways to learn. When educators deliver subject matter, an educator should not only prioritize subject matter but also must pay attention to their students as human beings who must be developed personally. An educator who can understand the learning

style of students will be helpful in helping him strengthen the relationship between educators and students.

MTs Taufik Walhidayah can be seen the average completeness of learning outcomes based on visual learning styles 15.4 and 56.7%, auditory learning styles 14.63 and 24.8%, kinesthetic learning styles 13.83 and 18.4% with acquisition knowledge learning outcomes averaged 79.4. The results of this study are in line with [10]), that students who have the dominant learning style are visual learning styles that have competent achievements and have a significant positive relationship between creativity and high visual learning styles.

From the results of the study it was found that overall visual learning styles were higher than the audio and kinesthetic learning styles. Because the visual learning style has the ability to be neat and orderly, speak quickly, more easily remember what is seen than what is heard, and have the ability to remember something based on visual associations and have a close relationship or correlation. The level of seriousness of learning styles with learning outcomes obtained positive relationships. The reason is that when researchers conduct ongoing material research is the "Human Respiratory System" which is so preferred by students. At the time of learning students see pictures or videos and interesting illustrations and educators also use colored markers when making lines and writing and complex demonstrations during speeches. Besides that the visual type is more comfortable learning with the use of colors, lines and shapes and has a deep understanding with artistic values as well as colors.

Visual learning style emphasizes more on how it is easier to learn the lesson through seeing, looking at or observing the object of learning, it aims to focus on understanding the lesson. Attention is a general reaction of the organism and consciousness that causesincreased activity, concentration and limitation of an object.

4.2 5.2 Completeness of Learning Outcomes Based on Learning Style

Based on table 11 data, MTs Qurrata A'yun class A average value of 84.9 knowledge was declared complete with 50% visual style, 30% auditory style and 29% kinesthetic learning style.

Hypothesis results in class A Darul Muqomah MTs / Ponpes average value of 84.5 was declared complete with 61% visual style, 21% kinesthetic learning style and 18% auditory style, in class B the average knowledge value 89.3 was declared complete with 45% visual learning style, 27% auditory learning style and 27% kinesthetic learning style.

The hypothesis results in class A MTsN Muara Fajar average know ledge value of 82.2 was declared complete with 60% visual style, 30% auditory style and 10% kinesthetic learning style, in class B the average knowledge value of 80.1 was declared complete with visual learning styles 41.9%, auditory learning styles 35.4% and kinesthetic learning styles 22.5%. Class C the average knowledge value of 87.6 was declared complete with a visual learning style of 63.3%, auditory learning style 16.6% and kinesthetic 20%. Class D average value of

knowledge 81.7 was declared complete with 53.3% visual learning style, auditorial learning style 30% and kinesthetic learning style 16.6.

Hypothesis results in the class A MTs / Ponpes Imam Ibnu Kathir average knowledge value 88 declared complete with 64% visual style, 24% kinesthetic learning style and 12% auditory force, in class B the average knowledge value 89.3 was declared complete with 64% visual learning style, 20% auditory learning style and 16.7% kinesthetic learning style. Class A and B are declared complete. Class C average value of knowledge is 76.7 with visual learning style of 65%, auditory learning style of 23% and kinesthetic 12%. Class D average knowledge value 77.5 with visual learning style 67%, auditorilal learning style 29% and kinesthetic learning style 4.8 declared incomplete.

Hypothesis results in MTs Taufik Walhidayah class A average value of knowledge 66.5 was declared complete with visual style 68.2%, auditory style 9.09% and kinesthetic learning style 22.7%. In class B the average knowledge value of 85 was declared complete with 45.8% visual learning style, auditory learning style 15.2% and kinesthetic learning style 16.7%. Class C average knowledge value 86.7 with 56% visual learning style, 28% auditory learning style and 16% kinesthetic learning.

The results of this study are in line with the research of [1], Indarto (2012), and [11], which concluded that learning styles significantly influence student achievement.

The results of this study are also in line with Pasaribu in [4], the effectiveness of education can be viewed from two aspects, namely the teaching process in teaching, concerning the extent to which planned learning activities are carried out and the learning process of students, concerning the extent to which learning objectives are achieved through teaching and learning activities.

5 CONCLUSION

Based on the results of the research and the results of data analysis, it can be concluded that there is a positive relationship between visual learning styles and the Biology science competencies of students in class VIII MTs.

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