Analysis of TBLA (Transcript Based Lesson Analysis) SainsMastery of Mathematical Concepts

Hariyanto¹, Sri Utaminingsih², Santoso³,
¹,²,³Master of Elementary Education, Universitas Muria Kudus, Indonesia

keyza.hariyanto@gmail.com

Abstract. The Think Pair Share Learning Model assisted with conversion tool games is a model designed for student-centered learning. So that students as individual subjects and social fields become inseparable. The purpose of this study is to reveal the pattern of knowledge construction through conceptual mastery using Transcript Based Learning (TBLA). This study involved 28 students of grade 5 SDN Bendo. In this study, it was divided into 2 cycles, namely cycle 1 focused on the unit length conversion material while the cycle concentrated on the material addition and subtraction of length unit conversion. The activities in each cycle will be recorded via video or audio. Then the recording will be used as a transcript of the learning dialogue and then analyzed using Arvaja's (2007) student response type. In addition to the transcript analysis, the students were given a written exam through the LKS (Student Worksheet). For the first cycle the class average value reached 75.36, while in the second cycle the average value reached 78.93. The percentage of completeness of all cycles has exceeded 80%.

1. Introduction
Mathematics is a fun subject. But unfortunately, it is still considered a scourge lesson that frightens every school exam. It is even more frightening to collaborate with a learning model that focuses on teachers (teacher oriented). These facts and conditions are still being carried out in the learning process in elementary schools. This condition directly impacts on the creativity and activity as well as the fighting power of the students in following lessons where the level of mastery of material concepts is very low. The current curriculum 2013 has a goal that focuses on the cognitive, affective and psychomotor domains. The 2013 curriculum also encourages students to develop attitudes, skills and knowledge in a balanced manner. Theme-assisted learning provides benefits for students, namely providing real experiences to students so that learning More meaningful. Students not only accept the teacher's explanation, but students are required to actively explore their own knowledge from various things. In addition, students are also required to be able to work together in groups.

There needs to be a learning model that needs to be applied in responding to these challenges. TPS (Think Pair Shear) learning model, for example. Usually this learning model is student-centered, where students are more active in seeking information, students are more independent, not only relying on information from the teacher alone, but here the teacher has a role as a facilitator. Thus, the learning process in the classroom will be more meaningful. Think Pair Share is also a very good active learning, if implemented correctly it will save the teacher's time in explaining, help students discuss and participate more and provide a cumulative assessment of student progress. In addition, to support a more effective
and fun teaching and learning process, it must be combined with teaching aids that are in accordance with the material in order to help students understand the concepts of the subject matter they are learning. So that the learning objectives in the form of maximum results are more easily realized. In line with this, AgusSuharjana et al [1] stated that teaching aids are learning media that contain or convey the characteristics of the concepts being studied. The learning media that the researchers will use are teaching aids of the conversion concept in the form of conversion tool games. The advantage of this tool is that students will be more active, not burdened with the material being studied and are game-oriented. Another advantage is that the concept will be easy to understand and embedded in students so that it will always be remembered for a long time. This teaching aid is also easy to make yourself with materials that are found in many schools and students’ homes. In addition, this teaching aid is given an attractive color to change the impression of students, if learning mathematics must be serious and focus on being more relaxed, effective and fun, with Sanaky that learning media can stimulate students in learning including duplicating real objects, making abstract concepts into concrete concepts, and providing a learning atmosphere that is not depressed, relaxed and attractive so that they can achieve learning goals, namely understanding concepts conversion in mathematics learning [2].

2. Research Method
Research design is a method used to collect research data, so that the research results can be proven. The researcher used analysis techniques to analyze the data obtained from the research results. This aims to obtain accurate data in accordance with the objectives of the study and the difficulties faced by students in mastering mathematical concepts with the Think Pair Share learning model and conversion tool games. By using the Transcript Base Lesson Analysis (TBLA) quantitative method, this data mining focuses on the learning transcripts made, learning artifacts and observations of the implementation of learning to see to what extent the influence of the Think Pair Share learning model and unit conversion tool games can improve the ability to master mathematical concepts in unit length conversion learning.

The research will be conducted using 2 learning cycles. Each learning consists of 3 stages, namely design (preparation), implementation, and reflection. Each cycle will consist of a Think Pair Share learning model assisted by conversion game tools. Conceptual pattern analysis was carried out at the learning implementation stage, because this study was made to obtain an overview of the extent to which students mastered the understanding of mathematical concepts in the length unit conversion material. Data from recording in the form of video and audio on the implementation of learning is used as the main data to analyze the mastery of mathematical concepts with the type of communication reson developed by Arvaja[3] that occurs in the learning process of mathematics. In addition, researchers use the results of observations and tests as an option to strengthen the analysis done.

3. Results and Discussion
From the research that has been done, namely analyzing the construction of students' knowledge in mastery of mathematical concepts using Transcripts Bassed Learning Analysis (TBLA), in which the research is divided into 2 cycles. Cycle I concentrated on mastery of the concept of length unit conversion assisted by the conversion tool playing media, while the second cycle focused on mastering the concept of addition and subtraction of the length unit conversion which was assisted by the simple conversion tool game. When the first cycle of learning took place, the researcher collected various learning artifacts either through video or audio and even written for further analysis based on the type of student response to find out the construction of students' knowledge in learning, so that learning transcripts were created. The transcript that has been formed is then analyzed based on the type of response to the communicative function of Arvaja[3] so that it is arranged in a table 1, and figure 1.

| Table1. Analysis of response types |
|-----------------------------------|
| Response type  | Q  | A  | S  | I  | EX | EL | JT | RE | EV | J  | CO | OR | AF |
| Number of student responses | 4  | 37 | 3  | 6  | 8  | 10 | 3  | 8  | 9  | 10 | 3  | 5  | 8  |
From table 1 and figure 1, it can be seen that the highest student response is code A (Responsive) in which students are enthusiastic in learning so that they are able to answer the questions raised by the teacher. In addition, there is a more dominant response, namely EL (Elaboration) and J (Judgmental) in which students begin to develop themselves with the information obtained in learning. From these data it can also be seen that students in providing suggestions, justifying suggestions and summarizing pieces of information are still relatively low so it needs to be facilitated by providing speaking opportunities according to wider learning topics so that students are sharper in critical thinking.

After analyzing cycle 1 regarding the concept of length unit conversion, then the researcher analyzed cycle 2 which contained the concept of addition and subtraction of the length unit conversion. Still the same was done in cycle 1, namely collecting artifacts in the form of video, audio or chat during learning in cycle 2. The collection of artifacts is then arranged in a table form which will make it easier for researchers to analyze them based on the type of response Arvaja[3]. The transcripts that have been collected include: From the transcripts that have been compiled, they are analyzed based on the type of response Arvaja[3] produces as table 2 and figure 2.

| Response type | Q | A | S | I | EX | EL | JT | RE | EV | J | CO | OR | AF |
|---------------|---|---|---|---|----|----|----|----|----|---|----|----|----|
| Number of student responses | 6 | 31 | 1 | 10 | 18 | 6 | 2 | 6 | 10 | 5 | 2 | 11 | 4 |

From the table 2 and figure 2, appear the 3 highest responses, namely Responsive (A), Exemplification (EX) and Originizing (OR) so it can be concluded that in cycle 2 learning students are more dominant in answering questions from the teacher, giving examples in real life and can control themselves when doing presentations convey the opinion of the group. The diagram above the researcher also highlights the 3 lowest student responses, namely suggestive (S), Justification (JT) and Sumarizing (CO). of the three lowest responses, students describe that learning in the cycle students have not been able to come up with ideas or ideas as suggestions related to the topic of learning so that it has an impact on confirming or criticizing the opinions of other groups and summarizing some of the information.
Table 3. Presentage completeness

| No | score | Total Students | Complete | Not Complete |
|----|-------|----------------|----------|--------------|
| 1  | 10    | 0              | 0        | 0            |
| 2  | 20    | 1              | 0        | 1            |
| 3  | 30    | 0              | 0        | 0            |
| 4  | 40    | 3              | 0        | 3            |
| 5  | 50    | 0              | 0        | 0            |
| 6  | 60    | 1              | 0        | 1            |
| 7  | 70    | 5              | 5        | 0            |
| 8  | 80    | 5              | 5        | 0            |
| 9  | 90    | 4              | 4        | 0            |
| 10 | 100   | 9              | 9        | 0            |
|    | Total | 23             | 5        |              |
|    | Presentege (%) | 82    | 18        |              |

From the table 3 presentage completeness above, the passing percentage value reaches 82%, so it can be said that this research is related to the mastery of the concept of addition and reduction in the conversion of units of length which is declared successful, because the percentage of completeness is > 80%.

Analysis of the artifacts that have been collected has been carried out either through video, audio or chat during learning, where the conversation analysis uses the type of response referred to from Arvaja [3] including Interrogative (Q), Responsive (A), Suggestive (S), Informative (I), Exemplification (EX), Elaboration (EL), Justificational (JT), Reasoning (RE), Evaluating (EV), Judgmental (J), Summarizing (CO), Originizing (OR), and Affectional (AF).

The pattern of knowledge construction of mastery of mathematical concepts in cycle I, which of the several types of dominant response types are Responsive (A), Elaboration (EL) and Judgmental (J). Whereas in cycle 2 the type of student response tends to be Responsive (A), Exemplification (EX), and Organizing (OR) types. Of the two cycles, the dominant type is Responsive, this indicates that students have built their own level of knowledge by thinking critically and having the courage to express their opinions [4]. From the dominant type of responsiveness, it can be seen that activeness in learning, so that mastery of mathematical concepts in the high activity category is better than the low level of activity according to the opinion of Ramlah, et al [5]. However, sometimes students have not been able to express the concepts they have mastered in formal mathematical form, so there needs to be an emphasis on the main concepts being taught so that they can slowly think concretely towards conceptual thinking [6].

Furthermore, if a teacher should instill a concept in students based on what they know beforehand, because in learning the mathematical concept it is a structured learning experience, so that students are able to respond to the material presented properly. This is the same as stated by Hudojo (1998) which states that mastering mathematical concepts must be gradual and sequential and based on past experience.

The shift in the construction pattern in learning cycle 1 and learning 2 lies in the responsive type (A), Elaboration (EL) and Judgmental (J) with the responsive type (A), Exemplification (EX), and Organizing (OR) types. So it should be noted that the shift in construction patterns is a student's thinking pattern in accordance with the experiences they have gone through and is a structured process [7].

Learning has interrelated variables, between conditions, learning strategies and learning outcomes. Teachers should be able to present effective and efficient learning according to the existing curriculum [8]. Development of speaking skills and critical thinking can make it easier for students to master mathematical concepts. It can be seen from the lesson 2 that the type of response organizing (OR) appears, namely controlling behavior or speech when making presentations.

As for the learning pattern in both cycles, there is a shift from pattern C to pattern A. So it can be said conveyed.
that the learning process is dynamic in order to keep students away from feeling bored in learning which causes student enthusiasm in participating in learning. From the enthusiasm of these students, the learning objectives were achieved. As for the mastery of the concept itself, both cycle 1 and cycle 2 the percentage of completeness exceeded 80%, so that the research was declared successful. Mulyasa[9] in terms of the learning process is said to be successful and qualified if all or most (80%) have reached the specified KKM.

4. Conclusion
Learning that has been carried out in both cycle 1 and cycle 2, the researcher collected various learning artifacts from video, audio and chat messages which then made the transcript of the conversation to be analyzed using the type of student response including Interrogative (Q), Responsive (A), Suggestive (S), Informative (I), Exemplification (EX), Elaboration (EL), Justificational (JT), Reasoning (RE), Evaluating (EV), Judgmental (J), Summarizing (CO), Originizing (OR ), as well as Affectional (AF). The pattern of knowledge construction on mastery of mathematical concepts in cycle 1, which of the several types of dominant response types is Responsive (A), Elaboration (EL) and Judgmental (J). Whereas in cycle 2 the type of student response tends to be Responsive (A), Exemplification (EX), and Organizing (OR) types. Of the two cycles the dominant type is Responsive, this result indicates that students have built their own level of knowledge by thinking critically and having the courage to express their opinions. Meanwhile, a shift in the construction pattern occurs from the response type (A, EL, J) to the response type (A, EX, OR). For mastery of mathematical concepts in cycle 1 and cycle 2 by giving LKS (Student Worksheets), the worksheets have reached > 80% completeness level, so that the mastery of concepts in both cycles is declared successful. Based on the research that has been done, it is necessary to make improvements in subsequent research. The things that need to be considered: (1) The sharpness in analyzing depends on the researcher as the analyst, the more critical or the sharper the better for similar research in the future. (2) There needs to be more in-depth research to avoid misconceptions in analyzing the transcript of each lesson. (3) Future research should be more in-depth to reach the smallest group so as to get a complete picture of the pattern of knowledge.

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