The Effectiveness of Whole Brain Teaching and Reciprocal Teaching in Reading to Visual and Auditory Students

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Abstract

This study aimed to analyze the effectiveness of Whole Brain Teaching and Reciprocal Teaching to teach reading comprehension to visual and auditory students in MTs Qodiriyah. The subject was eight graders. Class VIII A was the experiment class 1 and class VIII C was experiment class two. Every class consisted of 15 visual and 15 auditory students. This study was experimental research by using 2x2 factorial designs. The data collection was done by giving visual auditory kinesthetic (VAK) and reading comprehension tests. The data were analyzed by using ANOVA. The study revealed results. First, Whole Brain Teaching was effective to teach reading comprehension to visual and auditory students. Second, Reciprocal Teaching was effective to teach reading comprehension to visual and auditory students. Third, Reciprocal Teaching was more effective than Whole Brain Teaching in teaching reading comprehension to visual and auditory students. The last, there was no interaction between teaching techniques, students’ reading comprehension, and learning styles. In conclusion, Whole Brain Teaching and Reciprocal Teaching were effective applied in teaching reading comprehension to visual and auditory students. Although there was no interaction between three variables, the fact showed students’ reading comprehension achievement was influenced by teaching techniques not students’ learning styles.

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p-ISSN 2087-0108
e-ISSN 2502-4566
INTRODUCTION

Language has an important role in communication and interaction. Wardrough (2006, p. 1) says that a language is what the members of particular society speak. From the statement, it can be said that everyday people need to express or deliver something to others because they belong to social creatures that always need somebody else to live and do interaction. A related language, English is an international language which has important role because it is learned in every country of the world.

It can be seen in our country, Indonesia which English is given from elementary school until university even some kindergartens learn it too. Beside that, we can see that many courses open English course based on their level. It is caused to create a better young generation that ready to face globalization era. From this phenomenon, we can see that English has important role in our live.

According to Anderson (1999) cited in Hakim et al (2013, p. 7) stated that in learning English we have to learn the four language skills including (1) listening (2) speaking (3) reading, and (4) writing. All of them must be mastered by students because they have an important role in students’ teaching and learning process.

According to Irwin (1991, p. 7) cited in KIlingner, Sharon and Alison (2007, p. 12) comprehension is an active process to which the reader brings his or her individual attitudes, interest and expectation. Woolley (2011, p. 5) cited in Rosari, L & Mujiyanto, Y (2016, p. 34) stated that reading comprehension is the process of making meaning from text. It means after reading, the reader can be said actually comprehend the text if they know what the text contents about.

This problem also faced by class VIII in MTs Qodiriyah. Based on the English teacher explanation, the students are still difficult in comprehending text well. It is looked from them when they are asked to answer the question related a text. They are still difficult because their reading comprehension is low so they cannot understand the text well. We as the teacher must help the students to comprehend reading content and to increase their reading comprehension. Our task to find the reading technique that can be implemented in teaching and learning reading comprehension. The technique making students understand and comprehend text easily and enjoy reading learning process in the classroom. Because of the students have different learning styles, automatically they have different style in studying especially in understanding the lesson.

Talking about learning styles, Lepke (1977) cited in Alharbi (2015, p. 1259) maintained that when learners were taught according to their preferred learning style, their performance becomes better. Moreover Hamdani (2015) cited in Mulyadi, D., Rukmini, D., & Yuliasri, I (2017, p. 1201) asserted that knowing and recognizing students’ learning style can promote the education dealing with language message in written or printed form. It means that the reader must be able to understand the meaning of the message and interpret appropriately in written or printed form. So our comprehension is very needed in understanding information in the text. It is not easy for the students because in mastering reading skill, students are not only read once but also must habituate them to read continually to comprehend the reading content to find a message.
quality and make it more appropriate for the individual learner. From these statements, it means that by knowing the students' learning style, it is same with help them to reach their successful in learning because they find the best way or style to learn something easily. So it will be better to the teacher if he or she pays attention to their learning style while teaching and learning process in the classroom. She or he can give the best way learning them based on their style. It will make them more easy understand and comprehending the information in the content of the text.

To help them in comprehending the text, the English teacher can apply too teaching technique that will make them easy comprehend the text. The two of the techniques that can be implemented in teaching reading include whole brain teaching and reciprocal teaching techniques.

According to Biffle (2013, p. 178) cited in Kusumaningrum (2015, p. 4) proposes that whole brain teaching is a set of strategies that combines the best attributes of direct instruction and cooperative learning to create engaging and enjoyable classroom environment to enjoyable for students and teacher. From this statement, we can see that this technique is interesting enough to attract to the students, it is expected can help the students to improve their attention and concentration especially in reading comprehension.

Meanwhile reciprocal teaching technique is technique that used to improve the students' reading comprehension which this technique is developed first time by Palincsar in 1984. It can be seen from the statement proposed by Pearson and Fielding (1991) cited in Pilten (2016, p. 233) that stated reciprocal teaching was especially effective in developing comprehension among readers with low comprehension levels.

There were several studies that concern on the implementation of Whole Brain Teaching. Sixth, Astuti (2015) conducted study entitle the use of whole brain teaching method to improve the students' writing skill on descriptive text. The result showed that whole brain teaching could improve the students' writing skill on descriptive text and class condition became more interesting. Kusumayati (2014) in her study entitled the use of whole brain teaching (WBT) to improve students' speaking". The result showed that the use of whole brain teaching could improve students’ speaking ability, beside that it could make class interesting and make students more active and brave to express their feeling. Ghorbani; Gangeraj; and Alavi (2013) conducted study about Reciprocal teaching of comprehension strategies improves EFL learners' writing ability”. The result showed that reciprocal teaching is effective comprehension strategy in improving the learners’ writing ability, beside that the students will get motivation to read more if they realize the importance of reading in improving their writing performance. Gilakjani & Branch (2012) conducted study entitle visual, auditory, kinesthetic learning styles and their impacts on English language teaching. The result showed that visual students had greatest academic achievement in their educational major.

Based on the explanation above, I formulated the problems statements as follow:

1. How effective is the use of whole brain teaching technique and reciprocal teaching in teaching reading comprehension to visual learners?
2. How effective is the use of whole brain teaching technique and reciprocal teaching in teaching reading comprehension to auditory learners?
3. How effective is whole brain teaching technique compared with reciprocal teaching technique in teaching reading comprehension to visual learners?
4. How effective is whole brain teaching technique compared with reciprocal teaching technique in teaching reading comprehension to auditory learners?
5. How significant is the difference of visual and auditory learners before and after taught by using whole brain teaching technique in teaching reading comprehension?
6. How significant is the difference of visual and auditory learners before and after taught by using reciprocal teaching technique in teaching reading comprehension?
7. How significant is the interaction among reading comprehension, techniques, and learning styles?

Based on the explanation above, this study focuses on the use of whole brain teaching and reciprocal teaching in reading comprehension. I want to know whether there is difference between visual and auditory students by using whole brain teaching technique and reciprocal teaching technique in reading comprehension at eight grade students of MTS Qodiriyah or not. In other word, I also want to know these techniques are effective or not if they are implemented in teaching and learning process especially in reading comprehension.

METHODS

The type of this research is experimental research. According to Sukmadinata (2012, p. 194) the experimental research is the approach of quantitative research, it means that the approach fills all of the rules to examine the relations of cause effect. This study also uses factorial design 2 x 2 with ANOVA analysis. It is chosen because the study employs more than one independent variables (whole brain teaching and reciprocal teaching), and one dependent variable (reading comprehension). There is also moderator variable (visual and auditory students).

This research was be hold at MTs Qodiriyah. It was located at Dempet, Demak, West Java. The population of this study was eight graders of MTs Qodiriyah in the academic year 2017/2018. Class VIII consisted of 3 classes (A, B, and C). Every class consisted of 36 students. The samples were class VIII A as the experiment class one and VIII C as the experiment class two. This research used purposive sampling to get the sample. The distribution of the sample could be seen in the Table 1 below:

<table>
<thead>
<tr>
<th>Group</th>
<th>Class</th>
<th>Treatment</th>
<th>Students Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment 1</td>
<td>VIII A</td>
<td>Whole Brain Teaching</td>
<td>35</td>
</tr>
<tr>
<td>Experiment 2</td>
<td>VIII B</td>
<td>Reciprocal Teaching</td>
<td>35</td>
</tr>
</tbody>
</table>

There were three instruments. First, learning style criterion questionnaire was used to determine students’ learning style. This test was created by Chislett and Chapman (2005) which consists of 30 questions. It could be seen from the most answers chosen by them. This VAK learning styles test was be tested to both experiment class one and experiment class two. If their most answers was A, they include visual learning style. If their most answers was B, they included auditory learning style, and the last if their most answers was C, they included kinaesthetic learning style.

The second instrument was test. According to Arikunto (2005, p. 53) test is a tool or procedure that is used to know or measure something in the atmosphere by the rules that is established. In this research, there were three tests including try-out, pre-test, and post-test.

Try out test here was be used by the writer as the researcher to make sure that the reading test that would be tested to learners of the experimental group was valid and reliable. The try out was reading test in multiple choices form. The test was made and arranged based on the syllabus eight graders of MTs Qodiriyah. The multiple choices consist of sixty questions of reading comprehension test item that would be selected from the learner’s textbook.

I chose class VIII B to be given try-out. This class consisted of 33 students. The try out was made by making outlines based on the eighth graders syllabus of MTs Qodiriyah. Try out itself was consisted of 60 items of reading comprehension. This try out was used to test the validity and reliability of the instrument. It was meant to know whether the items had qualifications to be used in the research or not.

According to Singarimbun and Sofian (2011, p. 122) validity shows how far a tool is...
measures what’s want to measure. Here the writer used Pearson Correlation as the validity of the reading test try-out. The item was said valid if \( r_{count} \geq r_{table} \) or it can be said valid if \( r_{count} < 0.05 \). According to the Table \( r \) (Pearson Product Moment) with significant standard of 0.05 in 2-tailed, the \( r_{table} \) with 33 samples was gotten 0.344. So the item could be said valid if \( r_{count} \geq 0.344 \) or \( r_{count} < 0.05 \). The result of validity was below:

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Question Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Valid</td>
<td>1, 2, 7, 10, 11, 12, 14, 16, 19, 20, 23, 24, 25, 26, 27, 29, 30, 33, 34, 35, 41, 44, 45, 46, 48, 49, 51, 53, 55, 57, 58, 59, 60</td>
</tr>
<tr>
<td>2</td>
<td>Invalid</td>
<td>3, 4, 5, 6, 8, 9, 13, 15, 17, 18, 21, 22, 28, 31, 32, 36, 37, 38, 39, 40, 42, 43, 47, 50, 52, 54,</td>
</tr>
</tbody>
</table>

Based on table 2, there are 33 items were valid and 27 items were invalid. From this result, I would choose 30 items would be used as the pre-test and post-test in both of groups.

According to Singarimbun & Sofian (2011, p. 140) reliability is index that shows how’s far the measuring tool can be believed or be relied on. A test can be reliable but not valid, whereas a test cannot be valid yet unreliable. In addition the writer would count the reliability of try-out of reading test by SPSS too. It was used to determine the level of consistency of the reading test by the writer so that the reading test can be reliable. The result of reliability could be seen in the table 3 below:

<table>
<thead>
<tr>
<th>Table 3. Reliability of Try-out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
</tr>
<tr>
<td>.749</td>
</tr>
</tbody>
</table>

From the data above, the reliability score could be seen in the Cronbach's Alpha column which the score was 0.749. The test is reliable if the reliability score of the test is reliable. The criterion of reliability could be seen in the table 4 below:

<table>
<thead>
<tr>
<th>Table 4. The Criterion of Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval</td>
</tr>
<tr>
<td>0.800 ≤ r ≤ 1</td>
</tr>
<tr>
<td>0.600 ≤ r ≤ 0.800</td>
</tr>
<tr>
<td>0.400 ≤ r ≤ 0.600</td>
</tr>
<tr>
<td>0.200 ≤ r ≤ 0.400</td>
</tr>
<tr>
<td>0.00 ≤ r ≤ 0.200</td>
</tr>
</tbody>
</table>

Based on the criterion of reliability in the table 4 above, it could be seen that the reliability score was in high category. It meant that the tryout tested to class VIII B was reliable so that it could be used to pre-test and post-test in class VIII A and class VIII C.

The second test was pre-test. The researcher gave the pre-test to both of the groups, experiment class one and experiment class two. The test was multiple choice of reading comprehension consisted of 30 questions. The test form given to the both of the groups was same. The pre-test was done to know the students’ mastery in reading before the treatments given.

The last test was post-test. This test was same with pre-test given to the students in both of experiment class one and experiment class two. This post-test was given after the treatment. The purpose of this post-test was to know the effect of using whole brain teaching and reciprocal teaching to teach reading comprehension if these techniques were effective or not.

The last instrument in this study was observation checklist which consisted of some steps of teaching and learning process in the class including opening activities, main activities, and closing activities. It was used to monitor the activities during treatment happened in both of the experimental group in teaching reading comprehension. It was used too to know if the English teacher in teaching reading by applying the techniques (Whole Brain Teaching and Reciprocal Teaching) had been appropriate or not.

The last instrument in this study was observation checklist which consisted of some steps of teaching and learning process in the class including opening activities, main activities, and closing activities. It was used to monitor the activities during treatment happened in both of the experimental group in teaching reading comprehension. It was used too to know if the English teacher in teaching reading by applying the techniques (Whole Brain Teaching and Reciprocal Teaching) had been appropriate or not.

In collecting the data, there were some steps. First, determine students’ learning styles by testing VAK questionnaire test. Second the students in both of classes would be given reading test as the pre-test. After that they
would be given the treatment by using of the techniques which whole brain teaching technique would be applied to the class VIII A as the experimental class one and reciprocal teaching technique would be applied to the class VIII C as the experiment class two. The last step, the students in both of the classes would be given the post-test (reading test). To know the effectiveness of the techniques, the writer used independent sample T-test to test. Further, to find the interaction among, teaching technique, students’ reading comprehension and learning styles, the writer used ANOVA analysis.

RESULTS AND DISCUSSIONS

Dealing with the effectiveness of Whole Brain Teaching and Reciprocal teaching to teach reading to visual and auditory students, there were seven data being analyzed. Before they were discussed, first of all, the writer would show the result of the VAK test. The result of it could be seen below:

**Table 5. The VAK Test Result**

<table>
<thead>
<tr>
<th>Class</th>
<th>Learning Style</th>
<th>Class VIII A</th>
<th>Class VIII C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td>16</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Auditory</td>
<td>15</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Kinesthetic</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

From this result, I decided to take 15 students in each visual and auditory in both of the class as the sample of this research. It was done because the smallest score of the learning styles was 15 so I used this as the base to take the sample based on the learning style.

The primary data of this research were pre-test and post-test scores of reading comprehension from both of experimental class 1 and experimental class 2. To count the data, I used SPSS version 16.0. The result of pretest and post-test in both the experimental class 1 and experimental class 2 could be seen in the table 5 and table 6 below:

**Table 6. Pre-Test Score of Experimental Class 1 (EC1) and Experimental Class 2 (EC2)**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC1_visual</td>
<td>15</td>
<td>43.00</td>
<td>63.00</td>
<td>52.4667</td>
<td>6.36808</td>
</tr>
<tr>
<td>EC1_auditory</td>
<td>15</td>
<td>43.00</td>
<td>67.00</td>
<td>57.3333</td>
<td>8.02377</td>
</tr>
<tr>
<td>EC2_visual</td>
<td>15</td>
<td>43.00</td>
<td>80.00</td>
<td>61.8000</td>
<td>11.98928</td>
</tr>
<tr>
<td>EC2_auditory</td>
<td>15</td>
<td>60.00</td>
<td>80.00</td>
<td>71.7333</td>
<td>6.12334</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 7. Post-Test Score of Experimental Class 1 (EC1) and Experimental Class 2 (EC2)**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC1_visual</td>
<td>15</td>
<td>70.00</td>
<td>87.00</td>
<td>76.8667</td>
<td>5.18055</td>
</tr>
<tr>
<td>EC1_auditory</td>
<td>15</td>
<td>70.00</td>
<td>87.00</td>
<td>77.2667</td>
<td>5.13346</td>
</tr>
<tr>
<td>EC2_visual</td>
<td>15</td>
<td>70.00</td>
<td>87.00</td>
<td>79.6000</td>
<td>6.24271</td>
</tr>
<tr>
<td>EC2_auditory</td>
<td>15</td>
<td>73.00</td>
<td>90.00</td>
<td>82.9333</td>
<td>5.07749</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the table of pre-test and post-test score in both experiment class 1 and experiment class 2, the mean score of post-test score in both experiment class 1 and experiment class 2 either visual or auditory was higher than the mean score of pre-test in both of them. It meant that both Whole Brain Teaching and Reciprocal Teaching techniques were effective applied to visual and auditory students in reading comprehension.

According the statement of the problems of this study, there are seven questions. The result of the seven questions of the research being analyzed would be explained clearly in the paragraph below:

First, Whole Brain Teaching was effective to teach reading comprehension to visual learners. The result showed that whole brain teaching was effective to use in reading comprehension to visual learners because the mean score of post-test in the experiment class one with visual students (76.866) was higher than mean score of pre-test in the experiment class one with visual student (52.466). The
significant value (0.000) was lower than 0.05. So H1 was accepted that meant there was significant different from using whole brain teaching to teach reading comprehension to visual learners.

The second, Whole Brain Teaching was effective to teach reading comprehension to auditory learners. Based on the result, whole brain teaching was also effective to use in teaching reading comprehension to auditory. It could be seen from the mean score of post-test (77.266) that was higher than the mean score of pre-test (57.333) in the experiment class one to auditory learners. From the table of paired samples test, the significant value was 0.000 which it is lower than 0.05 so H1 was accepted. Therefore it indicated that there was a significant difference of using whole brain teaching to teach reading comprehension to auditory learners in experiment class one.

The third, reciprocal teaching was effective to teach reading comprehension to visual learners. The result showed that reciprocal teaching was effective to visual learners in experiment class two. It could be seen from the improvement score in pre-test to the post-test which the mean score of post-test (79.600) was higher than the mean score of pre-test (61.800) in experiment class two to visual learners. The significant value was 0.000 which it is lower than 0.05. It meant and H1 was accepted. So it indicated there was significant difference of using reciprocal teaching to visual learners in experiment class two.

The fourth, reciprocal teaching was effective to teach reading comprehension to auditory learners. The result showed that the mean score of post-test (82.933) was higher than the mean score of pre-test (71.733) to auditory learners in experiment class two. So reciprocal teaching was effective to auditory learners in experiment class two. Meanwhile the significant value was 0.000 which it was lower than 0.05 so H1 was accepted. It meant that there was significant different of using reciprocal teaching in teaching reading to auditory learners in experiment class two.

The fifth was there was significance difference of using whole brain teaching and reciprocal teaching techniques to teach reading comprehension for visual learners. The result showed that reciprocal teaching was more effective than whole brain teaching in teaching reading to visual learners. It was proven from the mean score of post-test in experiment class two (79.600) was higher than the mean score of post-test in experiment class one (76.866). The significant (2-tailed) value was 0.203 which it was higher than 0.05. It meant that H0 was accepted. So it could be concluded that there was no significant difference of using whole brain teaching and reciprocal teaching techniques to teach reading comprehension for visual learners.

The sixth was there was significance difference of using whole brain teaching and reciprocal teaching techniques to teach reading comprehension for auditory learners. The mean score of post-test in experiment class two (82.933) was higher than the mean score of post-test in experiment class one (77.266) for auditory learners. From this result it could be concluded that reciprocal teaching was more effective than whole brain teaching in teaching reading for auditory learners because reciprocal teaching was a technique that used as long as treatment in the experiment class two. Moreover the significant (2-tailed) was 0.005, it was lower than 0.05. H1 was accepted. It meant there was significance difference of using whole brain teaching and reciprocal teaching techniques to teach reading comprehension for auditory learners.

The last, there was interaction among techniques, students’ learning styles, and reading comprehension. To calculate the interaction among techniques, students’ learning styles, and reading comprehension, the writer used ANOVA. Based on the result, the significant value of teaching techniques was 0.004. It was lower than 0.05 so that H1 was accepted. Therefore there was significant difference between Whole Brain Teaching and Reciprocal Teaching techniques. While the significant value of learning styles was 0.188. It was higher than 0.05. It meant H0 was accepted. It indicated that there was no significant difference between visual and auditory students. The last, the significant value of techniques * leaning styles was 0.300. It was
higher than 0.05. So that H0 was accepted. Therefore it indicated there is no interaction between techniques used in this research and the students’ different learning styles.

The interaction among three variables could be seen in the figure below:

![Figure 1. Interaction Among Techniques, Students’ Learning Styles, And Reading Comprehension.](image)

According to figure above, although there was significant difference of both whole brain teaching and reciprocal teaching in reading comprehension, it did not depend to the students learning styles especially visual and auditory learning styles. In other word, the improvement of students’ reading comprehension was influenced by the use of teaching techniques namely whole brain teaching and reciprocal teaching. In other word, Whole Brain Teaching and Reciprocal teaching were effective to teach reading comprehension to students with different learning styles.

CONCLUSION

This study has explained the result of the implementation of whole brain teaching and reciprocal teaching techniques in teaching reading comprehension. Those techniques are effective for both visual and auditory students. The result also shows that there is no effective interaction among techniques, students’ learning styles, and reading comprehension. Therefore, learning style does not influence students’ reading comprehension which students’ reading comprehension is influenced by whole brain teaching and reciprocal teaching techniques.

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