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Learning Motivation for Every Student Learning Style on Multimodel Learning

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***Abstract*—The low motivation of *Junior High School*(JHS) students in learning science is one of the major problems to overcome by the lesson study group of*Science Teacher Association*(STA) in Kendari City. Meanwhile, the development of multi-model learning strategy is intended to accommodate the diversity of students' learning styles to improve their learning motivation. This study aims at obtaining information about the different of learning motivations in science between males' learning styles and female's, and between groups taught with a multi-model learning (group treatment) compared to students taught by a mono-model (control group). The design of multi-model learning tools used is based on lesson study activities at JHS-STA and used after being validated by the expert and users (teacher and student). Determination of student learning style based on dePorter et al. (2010) at the beginning of the semester. The data on learning motivation was measured through questionnaires after learning process in one semester. The study was conducted in Grade VII of odd semester of academic year 2016/2017 at three JHSswith high, medium and low-quality student category, grouped based on *Science Score of Elementary School Exam* average score of VII graders in the last two years. The data analysis using two-way Anova indicates that in general there is a significant difference of learning motivation in science in every learning style between treatment group and control group. Further test results (Posthoc Test) shows that motivation on visual learning style, auditory and mixed (multimodality) was higher in treatment group compared to control group. There was no difference in learning motivation among male and female students between the treatment and the control group. However, there were variations in the motivation for learning of each type of learning style in the group of male students as well as the female students.**

Keywords—multi-imodel learning; lesson Study; learning style; and motivation;

I. INTRODUCTION

One of the goals of learning is to make students have the passion to keep up lifelong learning and a curiosity to learn more. The key to make it possible is the strong and well-motivated student. Basically, developing student learning motivation is to help students understand how the relationship between material is expected to be learned (Djamarah et al., 2010). Lack of motivation can cause students not only failforcertaincourse, but also even dropped-out from school (Austin et al., 2013).

Generally, Junior high schools' science teachers in the city of Kendari complain about the low motivation of students in learning science. One of the indicators is the unexpected result of the tasks evaluation performed at home by both individual and group.Therefore, it is necessary to find the solution by rethinking the learning strategies and it is one of the recommended ways agreed by the lesson study program which is conducted by the *Junior High School Science Teacher Association*(JHS-STA) in Kendari City. The learning applied by science teachers during this time was the mono model learning, that is a single learning model which generally were STAD cooperative learning and direct learning.

According to Kardi (2014), although factors influencing the learning motivation have been understood and predicted,it is not possible to provide a concrete-generalized recipesto motivate a particular student or group of students,because student attitudes, values and expectations vary greatly. Pritchard (2009) also emphasizes that each student has a specific way of learning called learning style, which is a form of learning, the best way to think, process information and demonstrate learning.

Accordingly, the way in which the science teacher tries to improve the motivation of each student with different learning styles is to apply multimodel learning, i.e. learning that combines several learning strategies, such as inquiry, problem-based teaching, direct instruction, cooperative learning and learning strategies presented in an integrated manner according to the characteristics of the material at each face to face in the 5-E learning cycle frame (Engage, Explore, Explain, Elaborate, and Evaluate). Trilling &Fadel (2009) states that two major challenges of 21st century education are how to personalize learning and differentiate instruction for different classes, as it is clearly shown to have a positive effect on performance and attitude against learning.

This study aims to obtain information on 1) the differences of learning motivation between the types of learning styles of male and female students, 2) differences between the groups taught through multi-

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model learning (group treatment) and students taught by the strategy of learning mono-model (control group).

II. LITERATURE REVIEW

A. Multi-model Learning

According to Arends (2007), multimodel learning is the practice of applying various teaching models and connecting those models creatively during a lesson or a teaching unit. Woolfolk (2008) states that presenting information with many models is very useful. Hunt (in Joice et al., 2009) applying an ongoing model to all students, will only exacerbate the problem, so it is advisable to integrate the choice of models to create a particular teaching model.

According to Lasley & Matchzynski in Tomlinson (1999), only teachers applying diverse instructions through the use of varied and multisensory teaching models will succeed in maximizing their strengths and reducing student learning weaknesses. In addition, Shihusa and Keraro (2009), an effective learning approach should apply some learning methods to improve students' motivation and learning activities in Biology learning.

B. Learning Styles

According to De Porter and Hernacki (2011), learning styles are a combination of how one absorbs and then organizes and processes information. Kirton (2006), learning style as a preferred way to learn and how one learns well. Woolfolk (2008), students learn more when in an atmosphere and preferred way. Denig (2004) and Dunn et al. (2009), students whose learning styles are accommodated will reach 75% of standard deviations higher than students whose learning styles are not accommodated. Rose &Nicholl (2009) states, some people, will learn very well when given the freedom to choose the way in accordance with his own style. The results of Sengodan&Iksan (2012) study, student learning styles are positively correlated with intrinsic or extrinsic motivation, and there is a significant difference between the sexes in the learning style of the organization and the gender in the intrinsic motivation effort.

The diversity of student learning styles within the classroom consists of several types, namely, visual, auditory, kinesthetic types (DePorter et al., 2010). In addition, there is a combination of one type with another type (Rose & Nicholl, 2009). The result of the survey on the diversity of learning styles of students in Kendari City, from 669 samples, obtained the following learning style types: Visual (V) of 42.75%; Kinesthetic 21.67%; Auditory of 22, 12%. In addition, there is a mixed type, Visual-Auditory (VA) of 5.08%; Auditory-Kinesthetic (AK) 2.39%; Visual-Kinesthetic 4.48% and VAK combination of 1.49% (Amran, 2011).

C. Motivation

According to Potvina&Hasnib (2014), motivation is an internal state that evokes, directs, and supports a goal-oriented behavior. Williams & Williams (2011) argue that motivation is the most important factor that can be targeted educators in order to improve learning. Survey results show that 70 percent drop out of high school due to lack of motivation (Bridgeland et al, 2006 in Austin, 2013)

According to Potvina&Hasnib (2014), there are five main factors that influence motivation, ie, factors of students, teachers, content, methods/processes, and environment. Austin et al. (2013) emphasizes four dimensions and examples that can be of concern to teachers to improve student motivation in the classroom, namely, (1) competence; if students feel they have the ability to complete a particular task, then students are more likely to be involved in the task. One of the strategies in teaching is that teachers provide support to improve skills where students are weak and from time to time remove support; (b) control/autonomy; when students feel they have control over the situation and level of interaction with a particular task, students are also more likely to be motivated. Giving the student an option more likely to be more motivated and telling him that he should do his duties; (c) goals / values, students are also more motivated when finding relevant and meaningful topics for their lives. The teacher should be able to show how students will use the information in their lives; and (d) the association of peer pressure or social norms can have a profound effect on student motivation. If teachers build a classroom culture of high expectations and active engagement, it is possible that the majority of the class will accept these norms. To improve the dimension of motivation in the classroom, teachers need to consider making interactive lessons and allowing for movement.

III. RESEARCH METHOD

This research is a pre-experimental research with the design of static group comparison, i.e. randomized control-group only design, which is carried out in the odd semester class of academic year 2016/2017 in four junior high schools representing high, medium and low school categoryin Kendari city of Southeast Sulawesi.Grouped based on *Science Score of Elementary School Exam* average score of VII graders in the last two years. A total of 12 study groups were randomly assigned to two groups: experimental groups taught by multi-model learning; consists of seven study groups with a total of 210 students. The control group is taught by mono-model learning; consists of five study groups with 150 students. The differences in the number of study groups and students in each group is caused by the fixed-distribution of science teachers teaching tasks and it cannot be intervenedby thelesson study group member ofJHS-STA in each school.

The multi-model learning tool used is the result of lesson study activities based on JHS-STA and has been practiced through peer teaching by participating teachers and real teaching in their respective schools, and has been declared valid, practical and effective by expert teams as reviewers and users (teachers and students). This learning consists of six variations, presented according to the characteristics of the subject, namely; 5E-Direct Instruction-Inquiry, 5E-Jigsaw-Inquiry , 5E-Direct Direct Instruction-Cooperative NHT, 5E-Cooperative NHT-Concept Map, 5E-Cooperative TPS-Concept Map, and 5E-Cooperative TPS-Strategy PQ4R.

The learning of mono-model is single learning which is only in the form of STAD cooperative learning or direct learning which has been applied by teacher before the research. Determination of student learning styles based on instruments adapted from DePorter et al. (2010). Data on learning motivation of Science Subjectwas student scores obtained through a motivational questionnaire developed by Kardi (2006). The questionnaire consisted of 34 questions, each question consisting of five choices of answers to choose from.Motivational data retrieval is done on experimental group and control group students when the students finish the final exam of odd semester. Analysis of two-line anova data using SPSS 23version for Window application.

IV. FINDINGS AND DISCUSSION

A. Findings

The result of difference analysis of learning motivation of Science Subject between type of learning style on gender between experimental group and control group is listed in Table 1.

TABLE 1. The probability value of the test (sig.) Differences in learning motivation of each type of learning style and gender between the experimental group and the control group (* = sig value <α = 0.05) are significantly different)

Tests of Between-Subjects Effects					
Motivation					
Source	Type IIISum ofSquares	df	Mean Square	F	Sig.
Corrected Model	5.223a	15	.348	3.804	.000*)
Class	1.380	1	1.380	15.080	.000*)
Gender	.060	1	.060	.655	.419
Learning Style	1.480	3	.493	5.388	.001*)
Corrected Total	30.211	288			
a. R Squared = .173 (Adjusted R Squared = .127)					

<u>Advanced Test (Posthoc Test)</u>

1) Posthoc Test Differences in learning motivation of science between learning styles in male students and female students

TABLE 2. Posthoc results summary Differences in learning motivation of sciencebetween learning styles in men and women.

No	Difference of Learning Style	Mean Difference (I-J)	Sig.
1	Male Students		
	Visual vs Auditory	.2100	0.032*
	Visual vs Kinesthetic	.0818	0.861
	Visual vs Mix	-.0250	0.984
	Auditory vs Kinesthetic	.2918	0.033*
	Auditory vs Mix	.1850	0.049*
	Kinesthetic vs Mix	-.1068	0.715
2	Female Students		
	Visual vs Auditory	-.0554	0.793
	Visual vs Kinesthetic	.3188	0.292
	Visual vs Mix	-.0758	0.511
	Auditory vs Kinesthetic	.3742	0.172
	Auditory vs Mix	.06010	0.987
	Kinesthetic vs Mix	-.3949	0.130

*. The mean difference is significant at the .05 level.

2) Posthoc test of differences in learning motivation of each science learning style on gender between the experimental group and the control group.

TABLE 3. Summary of Advanced Test Results of difference in learning motivation of each type of learning style based on gender between experimental group and control group (*) = sig value <α = 0.05; expressed significantly differently).

No	Test the Difference between Learning Styles		Mean Difference	N. Sig
	Experiment	Control		
1	Male Students			
	Visual	Visual	.14850	0.023*
	Auditory	Auditory	.26000	0.043*
	Kinesthetic	Kinesthetic	.06667	0.428
	Mix	Mix	.10804	0.301
2.	Female Students			
	Visual	Visual	.21439	0.026*
	Auditory	Auditory	.25839	0.004*
	Kinesthetic	Kinesthetic	.55000	0.099
	Mix	Mix	.29321	0.001*

B. Discussion

The results showed that simultaneously there were significant differences in learning motivation between students who had visual, auditory, kinesthetic and mixed learning styles between

experimental groups taught by multi-model learning with control groups taught by mono-model learning (Table 1, Corrected model line ; sig value <α = 0,05). Based on the Posthoc test (Table 2), it shows that there are significantdifferences between visual learning style and auditory learning style; type of auditory learning style with kinesthetic and mixed learning styles in male students, whereas among female students there is no significant difference. Based on the mean positive difference, the learning motivation of male students in the visual learning style is better than the auditory learning style.

Likewise, the auditory learning style is better than the kinesthetic and mixed learning style. In addition, in Table 1; in the sex row, it indicates that there was no significant difference in the learning motivation of the Science Subject by sex between the experimental group and the control group (sig value> α = 0.05). However, if the analysis conducted separately between male and female students (Table 3), it appears that the significant differences on learning motivation (sig <α = 0.05) is found in male students with visual and auditory learning styles and visual, auditory learning styles and mixed learning styles among female students. Based on the mean positive different values, it is concluded that the students' motivation on science learning in the learning style was better in the experimental group than in the control group.

The pattern of these varied research results tends to be consistent with the results of the revised research conducted by Patrice &Hasnib (2014), i.e. from 50 articles studied, the role of male and female toward the motivation of learning science indicates a small or no significantdifference. Important differences arise in the disciplines of science, physics and technology which are clearly and universally favored by boys, whereas Biology is often favored by girls.Although some articles report no significant differences, other preferences are also investigated but on a smaller scale, such as astronomy and earth science both support boys.

The result of analysis of science learning motivation on the type of learning styles of male students, and kinesthetic learning style in male and female students showed no significant difference to the important note because it did not match the expectations of the researcher. In the kinesthetic learning style, unqualified was analyzed because in the female students of the sample control group, the was only one person, whereas in the sample in the male students of the experimental group only three students. In addition, motivation is not only influenced by the type of learning style and learning strategy alone. According to Potvina & Hasnib (2014), there are five main factors that influence motivation, i.e., students, teachers, content, methods or processes, and environment.

V. CONCLUSION AND RECOMMENDATIONS

In general, there is a significant difference in the learning motivation of Science Subject in each learning style between groups taught by multi-model learning (experimental group) with students taught with mono-model learning (control group). The motivation of science learning in visual, auditory and mixed learning styles (multimodality) was higher in treatment group compared with control group. However, there was no significant difference in the learning motivation of Science Subjectbased on sex between the experimental group and the control group. In addition, there are variations in learning motivation differences between the types of learning styles in boys' groups as well as in female students. The learning motivation of science in visual and auditory learning styles differed significantly in both sexes, whereas in the mixed style learning style differed only in female students. The motivation to study this different Science Subject is better in the experimental group than in the control group.Based on the results of this study it is recommended that, for the composition of the sample composition type of learning styles of students need to be attention so as to qualify for statistical analysis.

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