Paradox between students’ learning needs and learning strategies of teacher mathematics in Indonesia

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Abstract. During this learning is given by the teacher to his students. Teachers only provide material by using learning strategies based on certain learning theory without wanting to know that learning has been appropriate or not. Then the question arises again, whether the desired student learning is desired by the teacher? Because the teacher may be more aware of the condition of all students and learning environment. This becomes a paradox about the truth of a suit that some people think is appropriate but not for others. This study aims to determine which learning theory is considered appropriate according to the perspective of teachers and students. It is expected that mutual understanding of teachers with students will improve student achievement. This study will explore and compare the perceptions of students and teachers in Indonesia with the theory of learning behaviorism and constructivism. Using qualitative survey research methods, students and teachers describe the advantages and reasons why learning with learning theory is appropriate. The results of this study showed that most students and teachers perspective like learning with constructivism theory, but factors such as time allocation and student confidence are so influential that learning theory of behaviorism is used more often.

1. Introduction
Mathematics is a field of study that has an important role in education, namely as subjects are introduced to students from kindergarten level even up to university in some majors. This makes mathematics a universal science that underlies and plays a role in the development of other science and modern technology [1,2]. Based on these important roles, mathematics learning is expected to meet the needs of students in an effort to improve math skills.

Mathematics learning conducted in Indonesia has tended to use the theory of learning behaviorism (lecture). Behavioral learning theory is a learning theory that emphasizes the change in student behavior as a result of the stimulus and response. This learning theory explains if learning is a form of change experienced by students in terms of ability that aims to change behavior by way of interaction between stimulus and response [3,4,5].

The development of education in Indonesia today, many researchers and some teachers try to apply the theory of learning kontruksivisme to students. This is because the theory of learning behaviorism in the learning process felt less provide free space for students to develop their own ability is different from the theory of kontruksivisme. The theory of constructive learning itself holds that knowledge is the result of its own formation, so there is no transfer of knowledge from one person to another, because everyone
builds his own knowledge. For example, if a teacher wants to provide knowledge to students, then the gift is interpreted and constructed by the students themselves through experience [6,7]. However, are all the methods deemed appropriate by teachers and researchers also considered appropriate by students? Is it appropriate to apply to all students in a class?

The teachers and researchers have been searching for and making various methods of learning mathematics based on both learning theories which are considered the most effective and appropriate learning theories to improve students' math skills. However, sometimes we are overconfident and claiming the learning or learning method we think is appropriate is the best method and can be used in all circumstances, all the time and all places. We also often often blame teachers who always use behaviorism methods (lectures) and not using the method of learning kontruktivisme, but whether we better understand the state of the class than teachers and sometimes we forget that teachers in Indonesia are charged with a very large but time-limited learning materials which is very limited. The statement may be a reflection of us together, whether the method we are trying to apply is appropriate for teachers in a one-year lesson? Is this learning deemed appropriate by teachers in the school? This becomes a paradox about the truth of a suit that some people think is appropriate but not for others. This study aims to determine which learning theory is considered appropriate by both teachers and students.

2. Method
The research method used is qualitative survey research method. Survey research is defined as an information collection of responses and statements from individual samples [8]. In this study allows various methods in determining participants, collecting data, and utilizing various methods of instrumentation. Survey research can use qualitative research strategies, such as using open questions or qualitative questionnaires [9].

The research method used is qualitative survey research method. This method is not intended to define frequency, means or as a benchmark, but to determine the diversity of some interesting topics in a given population. In this study also did not count the number of people with the same characteristics (variable values) but rather set meaningful variations (relevant dimensions and values) in the population. An outline of qualitative survey methods is the study of diversity (not distribution) in a population. The cycle in this study uses a one-shot survey that involves only one empirical cycle. The stages include research questions, data collection, analysis, and reports that have been modified [10].

The research question aims to determine the material object (topic) to be studied, the formal object (topic aspect), the empirical domain (population), and the observed units (members of the population). In this study, the perception of learning mathematics into material objects that are studied and will discuss the theory of learning behaviorism and constructivism is usually used as a formal object. Empirical domain in this study is the population of Indonesian society with the units observed are teachers and students (junior and senior high school).

Data collection is to ask the units observed in the empirical domain. In this study the units observed in the empirical domain are teachers and students (junior and senior high school) in Indonesia. Data collection is done by spreading the question (Qualitative Questionnaire) in the form of Google form (Application form online) through social media to all over Indonesia. The number of questions raised are eight questions for teachers and ten questions for students. Questions are descriptive with questions about learning perspectives which, according to teachers and students. Analysis is to manage, synthesize, find patterns, find what is learned and decide what can be told to others from the data already obtained. In this study the data obtained will be analysed and compared with learning theory. After performing the analysis phase, the analysis results will be concluded at the report stage.

3. Result and discussion

3.1. Learning strategy of teacher mathematics with learning theory
There are 10 teachers who participated in this survey from several regions in Indonesia. In this survey the teacher answers the 8 questions asked. The question relates to learning with which learning theories
are often used by teachers, the obstacles encountered in the classroom during the lesson, and which lessons are deemed appropriate by the teacher. Survey results show that most teachers love the theory of constructive learning but this learning is considered to take a long time to be applied to their classroom students. Here is one representative example of the teacher's description answer:

| PENILAIAN |
|-----------|
| Apakah pembelajaran matematika yang anda terapkan di kelas sudah menyenangkan? Jika ya ataupun tidak jelaskan alasannya! |
| Ya kedang, dapat dilihat dari antusias siswa dalam pembelajaran |
| Apa saja kendala anda dalam kegiatan pembelajaran matematika dikelas? Jelaskan! |
| Siswa yang tidk percaya diri akan kemampuan mereka jadi selalu membutuhkan konfirmasi guru |
| Metode manakah yang lebih disukai oleh siswa anda, metode ceramah atau konstruktifis? Jelaskan alasannya! |
| Siswa lebih suka ceramah karena manaah tidak aktif dan hanya mendengarkan guru |

**Figure 1.** One representative teacher's answer.

Figure 1 (above), in the first and second questions indicates that there is doubt from the teacher itself whether the learning he has been doing has been fun and then assumes that most students still lack self-confidence and always ask for confirmation of teachers in learning. As a result, the teacher considers the students prefer to use the theory of learning behaviourism (lecture) which is proposed in answer to the third question. Figure 1 (middle) explains that teachers combine the theory of learning behaviourism with constructivism. Teachers who have limited time to explain the material will turn to the theory of learning behaviourism that is considered faster so that it can move on to the next material. Figure 1
(below) explains that both learning theories fit well in classroom learning. But there are disadvantages and advantages in each theory of learning. The theory of learning behaviourism (lecture) has the effectiveness of time, while the theory of constructive learning can foster the ability of creativity and resilience that is needed by students.

3.2. Analysis student learning needs with learning theory

There are 48 students who follow this survey from several regions in Indonesia. In this survey students answer ten questions asked. In this discussion will be discussed three of the ten questions that are very representative to see the learning desired by the students. The questions are about students’ feelings during the learning activities of mathematics, student’s perspective on mathematics learning, and mathematics learning that students need.

3.2.1. The feelings of students during learning activities of mathematics. The survey results show that there are some answers from students who are very interesting. In the first question that asks "does math learning feel boring? If yes or no explain the reason! ", Most students answered the math that taught is not boring, but there are some students have different answers and in my opinion very interesting. In this discussion will be discussed answers from three students who are representative with the survey. Examples are as follows:

Figure 2. Representative answers students (1).

Figure 2 students (1) explain boredom in learning mathematics depends on the teacher's teaching. And so far this student really enjoyed the learning mathematics delivered by his teacher.

Figure 3. Representative answers students (2).

Figure 3 students (2) state if the student is afraid of the math teacher because the math teacher looks horror. Students wonder if looking for value x and y important in everyday life?. This answer shows the importance of exploring the learning of mathematics in everyday life. It aims to make students understand the importance of mathematics material that is taught.

Figure 4. Representative answers students (3).
Figure 4 student (3) says that mathematical learning done in the afternoon makes sleepy and saturated. But at one time, students were very excited in the learning of mathematics because the mathematics teacher was very responsive in learning mathematics.

From the above statements it can be seen that the factor of the delivery of the material and the character of the teacher greatly affects the student's interest in learning. Factors deliver material that is not in accordance with the wishes of students will make students become bored in learning.

3.2.2. Student's perspective on mathematics learning. The next discussion will discuss the answer of the seventh question. This question will show students' perspective on mathematics learning. In the seventh question that asks "would you rather solve the problem according to the example the teacher taught instead of looking for other ways? If yes or no explain the reason! ", Most students responded if they preferred to solve math problems in their own way. However, some still follow the teacher's example. Examples are as follows:

Figure 5 student (4) says more fun when solving math problems by finding his own way. In addition the student is very challenged to solve the problem by using his own way. This attitude reflects the character of constructivism.

Figure 6 shows if the student (5) follows the problem-solving method as instructed by the teacher. Attitudes made by these students tend to be obedient to teachers and only nailed to the teacher's explanation. This attitude reflects the character of behaviorism.

3.2.3. Mathematics learning that students need. The next discussion will address the answers to the tenth question. This question will show the mathematics learning that students need. The tenth question asks "In your opinion, what kind of mathematical learning do you want to get from your math teacher, whether by lecturing method or guided discovery method? Explain your reasons! ", Most students responded if they preferred learning with guided discovery methods (constructivism). But there is one person who does not care about the methods used by the teacher. Examples are as follows:
Figure 7. Representative answers students (6).

Figure 7 students (6) argue that the desired mathematical learning is by the method of guided discovery (constructivism). The reason the student chose such method is by guided discovery method (constructivism) can create independent student, create friendship and can share knowledge with her friend.

Figure 8. Representative answers students (7).

Figure 8 students (7) argue that teachers can use any method provided that students can understand the mathematical material described. These students tend to be adaptable to the teaching methods applied by the classroom teachers.

Of the various student answers that have been described. Students in Indonesia tend to choose the theory of learning constructivism, this is because students have realized the importance of using a variety of ways other than the way that teachers teach, and students understand if the theory of learning constructivism they can find knowledge, have the attitude of independence, interact with fellow friends and train the ability presentation of students.

4. Conclusion
From the various answers of students and teachers who have been analysed, the results of this survey research show that most of the perspective of students and teachers love learning with constructivism theory. Students in Indonesia tend to choose constructivism learning theory, this is because students have realized the importance of using various ways other than the way that teachers teach, and students understand if with constructivism learning theory they can find knowledge, have the attitude of independence, interact with fellow friends and train the ability presentation of students. This is in accordance with the principle of constructivism learning theory which is based on students who are naturally active in learning so as to build new personal knowledge through connecting prior knowledge and new knowledge involving interactive and collaborative dialogue between teachers and students [11].

In fact, teachers more often use the theory of learning behaviourism. This is because time allocation is lacking, teachers in Indonesia with so much material burden prefer to use theory learning behaviourism because for constructivism learning theory requires a lot of time allocation. This is unfortunate because constructivism learning theory can be a framework where teachers can understand their students [12].

One more factor that makes the implementation of constructivism theory unconstrained is the lack of self-confidence of some students to seek other answers and prefer to use the solution of the teacher. The teachers also assume that if the student is not confident it is proved by the students who still need
confirmation from the teacher for their work. These two factors make the theory of learning behaviourism often used in learning mathematics in Indonesia.

Acknowledgments
This research is supported by our colleagues from the University of Education Indonesia who provide insight and expertise in assisting research, lecturers, and friends who are very helpful to this research. We thank all teachers and students who have answered the survey that has been given.

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