Influence of Discovery Learning Model Equipped Re-Lyric Songs Toward Learning Outcome on Chemical Bonding Subject of Tenth-Grade Natural Science Student

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Abstract—This research was conducted to know the influence of discovery learning model equipped re-lyrics song (DL model – re-lyrics song) toward learning outcome on chemical bonding subject of tenth-grade student at SMA N 4 Makassar, East Sulawesi, Indonesia. This research is a quasi-experiment with pretest-posttest control group design. This research was conducted in odd semester in the academic year 2017/2018. Population in this research was all tenth-grade of natural science student at SMA N 4 Makassar. Samples of this research were 36 students of X IPA 3 (experimental group, taught using DL model – re-lyrics song) and 36 students of X IPA 4 (control group, taught using DL model). They were selected by using simple random sampling technique. Data of student understanding on the subject of chemical bonding was measured using 25 of multiple choices questions that tested as pre- and post-tests. The data was analyzed using Mann-Whitney test. Result showed that student learning outcome of experimental group (74.81 ± 8.41) was significantly higher than student learning outcome of control group (71.53 ± 7.76). It can be concluded that the DL model – re-lyrics song significantly influence the learning outcome on chemical bonding subject of tenth-grade of natural science student at SMA N 4 Makassar.

Keywords: re-lyrics song, discovery learning, student learning outcome

I. INTRODUCTION

The application of curriculum named *Kurikulum 2013* (K-13) by the Indonesian government aims to improve the quality of education. K-13 is designed to involve students actively in learning. K-13 consists of some scientific-based learning model including discovery learning (DL) model. Bruner considers that DL model is in accordance with the active search for knowledge by humans and it provides the best results. The discovery of solutions to problems and knowledge makes human confident, producing meaningful knowledge. Bruner suggested that students learn through active participation with concepts and principles, so that they are encouraged to gain experience and conduct experiments that allow them to discover the principles by themselves [1].

Fun and interesting learning needs to be applied to increase student interest and activity. It must be centered on the psychological condition of students. Tolstoy stated that fun learning is necessary in learning process. It makes meaningful learning, motivating learning, and satisfying learning [2]. Enjoyable learning makes students comfortable in learning. Therefore, recording technique that is packaged in the form of song lyrics is applied in the learning process. This is conducted to increase students' interest and enthusiasm for learning.

Songs are interesting and fun things that can be applied in the learning process. Subject matter can be applied as song lyrics. Songs can be applied in note taking. Note-taking technique using song lyrics is suitable for adolescents. Adolescents learn more from what they see and hear. Through songs sung in verbal learning, students are cheerful and not bored. Therefore students can explore their knowledge through concepts found in song lyrics. As a result students easily understand the concepts.

Remembering a concept is not easy. However, recording techniques using song lyrics make students easier to remember the concepts. Remembering a concept in rhythmic lyrics is easier than that of in directly reading. Therefore, the recording technique using song lyrics is useful for students. According to Tony Buzan, brain often remembers information in the form of images, symbols, sounds, forms and feelings [3]. Most people believe that songs can stimulate the mind to become more peaceful and quiet with its strains.

Steps to turn subject matter into a song are preceded by creating small group of students, then the students work together to summarize the subject matter and followed by compiling summaries into lyrics and designing notes. Furthermore, Students compile these summaries in song tones and display songs containing subject matter in groups of groups. At the final step, work of students is given praise and comments by teacher.

According to the reasons above this study was conducted to know the influence of song lyric recording technique in discovery learning model toward student learning outcome on the subject of chemical bonding.

II. METHOD

This research is a quasi-experimental study with pretest-posttest control group design. There are two group samples; control group was taught using DL model and experimental group was taught using DL model equipped re-lyrics song.

Topic taught was chemical bonding. Based on the implemented model (DL model), learning process consists of six phases namely stimulus, problem identification, data collection, data processing, verification, and conclusions. Re-lyrics song is a new song lyric created by students in a group. They changed the original lyrics of song to their lyric by using the concepts of chemical bonding. The student learning outcome was collected by using objective test in the form of multiple choices; 25 question tests with 5 answer choices. The instrument was validated by experts. The instrument was given as a pretest at the beginning of the learning and as post-test at the end of the learning in both of the the experimental and control group.

This research was conducted at SMAN 4 Makassar in the odd semester of the academic year 2017/2018. Population in this study were all tenth-grade of natural science students at SMAN 4 Makassar, East Sulawesi, Indonesia, consisting of 6 classes (group) students. Samples were selected by using simple random sampling techniques and they were from group of students called X MIPA 3 and X IPA 4. Students of X MIPA 3 (32 students) were used as experimental group, and students of X IPA 4 (32 students) were used as control group.

The data was analyzed using descriptive and inferential statistical analysis. The descriptive analysis was used to provide a general description of the student learning outcomes both of the experimental and control group. The student learning outcome was categorized into complete and incomplete categories based on minimum criteria called *Kriteria Ketuntasan Minimum* (KKM). The inferential statistical analysis in this study was Mann-Whitney test [4].

III. RESULTS AND DISCUSSION

Descriptive analysis results of student learning outcomes on the subject of chemical bonding of the experimental group, a group student that taught using DL model -re-lyrics song, and the control group, a group student that taught using DL model, are shown in table 1. From the table 1, it seems that both of the experimental and control groups have same the lowest score (60) and the highest score (92). Even though, it is clear that the average score of experimental group (74.81±8.41) was higher than that of control group (71.53±7.76). Based on the statistical analysis (data are not shown), the DL model – re-lyrics song influence the student learning outcome on the subject of chemical bonding. According to the KKM, the completeness of the experimental group (78.13% of students) is significantly much higher than that of the 2nd experimental group (31.25% of students) (see table 2).

Based on observations, students in the experimental group were able to gather learning material and created it in song lyrics. It was also observed that students worked together to produce notes in the form of song lyrics according to the topic being studied. Through the mentioned activities, the topics learned were easily remembered by students. Each group sang the re-lyrics song, so that all students from other groups listens the song. These results show that students could understand the topic learned, create lyric of song from topic learned, and sang the re-lyric song well.

The re-lyric songs are categorized very well because they contain all the competencies that must be mastered by the students. At each meeting there are five songs produced by students. Table 3 show the re-lyric song lists. Based on the ability of the student to re-lyric song by using topic learned, it shows that the student mastered the topic. As a result, their learning outcomes were satisfying.

TABLE I. DATA OF STUDENT LEARNING OUTCOME ON THES SUBJECT OF CHEMICAL BODNING

Statistic Descriptive	Values			
	Experimental group		Control group	
	Pre test	Post test	Pre test	Post test
Sample size	32	32	32	32
The lowest score	8	60	8	60
The highest score	44	92	40	92
Mean	21.56	74.81	26.40	71.53
Median	55.50	85.20	34.15	99.00
Modus	26.34	77.00	21.95	67.83
Standard Deviation	8.76	8.41	7.43	7.76

TABLE II. CATEGORIES, FREQUENCY AND PERCENTAGE OF STUDENT LEARNING OUTCOMES ON THE SUBJECT OF CHEMICAL BONDING

Criteria	Value	Experimental Group		Control Group	
		Frequency	%	Frequency	%
Complete	≥ 70	25	78.13	22	68.75
Incomplete	< 70	7	21.87	10	31.25
Total		32	100	32	100

TABLE III. THE RESULTS RE-LYRICS SONGS ON THE SUBJECT OF CHEMICAL BONDING

Concepts	Group	Song Title	Re-lyric Songs
Noble gas stability	1	Perfect	Stability
Duplet & octet	2	Dia	Noble gas
Ionic bonding	3	Sejuta cinta	Ionic bonding
	4	Terakhir	Stability
	5	Bukti	Noble gas
Covalent bonding	1	Surat cinta untuk Starla	Covalent bonding
(single bond, double bond, and triple bond)	2	You belong with me	Covalent bonding
	3	Alone	Covalent bonding
Coordination bonding	4	Despacito	Covalent bonding
	5	Dekat di hati	Covalent bonding
Polar & non polar	1	Diary depresiku	Polar & non polar
Metallic bonding	2	Kesempurnaan cinta	Polar & non polar
	3	Akad	Metallic bonding
	4	Surat cinta untuk Starla	Polar & non polar
	5	Dekat di hati	Metallic bonding

IV. CONCLUSION

The discovery learning model equipped re-lyrics song significantly influence the learning outcome on chemical bonding subject of tenth-grade of natural science student at SMA N 4 Makassar in the academic year 2017/2018.

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