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THE IDENTIFICATION OF MULTIPLE INTELLIGENCES OF 8TH GRADE STUDENTS OF JUNIOR HIGH SCHOOL

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ABSTRACT

People are born with multiple intelligences. It is indicated from the talent and abilities of people in learning. Unfortunately, practices of science learning in junior high schools did not consider and integrate multiple intelligences into methods of learning. Therefore, this study was to identify multiple intelligences of students at junior high schools so that it can be used as a reference in developing effective methods of science learning without ignorance of students' multiple intelligences.

This is a survey research with the techniques of census to students. The collection of students' multiple intelligences were by a set of questionnaire. The questionnaire has been content validated by experts. The validity measurement resulted in a validity index contently of 0.89 meaning the questionnaire was valid. The population of this research was junior high school students, and the sample was 8th grade students.

The results showed that each student from the sample had eight intelligences. No students did have dominant specific intelligence. Eight intelligences from the students were linguistic, mathematical-logical, musical, spatial-visual, kinesthetic, intrapersonal, interpersonal, and natural. The grade of the intelligent was represented by the average of 16.9 ; 16.7 ; 14.7 ; 16.9 ; 16.4 ; 15.3 ; 19 and 15.9, respectively. Based on the measurement and identification of the intelligences, it can be concluded that science learning should facilitate multiple intelligences, integrated into variety of methods in one lesson.

Keyword: multiple intelligences; science learning; junior high school

INTRODUCTION

Munif (2009) explained that learning was a process of two-way transfer of the two sciences between teachers a source of information and students as recipients of information . Setiyowati , et al (2009) explained that a good learning process was a learning process that can lead students to a positive activity . Student learning should not passive by hearing, writting as in some conventional learning, but it should provide activities that driving studens to be active. Students were born with multiple intelligences. With the intelligences , students would go to school with different expectations . The expectation are a safe and comfortable environment including facilities and infrastructures, comfortable learning place like a second home where they were advised by an adult and they can respect , and the presence of students in the peer community. The students also wanted a learning course in accordance with what they have, mastered and intelligences . Based on the theory of multiple intelligences, human can learn, communicate,

and solve problems with a nine- ways . According to theory multiple intelligences of Gardner in Meinani (2009) states that the ninth aspect can empower the expertise. The ninth aspect are namely : (1) the strength of the expertise of words (linguistic intelligence) , (2) the expertise of the power of logic / reasoning and numbers (logical - mathematical intelligence) , (3) the strength of the expertise of images (spatial intelligence) , (4) the power of gestures expertise (the intelligence of body movement) , (5) the power of rhythm and tone mastery (musical intelligence) , (6) the strength of the relationship antarinsan skill (interpersonal intelligence) , (7) the power of self expertise (intrapersonal intelligence) , (8) the strength of the expertise of human relationships with the fauna , flora , and natural (naturalist intelligence) , and (9) the strength of religiosity , spirituality , and philosophy expertise (existential intelligence) . According to Fathi Abdulkader , et.al (2009 : 676-679) theory of multiple intelligences gadner 8 believes that people have a variety of intelligence or ability based on double eight intelligences. The intelligences are:

- a. Verbal / Linguistic : the ability to use language effectively both in speaking and in writing
- b. Logical mathematical : the ability to use numberseffectively and reasonably well
- c. Visual / Spatial : the ability to recognize shapes, space,color, line, and a form and an image that represents the ideas of visual and spatial
- d. The body / kinesthetic : the ability to use the body toexpress ideas and feelings, and to solve problems
- e. Musical intelligence: the ability to recognize rhythm, pitch, and melody.
- f. Interpersonal Intelligence: the ability to understand other people, feelings, motivationsand intentions, and to respond effectively.
- g. Intrapersonal Intelligence: the ability to know and to understand ourselves, and to recognize similarities and differences from one to another.
- h. Naturalist Intelligence: the ability to recognize and to classify plants, minerals, and animals.

In the process of science learning,teachers should choose learning methods that are appropriate to the characteristics of the materials and students' needs. Unfortunately, because of the lack of conditions, such as facilities and infrastructures, and also due to the assesment system in Indonesia,teachers tend to use oral presentation in delivering sciences learning or generally called conventional learning. Conventional learning methods by oral presentation can be benefit for students who have a logical mathematical and linguistic intelligence only. However, students who have the other intelligences will getd ifficulties and bored. This is not becauseof the fact that the teacher is not able to convey the subject matter, but because teacher does not realize the diversity of students' intelligence, in fact, the intelligence is related closely to talent that shall help students to get success in learning. On the other hand, most teachers do not know how to identify and determine students' intelligences. According to Paul Suparno (2004:56), teachers who have dominant specific intelligence, tend to enjoy to use learning methods which is in accordance with their intelligences. For example, a teacher with high musical intelligence often uses songs or music in learning. As a result, students who have different intelligence with the teacher will get disadvantages in the learning, students may feel not happy to be taught or do not get anything for that learning in school. Therefore, the problem of this research is how to identify the diversity of students' intelligence and what teaching methods suitable to be applied in class that may facilitate the diversity of student intelligences. This research would be benefit for teachers to be used as a reference to develop learning processes that facilitate students'intelligences, dealing with the intelligence diversity in a classroom.

RESEARCH METHOD

This study measured the diversity of student's intelligences . The technique used is a census of intangibles . The census was done by use of questionnaire and did not measure directly the intelligences . The sample were students in grade 8th junior high school (SMP N 1 Sentolo). Steps of study were (1) developing and validating a set of questionnaire to measure the students intelligences, (2) analyzing the index of validation of the questionnaire, the validation was done by 2 expert to review the content of the questionnaire, (3) conducting a survey to students and collecting the data of students' intelligences, (4) analyzing the data to identify the multiple intelligences of 8th grade students, and (5) reviewing theoritical studies to develop learning methods to facilitating the multiple intelligences students in science learning.

RESULT

As previously explained that the questionnaire developed was validated in terms of its contents by experts. Based on expert judgment, it can be summarized in the Table 1 below:

Table 1. Recapitulation of Content Validation from 2 Expert Judges

Expert judge 2	Expert judge 1	
	Weak Relevance (item rated 1 or 2)	strong Relevance (item rated 3 or 4)
Weak Relevance (item rated 1 or 2)	A=0	B= 2
Strong Relevance (item rated 3 or 4)	C= 4	D=50

Based on the results of the above mapping, then using current analytical formulation below so as to produce the content validity index.

$$\text{Content validity} = \frac{D}{(A+B+C+D)} \quad (\text{Gregory,2007:123})$$

Questionnaire was developed, consisting of 56 items. Based on the analysis using the above formula, it produced content validation index of 0.89. The index is high, meaning that the questionnaire is valid and is suitable to the indicators. Thus, the questionnaire is feasible for the collection of data. Although the questionnaire was developed consisted of 56 valid statement, but only 48 statements were used to collect the data due to simplification of calculation for statistical purposes.

The result of survey should that 8 kinds of multiple intelligences were personally possessed by student. No student did have single intelligence. The multiple intelligences of

students were listed in the Tabel 2 below and average score of multiple intelligences can seen in Figure 1, with numbers represent quantitation of the intelligences and the letters are the type of intelligences : L : linguistic intelligence ; LM : logic mathematical intelligences; M : musical intelligence ; VS : spatial visual intelligences ; K : kinestethical intelligence ; Intra ; intrapersonal intelligence ; Inter : interpersonal intelligences ; and N : Naturalist Intelligence.

Tabel 2. Recapitulation of the result of the questionnaire

Number Of Students	L	LM	M	VS	K	Intra	Inter	N
1	17	18	11	19	17	17	18	14
2	18	15	18	17	13	14	20	14
3	17	18	12	18	18	18	21	18
4	17	17	19	19	15	14	17	16
5	14	15	17	17	18	17	17	16
6	16	17	12	18	21	16	21	17
7	15	16	13	15	15	15	15	15
8	15	15	17	16	18	16	16	17
9	20	19	15	18	17	16	23	20
10	19	18	11	17	15	17	22	8
11	20	19	11	17	19	14	21	18
12	15	16	13	15	14	14	15	14
13	17	16	14	18	18	16	17	16
14	16	15	14	14	14	14	18	14
15	14	15	18	15	18	18	21	11
16	21	19	13	19	19	15	20	17
17	20	19	13	15	17	16	23	15
18	20	18	15	15	17	16	20	14
19	17	16	18	15	16	16	17	17
20	19	17	15	18	17	14	20	16
21	16	17	18	19	15	14	17	16
22	17	15	17	18	16	16	18	16
23	17	18	12	17	16	14	16	18
24	14	17	19	19	16	16	20	20
25	15	16	18	17	16	15	19	13
26	14	17	16	16	16	16	19	14
27	17	19	9	13	14	14	19	17
28	18	18	14	16	18	15	22	20
29	18	16	15	18	14	15	17	16
30	17	15	15	17	17	14	20	17
31	16	15	12	18	15	13	22	16
32	16	13	16	17	17	16	19	20
Averages	16,9	16,7	14,7	16,9	16,4	15,3	19	15,9

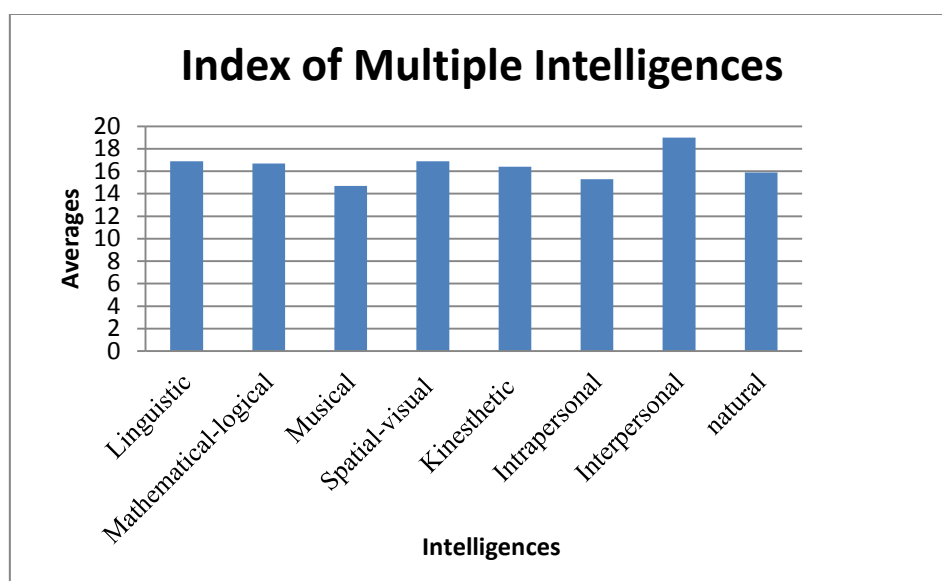


Figure 1. Averages Score of Multiple Intelligences

According to the table and the figure above, the students have a diverse intelligences and each of student has one certain intelligence that stands out. From the data, all types of intelligences are with similar strength in a class. None of intelligences has extreme strength. Therefore, all intelligences development should be facilitated in a science learning by use of a variety methods of learning.

DISCUSSION

Human was born with intelligence, with varies from one person to the other. Intelligence shall be important in learning, communication and problem solving. The study show that the students of grade 8 of junior high school have 8 multiple intelligences, that should be improved in sciences learning to get optimum output of learning. Fathi Abdulkader reported similar result (2009) stating that each person has at least 8 multiple intelligences of Gardner. The multiple intelligences were linguistic, logic mathematic, musical, kinesthetic, spatial-visual, intrapersonal, interpersonal, and natural.

Xie and Lin (2009) described some inportant points in the multiple intelligences theory; these are (1) everyone has at least eight types of intelligences, (2) Most people can improve the intelligences in a certain level of competence, (3) Persons with excellent intelligences are able to solve well complicated problems, and (4) every intelligence may be expressed throught a variety of ways . The principle of the development of multiple intelligences in the learning process includes: (1) emphasizing the improvement of intelligence , (2) using of all intelligence in developing different teaching methods , (3) reviewing the lesson plans tofacilitate multiple intelligences , (4) providing opportunities to tudents to choose learning activities and assessment methods ; (5) providing opportunities to students to use well dominant intelligence to strengthen weak intelligences ; (6) using intelligences to understand the broad subject .

The theory of multiple intelligences is a key strategy for improving student achievement even for those who are disabled or have low achievement . The theory of multiple intelligences was developed to meet different needs of students in order to promote and actualize talent or

ability. According to Bas (2010: 367-38) people have 8 intelligences , but not all of these intelligences are developed comprehensively . Some teachers feel to design a lesson that is able to facilitate eight intelligences so that not only it did facilitate language skills, but also help students to realize self potency or talent. The intelligence or potency of students can be identified by doing activities of thinking in a classroom of learning and grouped according to their intelligences. It can also be indentified by a set of valid questionnaire developed by researchers.

Xie and Lin (2009 : 107-108) said that human ability and talent is direct evidence that there were some intelligences , and the intelligence could be fully utilized either individually or combined/grouped . This theory can be applied at home or at school to develop a method of teaching or learning and to provide a platform for development of creativity, comprehension and implementation of new knowledge , techniques and concepts in learning process. Multiple intelligences do not only help teachers to choose different methods of learning and assessment , but also allow students to demonstrate what they have learned in different ways according to the theory of multiple intelligences. In implementation, teachers must use a variety of approaches to improve problem solving skills and long-term achievement. Multiple intelligences have an important role in education that highlights the uniqueness of each student, has the data in the form of dominant intelligence of student. The dominant intelligences will help and provide learning experiences , give an overview of teaching and assessment with multiple intelligences , media for students to express their talents or potency .

According to Paul Suparno (2004:58), the impact of multiple intelligences for teachers are (1) teachers are required to understand the intelligence of the students, (2) teachers should be able to develop a model of student learning with various intelligence based on students intelligences and was not due to teachers'intelligences and competencies, (3) teachers need to use evaluation techniques that match with the multiple intelligences of students. Thus, learning by applying multiple intelligences will require teachers to be more creative in their learning and not limited to one method of learning.

Students' multiple intelligences based on learning result in a creative and applicative learning . The multiple intelligences based on learning will be able to facilitate all intelligences in a learning activity . According to Fathi Abdulkader , *et.al* (2009) activities are done students and teachers in the study and learning process at each intelligence , there are :

- a) Linguistic: reading or writing a story, listening or reciting poetry , storytelling , brainstorming, using vocabulary and reading learning materials
- b) Mathematical logic: counting number based in logical thinking , explaining natural phenomena in a systematic thinking, being creative in problem solving
- c) Visual Spatial: drawing a diagram, drawing with computation , using illustrations and imagination to describe a model , and using concept maps to learn
- d) Kinesthetic: exploring knowledge by using media, games, dancing , playing roles , and prefer to learn with and tangible/real objects.
- e) Music: using musical notation to learn , adapting songs or lyrics , repeating rhythms with his mouth while working and singing
- f) Interpersonal: activities discussion , working in groups , and learning with peers .
- g) Intrapersonal: writing a journal , judging their selves , setting goals , self reflection and assessment of progress in terms of the results that have been done .
- h) Natural: learning in nature , interacting with animals and plants directly , using materials in nature wisely for learning objects

Piping , S. (2005) said that any types of intelligences of students have their respective characteristics . These characteristics can be used as reference materials for teachers to develop learning methods. Learning activities using multiple intelligences theory must adapt a variety of intelligence of students . Learning in this way to some extent can lead to enthusiasm of learning

and self-confidence of students . Students explored their creativities in order to study the materials with talen, for example through songs, rhymes , poetry , drama and others. Learning is an integral process of receiving and giving information . Thus the principle of learning activities using multiple intelligences can not be separated from one to another , but all intelligences must be facilitated in every lesson . Thus the teaching and learning activities mentioned above should be applied in the study as a whole in accordance with the existing diversity of intelligences in the classroom and not allowed to ignore the intelligences .

CONCLUSION AND SUGGESTION

Human was born with intelligence, with varies from one person to the other. At least 8 intelligences that exist in a person (student) . The multiple intelligences were linguistic, logic mathematic, musical, kinesthetic, spatial-visual, intrapersonal, interpersonal, and natural. The intelligence or potency of students can be identified by doing activities of thinking in a classroom of learning and grouped according to their intelligences. It can also be indentified by a set of valid questionnaire developed by researchers.

This theory can be applied at home or at school to develop a method of teaching or learning and to provide a platform for development of creativity, comprehension and implementation of new knowledge , techniques and concepts in learning process. Thus the activity of learning using the theory of multiple intelligences adapted to a variety of intelligence possessed by students such as reading ,counting numbers, drawing diagrams , using models , games , adapting songs or lyrics , discussion , working in groups , writing journals , learning in nature opens . The activities should be applied in the study as a whole in accordance with the existing diversity of intelligences in the classroom and not allowed to ignore the intelligences.

Based on the evidence and findings that students in a classroom have a variety of intelligences, teacher must understand the intelligence and talent of students from the activities they do in learning process and in school every day. The intelligences can also be identified using a valid questionnaire. By identified intelligence of students, teachers can implement learning methods that is in line with and suitable to the characteristic of materials and the fulfill students' needs. Chosen learning methods supporting the characteristic and talent of students would help students to develop their creativities and to understand learning materials easily and clearly. Learning with proper multiple intelligences can be applied at home or school, and therefore teachers should assign tasks or assessments to students in learning process to improve continuously students' intelligences.

BIBLIOGRAPHY

- Abdulkader , F.A. , Gundogdu , K. , Eissa , M.A , . (2009) . *The Effectiveness of a Program Based on Multiple Intelligences Certain Improving Reading Skills in 5th Year Primary Learning Disabled Students* [Electronic version] . Electronic Journal Of Research And Educational Psychology , 7 (3) , ISSN : 1696-2095 . pages 673-690
- Bass , G & Beyhan , O. (2010) . *Effects of Multiple Intelligences Supported Project Based Learning on Students Achievement Levels and Attitudes towards English Lesson* [Electronic version] . Electonic International Journal of Elementary Education , Vol 2 , Issue 3 . pages 365-385
- Denig , J. S. (2004) . *Multiple Intelligences and Learning Styles : Two Complementary Dimensions* . Teachers College Record Volume 06 , Number 1 , 0161-4682 . pages 96-111
- Dwi Meinani Setyowati , Ahmad A. Hinduan . (2009) . *Application of Multiple Intelligences to Improve Physics Learning Outcomes of Students at SMA N 2 Magelang , Central Java* .
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- Indonesian Periodic Journal of Physics Volume 1 Number 2 January 2009 . Taken By Date July 1, 2013 , from <http://www.journal.uad.ac.id/index.php/BFI/article/view/271/106>
- Gregory, R.J.(2007). *Psychological Testing:History, Prinsiple, and Applications Fifth Edition*. United States of America.Pearson Education.
- Munif , C. (2009) . *Human's School, Multiple Intelligences Based of School in Indonesia*. Bandung . Kaifa Mizan Library
- Paul , S. (2004) . *Multiple Intelligence Theory and Its Application in School How to Apply the Theory of Multiple Intellegences Howard Gardner* . Yogyakarta. Canisius
- Piping Sugiharti . (2005) . *Application of Multiple Intelligences Theory in Physics Education* . Retrieved July 1, 2013 , from 202.147.254.252/files/29-42 application 20teori % % % 20intelligence 20multiple 20pembelajaran % % % 20dalam fisika.pdf
- Setiyowati , Sukisno , Mindyarto . (2009) . *Teaching Electromagnetic Waves Using Multiple Intelligences Theory Approach For Class X High School Students [Electronic version]* . Indonesian Journal of Physics Education Vol 5 2009 , 1693-124 , pages 20-25
- Xie , J. & Lin , R. (2009) . *Research on Multiple Intelligences Teaching and Assessment [Electronic version]* . Asian Journal of Peopleagement and Hupeopleity Sciences , Vol 4 , No. 2-3 . Pages 106-124