



Analysis of Learning-based Material Android app Vector Loaded Authentic Learning Using TBLA Method (Transcript Based Lesson Analysis)

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Abstract

Learning analysis needs to be done after the learning process ends to get reflections on previous learning. However, the results of the interviews obtained information from class X students that learning analysis had never been carried out. Therefore, analyzing the learning based on the Android application of vector material containing authentic learning through TBLA is necessary. The purpose of the research is to analyze the involvement of students and the use of keywords during the learning process using the Android application on vector material through TBLA. This research is a descriptive study. The subjects were 32 class X IPA 4 students and one physics teacher. The stages of data collection are plan, do, and see. The study results showed that the learning carried out during the first cycle was still teacher-centered. Cycle 1 learning takes place interactively. The use of the keyword during the first learning meeting was most pronounced, namely "vector" 23 times. Meanwhile, during cycle 2, it was also teacher-centered. The keyword most pronounced in the second cycle, namely "tight" was pronounced 43 times. The learning carried out is still teacher-centered, so based on the results of this analysis, it is recommended that further learning be more student-centered.

Keywords: TBLA; Teacher Centered; Vector

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INTRODUCTION

Education is one of the benchmarks to see the progress of a nation. Education in Indonesia has not been fully implemented properly; one problem is improving the quality of learning. Improving the quality of learning can occur over time and is influenced by several factors, namely teachers, students, facilities and infrastructure, environment, and management at school (Pandiangan, 2019; Pulsande et al., 2021). The teacher is one of the main

supports for the quality and quality of education and has a role as an initiator. As an initiator, the teacher must spark ideas for progress in education and teaching. One of the ways to improve the quality of education in our country begins with improving the existing learning process to align with developments in science and technology. Thus, teachers must also improve their abilities in education and teaching, including increasing the ability to use media and learning strategies following current



developments. One way to do this is by using learning media as an Android application on physics material (Dewi, 2017; Wulandari & Humaidi, 2021). Android is a Linux-based operating system, the basic foundation for a mobile device, including an operating system, applications, and middleware. In addition, Android provides an open space, so anyone can develop applications according to their wishes (Pane et al., 2022; Sulisty & Kurniawan, 2020).

One of the physics materials that is difficult to understand is vector material (Khumaidi et al., 2022). Students experience misconceptions about depicting vector force concepts and using the same formula in different questions. Therefore, the teacher's use of the Android application can make it easier to solve visualization difficulties in vector material. The learning process on vector material still uses the lecture method, so the teacher dominates learning or is teacher-centered. This causes students not to play an active role during the learning process. One of the learning models that can make students more active is the STAD-type cooperative model. In addition, this model can create a learner-centered learning process. The advantage of this model is that it can move students to play an active role while exchanging ideas in mastering the material being taught so that students dominate the learning process and the teacher acts as a facilitator during the learning process. The use of Android applications on vector material and the STAD-type cooperative model can make students actively involved during learning to improve the quality of learning. Moreover, the vector material being taught is related to problems that occur in everyday life or is called authentic learning. Authentic learning relates to real-life situations (Aynas & Aslan, 2021). Singer et al. (2020) recommend that the use of Authentic

Learning should be structured based on characteristics that focus on real life in the long term. Authentic learning focuses on the role of authenticity and learning. It focuses on situations that occur in real life, difficult problems and their solutions, problem-based activities, case studies, and participation in individual and group practice that occurs during the learner's learning process (Stefaniak & Xu, 2020).

To determine the improvement in the quality of learning by using the Android application on vector material containing authentic learning conducted by the teacher, it is necessary to analyze the learning process to determine the involvement of students. Analysis of the learning process is a procedure for seeing, hearing, describing, discussing, and understanding the interactions carried out by teachers and students during the learning process (Rahayu et al., 2020). Learning analysis focuses on data related to student interaction with the material taught by the teacher, student-student interaction, and student-teacher interaction. The next step from the data obtained was to be analyzed using the TBLA method (Suhartono, 2017). Analysis of the learning process using the TBLA method is a procedure in which student learning outcomes are analyzed using conversation transcripts of teachers with students and students with other students. The data collection process in the TBLA model is carried out by in-depth observation. The TBLA model is obtained through a process of observation or recording during the learning process (Sudarsana & Suarni, 2020). In addition, data collection was carried out using a lesson study pattern where learning carried out by teachers and students was recorded (Yoshida et al., 2021). To explain the pattern of arrangement of students' knowledge by mastering the concept of transcript-based learning analysis (TBLA). Based on this analysis, a reflection of the teacher's

learning practices will be obtained, and the teacher can find out what improvements are needed so that further learning can be even better (Suarni et al., 2022). The research carried out by (Mutiani et al., 2020) states that analysis using the TBLA method can be used to provide input and improve the quality of learning, as seen from the transcripts of conversational dialogues between teachers and students. Meanwhile, in this study, the TBLA method was added to analyze the use of keywords that students often used during the learning process.

Based on the results of the interviews, information was obtained that in class X students, especially in vector material, an analysis of the learning process had never been carried out using the TBLA method. Analysis using this method can be a reflection for teachers to improve the quality of previous learning. In addition, through this method, the involvement of students specifically and much other information can be obtained from the results of the learning analysis. To find out how students are involved during physics learning using an android application that is applied to vector material, researchers are interested in

analyzing the learning process using the TBLA method. Thus, the researchers researched by analyzing learning based on the Android application of vector material containing authentic learning using the TBLA method. This study aims to analyze the involvement of students and the use of keywords during the learning process using the Android application on vector material containing authentic learning through TBLA. This research is limited to vector material.

METHOD

This research is a descriptive study with a qualitative approach (Zellatifanny & Mudjiyanto, 2018). This research was conducted at a high school in Banjarmasin from July to August 2021. The subjects of this research were 32 class X IPA 4 students and teachers involved in learning, while the object of this research was transcripts of conversations between students and teachers during the learning process. The stages of data collection used the lesson study pattern, namely Plan, Do, and See (Hadiprayitno & Khair, 2018), are listed in Figure 1.

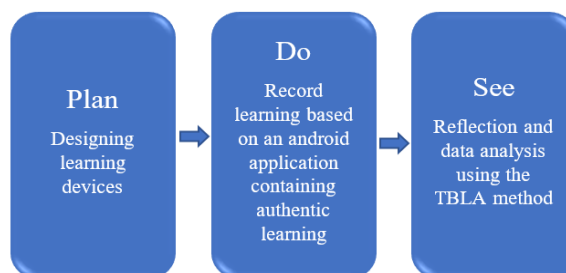


Figure 1 Stages data collection

At the "Plan" stage, the researcher prepares lesson plans and scenarios. Researchers prepare data collection at the "Do" stage through recorded conversations during the learning process using a mobile phone. The text of the conversation is then converted into a transcript, which will then be analyzed with TBLA. At the "See" stage, the

researcher analyzed the transcripts of the teacher's conversations with students. The analysis phase is carried out by transcribing all communications between the teacher and students in the class in as much detail as possible. Transcripts are written in Microsoft Office Excel format, then they will be analyzed in two ways, namely the number of words and focused

words. Analysis of the number of words will produce a graph showing the intensity of the conversation; you can analyze the tendency of learning that occurs, whether it tends to be student-centered or vice versa. Analysis focusing on the word will produce graphs showing the keywords used during learning. In addition to the graphs in question, in-depth analysis can be carried out through excerpts from conversations.

RESULTS AND DISCUSSION

Based on the full transcript analysis using

the TBLA method, several words, and a focused word graph were obtained, which occurred in 2 cycles, namely cycle 1 in 2 meetings, namely August 24, 2021, and August 30, 2021, then cycle 2 in 2 meetings, namely September 6, 2021, and September 13, 2021. Several words and focused word graphs were obtained based on the full transcript analysis.

1st cycle

Result of observation format and full transcript are listed in Table 1.

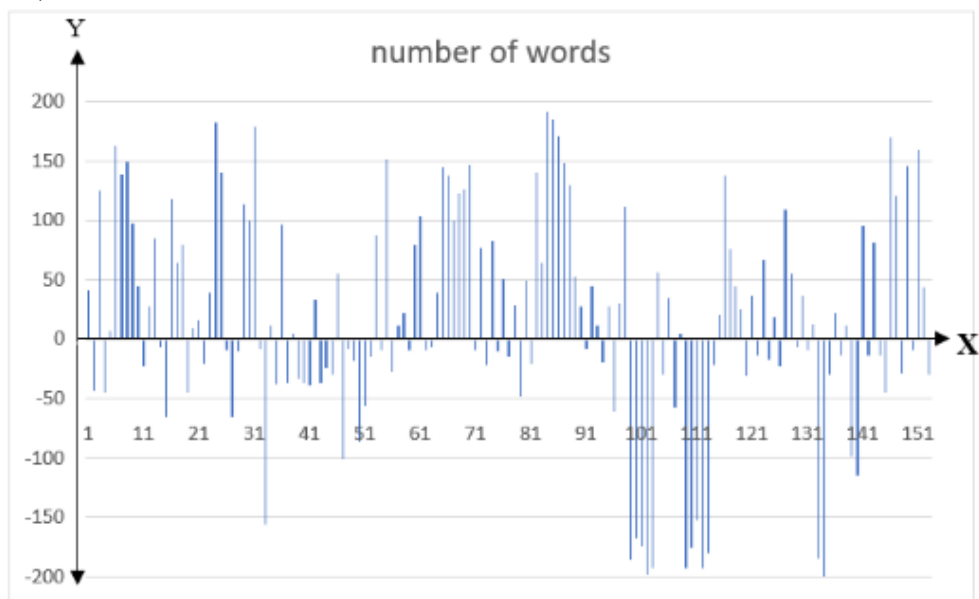
Table 1 Observation format and full transcript

Time		Speaker	Index	Saying	Information (Description, Situation, Expression)
Hour	Minute	G/S			
13	30	G	1	Assalamualaikum warohmatullahi wabarokatuh	Teacher says hello
13	31	S	2	waalaikumussalam warohmatullahi wabarokatuh	Students answer in unison
13	33	G	3	well, before we start today's lesson, let us pray according to each religion and belief, start praying.	The teacher asks students to pray
13	34	S	4	prayer is over; how are you today?	Teacher asks news
13	34	G	5	okay mis.	Students answer in unison
13	49	G	6	okay, let's take a look at the picture that you sent, two students heading to school with a different route from the same house in Kayutangi Sandalwood	The teacher reads the statement on the PowerPoint
13	49	G	7	student 1 goes to school by route Sandalwood Road, Emir Cafe and Restaurant, Gadget Mart, regional police, helmet washing place to school	

Time		Speaker	Index	Saying	Information (Description, Situation, Expression)
Hour	Minute	G/S			
13	49	G	8	and student 2 headed to school by way of Sandalwood, a road of Emir Cafe and restaurant, Muhamadiyah University, where the helmets were washed up to school.	
13	49	G	9	So which is the farthest distance traveled by the two students from home to school?	
13	50	G	10	Come on, who wants to answer? It's okay if it is wrong.	

In the first cycle of the first meeting, the number of word charts obtained can be seen in Figure 2, showing that the upper part is the conversation session carried out by the teacher, while the lower part shows the conversation session carried out by the students. The X (horizontal) axis between the teacher and

student conversation sessions is the conversation index recorded in the full transcript. The positive (vertical) Y axis upwards shows the number of words the teacher speaks. In addition, the downward negative (vertical) Y axis shows the number of words spoken by students.



- + The number of words spoken by the teacher
- The number of words spoken by students

Figure 2 Graph analysis transcript first learning based on the number of words

At the first meeting during the "Plan" stage, the researcher prepared lesson plans and scenarios to be used during learning activities. According to Winkel (1991) and Mujahida & Rus'an (2019) learning activities are a set of actions designed to support the learning process, therefore learning needs to be designed to set goals and control its implementation, such as making lesson plans and scenarios. The learning model used at this meeting is STAD-type cooperative. According to (Namaziandost et al., 2019) the STAD-type cooperative learning model has advantages obtained from social cooperation between students. The lesson plan that is carried out is that the teacher provides motivation related to the material of scalar and vector differences to students. After that, the teacher distributes teaching material in the form of an android application of vector material containing authentic learning to students; then students are divided into several groups to work on the worksheets distributed by the teacher. Then, the teacher guides students to work on the questions in the student worksheet and

asks one of the group representatives to present the experimental data obtained from discussions with group members. The teacher ends the activity by providing further exercises to strengthen the vector resultant material by being done independently by the students.

During the "Do" stage, students are active in giving brief responses and answers to the teacher's questions, as seen in Figure 2. The teacher's early learning activities motivate students by exploring students' initial knowledge about the vector material to be taught by presenting a picture and asking students to provide feedback on the picture. There are 2 to 3 students who respond to questions from the teacher. In the main activity, the teacher divides students into six groups of 6 students to discuss the problems in the student worksheet and then present the results of the discussion obtained. During the presentation activities, the two groups, namely groups 1 and 2, sent their representatives to present the results of the discussions they had obtained.

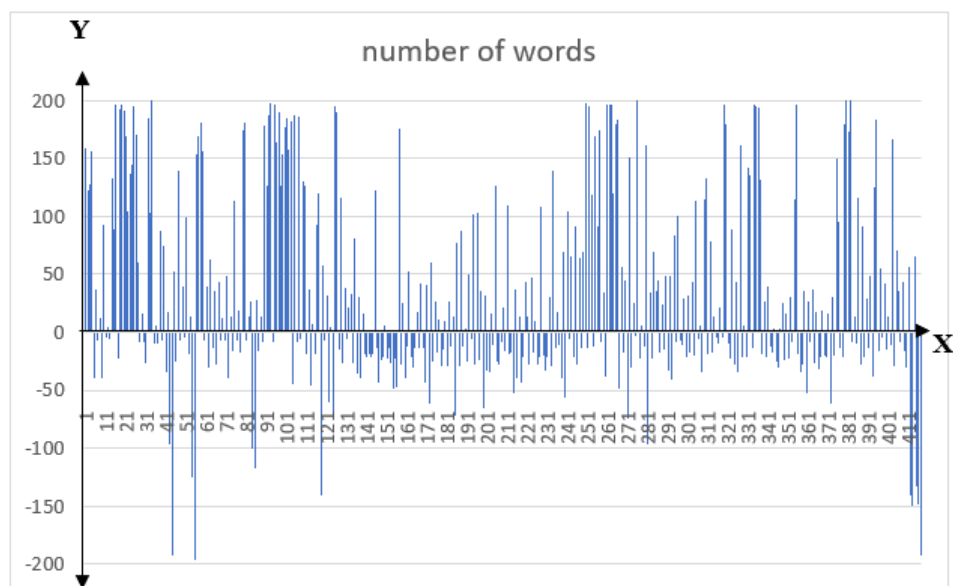


Figure 3 Graph analysis transcript second learning based on the number of word

Based on the "See" stage, the analysis of the first meeting increased the quality of conversations that occurred when presenting the results of student discussions. It can be seen from the index 99 to 103 that the number of student conversations is greater. During the final activity, the teacher invites students to conclude the learning that has been done. Three students expressed their opinions

Furthermore, during the "Plan" stage, the second meeting was also prepared like the first meeting, namely lesson plans and scenarios. The material presented concerns the vector addition of the polygon and the parallelogram methods. The learning model used at this meeting is STAD-type cooperative. During the "Do" stage, students respond to questions given by the teacher. Some students are experiencing difficulties downloading an Android application based on authentic learning on vector material. This is because the cell phones owned by students have insufficient memory capacity to download the application. Downloaded applications will reduce the storage capacity or Android memory owned by students so that if the Android memory is full, the application cannot be downloaded. This follows Winda & Zebua (2019); applications downloaded on Android have different storage sizes; the larger the storage size of applications downloaded on Android, the greater the storage space required. For students who have difficulty downloading the application, the teacher prepares learning materials that can be accessed via the web.

Based on the "See" stage, the results of the analysis of learning as a whole in the first and second meetings, several students were active during learning. While many students are not active at all during learning. This can be seen from the number of sharp downward peaks, which are not too many but are not indicated by the high or low peaks but by the many lines of sharp downward peaks.

regarding the conclusions of the learning that had been carried out. During the first meeting, the teacher dominated the conversation too much in explaining the learning material. There were 5 to 6 students who actively responded, and some only gave general responses such as greetings and "yes mis". Learning at the first meeting is still dominated by the teacher or is teacher-centered.

The learning that was carried out during the first cycle was still dominated by the teacher or teacher-centered. Overall, learning cycle 1 shows that the teacher's conversation with students is interactive. This is consistent with Winarti et al. (2021) focused word graph, which shows most of the sharp peaks going up and followed by sharp peaks going down but not as many as sharp peaks going up, indicating that the conversation is interactive. However, the teacher still dominates the process of learning.

Based on the analysis of the full transcript of cycle 1 of the first and second meetings, focused word graphs were obtained as shown in Figures 5 and 6, showing the Y axis (vertical) for the number of keywords spoken during learning. The X-axis (horizontal) shows the index during learning, where the index is the time during learning.

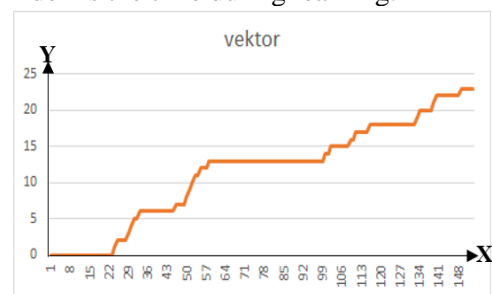


Figure 4 Graph focused on word first meeting

At the first meeting, the keywords used during learning were direction, magnitude, scalar, vector, and distance. The use of the keyword during the first learning meeting was most pronounced, namely "vector (vektor)", 23 times from the 1st to the 148th index. It can be seen

in Figure 4 that the red line stops in the middle between 25 and 20, indicating the word was spoken 23 times. The word "vector (vektor)" is first pronounced at index-22, increases to index-57, and is no longer pronounced until index-99. At the 100th index, the word vector is spoken again and increases to the 148th index.

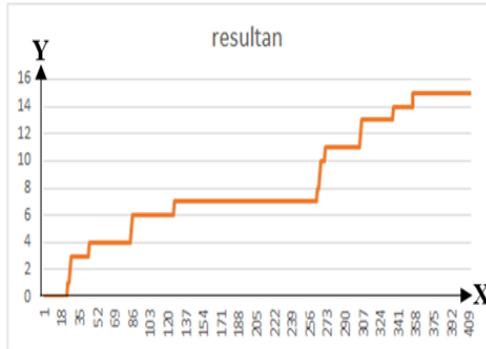


Figure 5 Graph focused on word 2nd meeting

At the second meeting, the keywords used during learning were displacement, resultant, polygon, parallelogram, and painting. The most frequently used keyword is "resultan (resultan)" with 15 times from index 1 to 409.

Students are quite active during learning activities, but there are several important notes as a reflection of the learning that has been done, namely: the teacher still dominates during the learning process, the teacher conveys too much information and concepts that students should find, and many students are not actively involved and requires more attention from the teacher.

2nd cycle

Graph analysis transcript third learning based on number of words are listed in Figure 6.

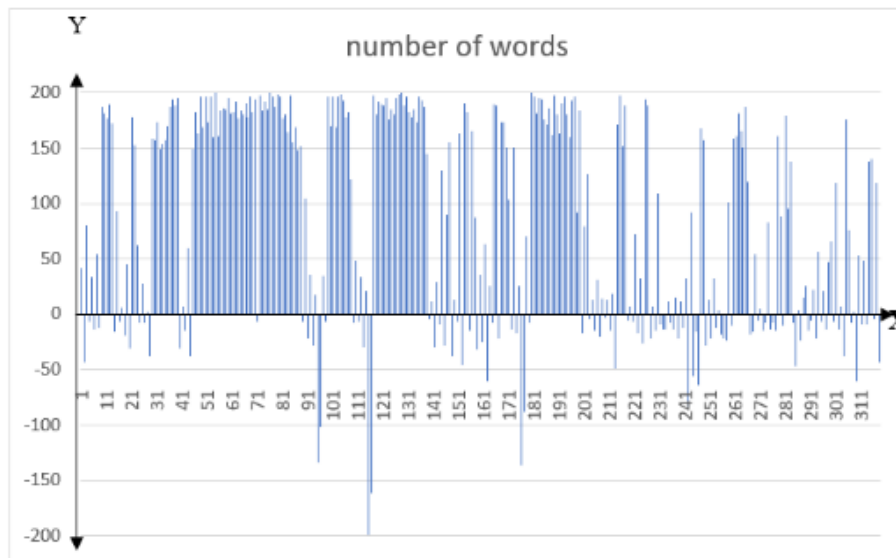


Figure 6 Graph analysis transcript third learning based on number of words

In cycle 2, namely the third and fourth meetings, during the "Plan" stage, the planning for the third meeting was prepared like cycle 1, namely lesson plans and scenarios. The material taught in the third meeting is painting vector addition. The learning model used at this meeting is direct instruction. This model is used because there are many formulas

for painting addition vectors, so further information is needed from the teacher.

During the "Do" stage, students follow the learning process well and respond to questions given by the teacher. Based on the "See" stage, the analysis results at the third meeting during the learning process were dominated by the teacher or were

teacher-centered. Figure 6 shows that the sharp peak lines upward are more numerous and have higher peaks than the sharp peak lines downward. The teacher dominates learning because, at this

meeting, the teacher uses direct instruction; according to Fayanto et al. (2019), the direct instruction model is a teacher-centered learning model.

Table 2 Sample transcript conversation when the teacher guides participant educate for conclude learning

Index	Speaker	Saying
265	G	okay, to guide you to conclude, Miss asks why the boat is ornamental if seen from on or use a drone; you see a boat ornamental no move in a manner upright straight
266	G	However, deviates a little; why does that happen? Does anyone can answer why he deviates?
267	S	Because the water current
268	S	the water wave
269	G	Who Just was the one who answered the names? Earlier, there are 3
270	S	Firda
271	G	Firda
272	S	because Allah, Miss
273	S	Noval, Miss
274	G	because of Allah, what is the theory like? Noval that was, what just earlier the answer because?
275	S	water waves
276	S	water flow
277	S	water pressure mis

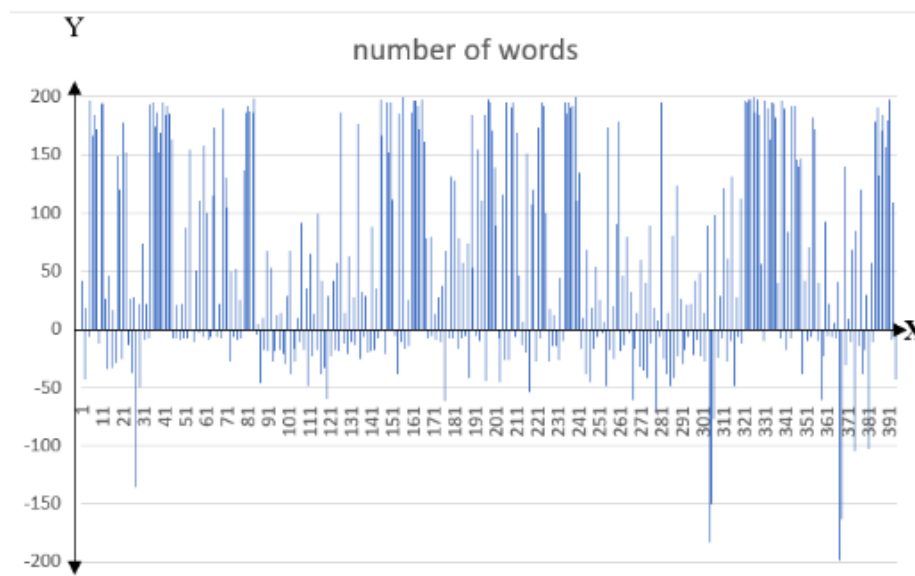


Figure 7 Graph analysis transcript fourth learning based on the number of Word

During the "Plan" stage, the planning of the fourth meeting was well prepared, like cycle 1, namely preparing lesson plans and scenarios. The material taught in the fourth meeting is determining the resultant vector. The learning model used at this meeting is STAD-type cooperative. During the "Do" stage, students actively participate in the learning process and respond to the teacher's questions, as seen in Figure 7. Based on the "See" stage, the analysis results of the fourth meeting during the learning process are still dominated by the teacher or are teacher-centered. However, students are active in answering the teacher's questions, as seen from the number of lines at the bottom of the horizontal line. When the teacher asks students to work on the worksheets that have been distributed, students who have difficulty using the PHET simulation media will be used to do the practicum. Students have difficulty using PHET simulation media because they rarely do the practicum. The PhET simulation media itself has drawbacks; namely, the success of a learning process depends on the students' independence. So, students are required to be independent in carrying out practicums following the steps in the instructions for using the PhET simulation media contained in the student worksheet. According to Haryadi & Pujiastuti (2020), to get good results in using PhET simulation media, make careful preparations and know how to implement the stages of using PhET simulation media. But instead of acting as a guide while the students are doing the practicum, the teacher asks the students to do the practicum together by displaying PhET on the laptop. The teacher feels unsure about the ability of students to carry out practicums independently even though in the student worksheet, there are already steps in doing practicum through PhET. Conversations of students experienced an increase when students presented the

results of the discussions obtained and when concluding the learning activities that had been carried out.

Based on the results of the analysis of learning as a whole in the third and fourth meetings, several students were active during learning, while many were not active at all. Overall, the learning carried out during the second cycle shows that teacher-student conversations are interactive but are still dominated by the teacher or teacher-centered.

The use of the keyword during the third meeting of learning was the most pronounced, namely "formula (rumus)" which was pronounced a total of 34 times based on the 1st to 409th index. The word "formula (rumus)" was first uttered at the 35th index and increased until the 341st index, after which the word was not spoken again.

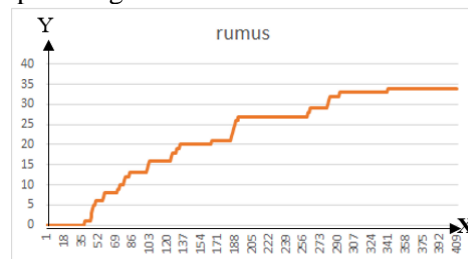


Figure 8 Graph focused of word 3rd meeting

Meanwhile, at the fourth meeting, the most frequently used keyword, namely "tight (apit)", was uttered 43 times from the 1st to the 394th index. The word "clamp" is first used at index 2, then nothing is said until index 69 and again at index 70. These keywords have increased until they were last spoken at the 389th index.

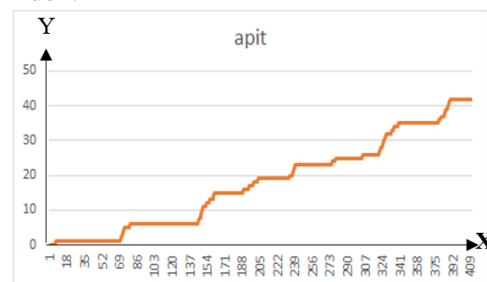


Figure 9 Graph focused on word fourth meeting

Based on the analysis of learning transcripts, the learning process in cycles 1 and 2 is still dominated by the teacher or is teacher-centered. Some students play an active role during learning, while many students are not active at all. This could have happened because students lack interest and motivation to learn. The importance of motivating at the beginning of learning encourages students to be active during learning activities. According to Susanti et al. (2021), at the beginning of learning, the teacher always motivates so that during the learning process, students are active. However, if, after being given motivation, the students are not active, this can be caused by internal factors originating from the students and external factors originating from the subjects, learning models, and the classroom environment. In cycles 1 and 2, the teacher has carried out learning based on the lesson plan well. The use of the STAD-type cooperative learning model is to make students active during the learning process, but students are not yet active during the learning process. This is because learning is carried out online; according to Almahasees et al. (2021), learning that can be carried out during a pandemic is online learning but has a weakness, namely that it will be difficult for teachers to monitor students during the learning process, especially while students are conducting discussions. Students carry out discussions through the WhatsApp group where the teacher is not included in the group, so the teacher cannot monitor the activity of students during discussion activities. This is following (Putra, 2021; Septiani & Samputra, 2021): online learning has weaknesses in its implementation where it will be difficult for teachers to monitor students during the learning process.

CONCLUSION

Based on the results of the analysis of learning transcripts (TBLA) cycles 1 and

2, it can be concluded that the teacher still dominates the involvement of students during the learning process or is teacher-centered. Several keywords are often spoken in cycle 1, namely "vector" and in cycle 2, namely "tight". Learning analysis using TBLA can provide an overview of communication patterns and student involvement during learning activities. In addition, the analysis using TBLA obtained reflections so that it can be known how to improve further learning activities, where students can be more active during the learning process.

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