

The Effect of Discovery Learning Method Application on Increasing Students' Listening Outcome in the 2nd Semester of 10th Grade 5th Science Class at Public High School 2 Jember

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Abstract: Curriculum of 2013 has been started since July 2013 in schools appointed as the implementer. This study is experimental study with one group pretest-posttest design. It aims at discovering whether discovery learning model implementation could increase student's listening score and social attitude in accordance with curriculum of 2013 implementation. The subjects of this study are 37 students of class X IPA 5 Public High School 2 Jember in their 2nd semester of 2014/2015 academic year. This study concluded that the implementation of discovery learning model could increase students' listening score and social attitude, with significance value of 0,005 ($z = -2,823$, $p < 0,001$), with medium effect size for listening score and significance value of 0,000 ($-4,875$, $p < 0,001$), with large effect size for social attitude.

Keywords: Discovery Learning, Listening Score.

I. Introduction

Curriculum of 2013 has been started since July 2013 in schools designated as the implementer school. In the curriculum of 2013, there are two categories taught in English subjects. English as a compulsory subject for 2 hours per week, and English as specialization subjects for 3 hours per week.

In the implementation of English teaching, there are four skills that should be taught, namely listening, speaking, reading, and writing. The one which is considered the most difficult skill to be taught is the skill of listening, even though listening is a skill that can not be left behind in language learning, especially in learning English. A learner, if he had never practiced listening in a particular language, then he can only express the unilateral idea in that language, thus he will not be able to communicate with others in that language.

Data shows that the average learning outcomes of listening aspect in class X in one of the high school in Jember, namely 10th grade 5th science class at Public High School 2 Jember only ranged from 77.7 to 85.1. The 5th science class is a class that has the lowest learning outcome in the high school with average score of 77,7.

Based on the learning outcome of grade 10th science class at Public High School 2 Jember's listening aspect at the 2nd semester of 2014/2015 academic year, researchers found that not all of the student reached the KKM or Kriteria Ketuntasan Minimum (Minimum Completeness Criteria). Only 21 of 37 students that could reach the KKM while 16 others still unable to reach it.

Based on the observation result, researcher found that some students did not understand the learning material and asked their friend when the verbal text was played. This action disturbed another students' concentration at that time so that the listening aspect's learning outcome of 10th science class did not reach the class completeness criteria that is 85% of the students reach the KKM, where the score needed to reach the KKM is 80. Related to that matter, the researcher was trying to increase the learning outcome of listening aspect. This matter will be the accomplishment target of this research.

The curriculum of 2013 recommend to choose between discovery/inquiry learning, project-based learning, or problem-based learning model in teaching the students. Between those 3 models recommended in the curriculum of 2013 implementation, discovery learning model is the most suitable model. According to Permendikbud (Ministry of Education and Culture Regulation) No. 65 on 2013 about the standard process, to realize the skill which will be taught, learning model which applies the discovery/inquiry learning model is needed (2013:9). This is related to the suitability of the discovery learning model with listening learning model named three-phase listening. Three-phase listening is a method in learning the listening aspect that consist of 3 phases, those are pre-listening, while-listening, and post-listening (Hedge, 2003: 247).

The advantage of the three-phase listening method is that the students will acquire the experience needed to understand the listening material step by step through the -pre-, while-, and post-listening process. There are several advantages in discovery learning models like (1) this learning model has several phase, those are stimulation, problem statement, data collection, data processing, verification, and generalization; (2) this learning model could be implemented in accordance with the listening aspect characteristics which have 3 phases those are pre-listening, while-listening, and post-listening (Hedge, 2003: 247); (3) this learning model is suitable with the learning approach in the curriculum of 2013 which was called scientific approach which include observing,

questioning, rationalizing, associating, and communicating (Permendiknas No. 65 on 2013).

Those advantages of discovery learning and its suitability with scientific approach of the curriculum of 2013, combined with the three-phase listening method will help students to find the targeted learning material by themselves. They were conditioned so that they can state their opinions, ask questions, and communicate their ideas about the targeted learning material. With that combination, students can actively find the targeted learning material so that they can understand it more easily. By then, when the listening evaluation is held, the students will be able to answer the question well.

In the Curriculum of 2013 Teacher's Training Material Module of 2014/2015 Academic year, it was stated that discovery learning model is a model that emphasizes that the learning participants have to find the concept or principle which was unknown to them by themselves. In discovery learning, the material taught is not taught in its final form. The learning participant is driven to identify what is needed to be understood then, they have to find it by themselves the information needed about the learning material. The information acquired then being organized or constructed by them to create their own understanding in a final form (Anonim, 2014: 43).

In accordance to the curriculum of 2013, each assessment both in cognitive and psychomotor is always accompanied by attitude assessment. In this research, in addition of the assessment of listening aspect of learning, the assessment of students' social attitude also been done. The discovery learning model explained above then conditioned to change students' learning pattern from the passive one to be active. Indirectly, it also affects the students' social attitude so that these aspects cannot be separated.

On its implementation in teaching and learning process, there are several phases that need to be done. According to the Educator Profession Development Center, Indonesian Education and Culture Department, there are 3 phases, those are (1) Planning phase which is an activity to define the learning objectives, identify students' characteristics, determine the material, develop the teaching material and media, and also design the assessment process; (2) Implementation phase which include the discovery learning activity consist of 6 steps, those are stimulation, problem statement, data collection, data processing, verification, and generalization; and (3) Assessment. The assessment can be done as a test form or non-test form.

These followings are the specific explanation of the stage in discovery learning:

1. Stimulation stage, where teacher can start the teaching and learning activity by asking questions, suggesting to read books, and another learning activities that lead to problem solving preparation. The stimulation in this stage serves to provide interactive condition in learning which could help students to be more active in exploring the material.
2. Problem statement stage where the teacher gives chances to the students to identify problems related to the learning material. Then, one of them was chosen and formulated in the form of hypothesis (a temporary answer to the problem question).
3. Data collection stage during which students conduct experiments or exploration, while teachers provide opportunities for students to gather as much information relevant to prove whether or not the hypothesis is correct. Data can be obtained through reading the literature, observing the objects, interviewing the sources, conduct their own experiments, and so on.
4. Data processing stage which is an activity to process the data and information that has been obtained by the students through interviews, observations, and so on. The data and observation result then being interpreted.
5. Verification stage where students perform a careful examination to prove whether or not the hypothesis has been proved, linked to the results of data processing.
6. Generalization (drawing conclusion) which is the process of pulling a conclusion that can be used as a general principle and applies to same event or problem by taking into account the results of the verification. Based on the results of verification then the underlying principle of generalization is formulated.

On the discovery learning activities, in addition to knowledge and skill aspects, attitude aspect was also need to be developed. In the attitude aspect, students are expected to reflect religious behavior, have a noble character, knowledgeable, confident, and responsible.

II. Research Method

This research is an experimental research to determine whether there is a significant difference in subjects' scores. The subjects' score mentioned in this case the learning outcomes of students' listening aspect and students' attitude score before the treatment is given (pre-test) and after the treatment is given (post-test). The treatment given is a scientific approach to the implementation of the discovery learning methods combined with three-phase listening technique. The location of this research is Public High School 2 Jember located at 16 Jawa Street, Jember. This study was conducted over three months which began in February 2015 until April 2015. The research was conducted at the given time because the researchers had to adjust the research process to the teachers teaching schedule.

The main data source in this study is the English teacher of Public High School 2 Jember and The students at 10th science class Public High School 2 Jember Semester 2 of 2014-2015 academic year. The subjects in this study were 10th grade 5th class Public High School 2 Jember. The students' of this class consist of 37 people with the details of 23 female students and 14 male students. The students in this class have heterogeneous character. There are 4 people or 11% of students that have difficulty to focus while listening session is present.

The subjects in this study were determined based on the learning outcomes in listening aspect at KD (Kompetensi Dasar/Basic Competence) 3.3 and 4.3 about Expressing Attention. Based on the learning outcome, the researcher found out that 10th grade 5th class Public High School 2 Jember only has 21 students who have reached the KKM (minimum completeness criteria) while the other 16 did not make it.

The research design used in this study is one group pretest-posttest design where there is only one group receiving the treatment which result is assessed by pre-test and post-test.

This experimental research procedure begins with a preliminary study to get the problems faced by teachers and students at the same time granting a pre-test, followed by the provision of scientific approach material implemented with discovery learning methods combined with three-phase listening techniques, and then followed by post-test.

Researchers using a compact disk (CD). The content's characteristics of the CD used are without pictures, without expression, without the speaker's gesture so that students just listen and focus on the content of the conversation. While the equipment used were a laptop, loud speakers, listening material CD and worksheets.

Listening material presented for the second semester of the academic year 2014/2015 refers to the Core Competence and Basic Competence of the curriculum of 2013. Furthermore, the material was included in the English syllabus for Class X.

However, the curriculum of 2013 does not divide the material for semesters 1 and 2. So researchers took the initiative to divide the listening material in accordance with KD (basic competence) into materials for semesters 1 and 2.

Researchers chose the cognitive field of memory, understanding, and application for students of class X semester of 2. As described in the previous section, the researchers set listening tasks in the form of multiple choice, writing the alphabet of the responses, and selecting the right picture. Those three form of assessment are objective kind of tests. (Nurgiantoro in Jwalita: 2013: 14).

From these process, there are 2 kinds of data that can be obtained those are learning outcome of listening aspect data (scores) and the observed data on the social attitudes of the students during the learning process. The data analysis was done in 4 steps including (1) sorting the data collected (2) presenting the data (3) calculating the degree of influence with the SPSS for Windows ver. 16 using a non-parametric statistical tests were similar to-sampled paired t-test, that is Wilcoxon Signed Rank Test, and (4) drawing conclusions based on the results of all the data and analysis obtained.

III. Discussion

Here is the analysis of students listening scores⁷

	N	Percentiles		
		25th	50th (Median)	75th
Pre_Test	30	73.30	80.00	86.70
Post_Test	30	80.00	86.70	86.70

Based on the table above, it can be seen that there is an increase in the median value of the pre-test to the post-test. The median of the pre-test was 80 and the median of the post-test was 86,7. Analysis results by Wilcoxon Signed Rank test below shows that the level of significance is 0.005. This number is smaller than 0.05, meaning that there is a significant increase in the value of the pre-test to post-test score.

	Post_Test - Pre_Test
Z	-2.823 ^a
Asymp. Sig. (2-tailed)	.005
a. Based on negative ranks.	
b. Wilcoxon Signed Ranks Test	

The strength of the effect of this increase can be determined by calculating the effect size of this variable. Results of this treatment's effect size calculation was $r = 0.364$. According to Cohen (1988) in Pallant (2002: 225), the effect size of 0.364 indicates that the treatment given to the students has a medium effect size on improvement of students' listening scores.

In summary, based on the analysis above, it can be seen that there is a significant improvement on listening aspect's learning outcomes of 10th grade 5th class Public High School 2 Jember in Semester 2 Academic Year 2014/2015 with the implementation of discovery learning model, $z = -2.823$. The median score of listening aspect's learning outcomes is increasing from the pre-test score ($Md = 80$) to the post-test ($Md = 86.7$). These results indicate that the target of the success of this study is reached, where 85% of students reached KKM with a value of 80.

	N	Percentiles		
		25th	50th (Median)	75th
Pre-Test	31	80.00	80.00	80.00
Post-Test	31	83.30	83.30	86.70

Based on the above table, it can be seen that there is an increase in the median value of the pre-test to the post-test. The median of the pre-test was 80 and the median of the post-test was 83.3. Results of analysis using Wilcoxon Signed Rank test below shows that the level of significance is 0.000. This number is smaller than 0,05, meaning that there is a significant increase in the value of the pre-test to post-test attitude score.

	Post Test – Pre Test
Z	-4.875 ^a
Asymp. Sig. (2-tailed)	.000
a. Based on negative ranks.	
b. Wilcoxon Signed Ranks Test	

The strength of the effect of this increase can be determined by calculating the effect size of this variable. After going through the counting process, it is known that the effect size of this variable is 0,629. According to Cohen (1988), the effect size of 0,629 indicates that the treatment given to the students' have a large effect size on improvement of students' scores of attitude.

In summary, based on the analysis above, it can be seen that there is a significant increase in the attitude scores of 10th grade 5th class Public High School 2 Jember in Semester 2 Academic Year 2014/2015 with the implementation of the discovery learning model, $z = -4.875$. The median score of listening aspect's learning outcomes after the implementation of discovery learning model increased from the pre-test ($Md = 80$) to the post-test ($Md = 83.3$).

Discovery learning as a learning model that emphasizes learners to find their own principles or concepts that were previously unknown, has been proved that it can improve students' skills in the English subject's listening and affective scores of students. This is shown in the results of statistical analysis using Wilcoxon Signed Rank Test technique which shows that there is a significant increase in the students listening and attitude score with effect size for each variable is medium and high.

Scientific approach with discovery learning methods combined with the three-phase listening technique is indeed effective to improve students' understanding in terms of English language listening ability. Stages in discovery learning that consists of 6 parts, namely stimulation, problem statement, the data collection, the data processing, verification and generalization has been designed in a way to help students improve their English language listening ability. Indirectly, students' attitude aspects which include being polite, caring, honest, discipline, confidence, and responsibility were also affected because these methods provide a place for students to release their potential.

In terms of listening skills, scientific approach with discovery learning method combined with three-phase listening has its own advantages that has been proved to help improve students' English listening ability.

In section 1, the process of 'observing', where there is a discovery learning aspects: stimulation and listening aspects of the three-phase: pre-listening, students are encouraged to prepare themselves by knowing the material that will be tested during the process of listening in later time. In this pre-listening activities, students are invited to observe the example conversation in accordance with the listening material. Here students learn to recognize and understand what they will face later.

Section 2, the process of 'asking' where there is a discovery learning process: problem statement. Teachers encourage students to find what they have not understood the process in the previous section. Teachers also encourage the students to ask questions and state their opinions so that the teacher can ensure students understand what they are doing and can move on to the next section.

Section 3, which is the process of 'collecting information/experiments' where there are aspects of discovery learning: the data collection. Here, students are invited to train his understanding in dialogue in accordance with the listening material. Teachers make sure if students have really understood the material.

Section 4, 'associating' process, which is a process that includes aspects of discovery learning: the data processing and three-phase listening: while-listening. In this section, students started the listening process itself and try their best to solve the problems given with the provision of pre-listening comprehension obtained in the 3 previous section.

Section 5, which is the process of 'communicating' includes aspects of discovery learning: verification and aspect of three-phase listening: post-listening where students can check their work. The students came to know how far their understanding in the listening comprehension they have did.

Section 6 which is the last part of this includes discovery learning aspect: generalization. In this section teachers guide the students to infer the pattern of the target material so that students come to understand what they have achieved and what they need to develop further in order to achieve better results.

The sixth section of the core activities of the scientific approach with discovery learning method combined with the three-phase listening proven to improve students' English listening scores.

In terms of attitude aspects of students consist of religious attitude, polite, caring, honest, discipline, confidence, and responsibility, scientific approach with discovery learning methods combined with three-phase listening are proven to increase students' affective aspects.

Polite and caring attitude is encouraged when the students attend their classes, how they behave in the classroom and how they interact with teachers and classmates, and their concern for the teacher and classmates. The part of the discovery learning that requires more interaction between students and teachers stimulate students to be more polite when interacting with the teacher.

Honesty will be encouraged as they work on the assignment given by the teacher. Discipline, shown by how they behave and their punctuality in doing their tasks. Confidence can be encouraged with more interaction between students and teachers and peers because this discovery learning model requires students to express their opinions. As for the aspects of responsibility, driven by the assignments that the teacher gave them, can be observed by the students' willingness to try finishing the task with the best.

IV. Conclusion

Based on the analysis above, it can be concluded that implementation of the scientific approach to discovery learning methods combined with three-phase listening can improve students' listening skills along with social attitudes score. It is characterized by a significant increase in listening scores and social attitudes scores of the students as well as the achievement of predetermined success target.

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