

Prior Knowledge Activation through Brainstorming to Enhance Malaysian EFL Learners' Reading Comprehension

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Received: March 11, 2016 Accepted: April 11, 2016 Published: April 29, 2016

doi:10.5296/ijl.v8i2.9397 URL: <http://dx.doi.org/10.5296/ijl.v8i2.9397>

Abstract

Reading comprehension is a flexible and ongoing cognitive and constructive process. There are different pre-reading methods that can influence positively on EFL learners' reading comprehension. Thus, this research investigated the impact of brainstorming as a pre-reading strategy on reading comprehension ability of Malaysian EFL learners. The study used an experimental design with fifty students who were between 12 to 18 years of age at intermediate level were considered homogenized. In order to have homogenized participants a language proficiency test was run. It was given to 70 students at Asian EFL Academy Language Institute in Pinang, Malaysia. The results of the proficiency test confirmed the homogeneity of the participants regarding their reading comprehension ability. Then, the researcher divided the students into two groups, control and experimental. An immediate-delayed test was administered to both groups before and after the implementation of the proposed technique on the experimental group. Experimental group received treatment for a given period of the time. At the end of the specified period of treatment both groups received a delayed test. None of the groups had any previous experience in brainstorming strategies. An immediate test was covered having 10 reading comprehension questions carrying out every two session at the end of each reading comprehension lesson. The last session was devoted to conduct the delayed tests including 50 questions at the end of treatment. The participants in the experimental group were instructed how to use brainstorming strategies before reading passages in 10 sessions for 20 minutes at Asian EFL Academy Language institute in Pinang, Malaysia. A statistical comparison of the results indicated that brainstorming strategies have a positive significant effect on reading comprehension ability of the participants.

Keywords: Brainstorming strategy, EFL Learners, Reading comprehension ability

1. Introduction

Many researches have been performed about the role of brainstorming in different fields in order to obtain extensive educational purposes. This approach has an effective role in group idea generation based on the empirical studies. Brainstorming is a group creativity technique by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its members. Dr. Alex Osborn offered the term brainstorming for consideration in 1953. Osborn (1953) defined this new technique as: "An organized way to allow the mind to produce ideas without getting bogged down in trying to judge the value of those ideas at the same time" (Kirk & Spreckelmeyer, 1993, p. 85). Osborn (1953) mentioned the two principles (Defer judgment and Reach for quantity) contribute to "ideative efficacy". Following these two principles were his four general guidelines for brainstorming (Osborn, A.F. (1963) *Applied imagination: Principles and procedures of creative problem solving* (Third Revised Edition). New York, NY: Charles Scribner's Sons.)

- Go for quantity
- Withhold criticism
- Welcome wild ideas
- Combine and improve ideas

Many researchers have been investigated Osborne's claims about the usefulness of group brainstorming. All of these researches have been verified that making ideas in group is considerably more than individual ideation based on the Osborn's brainstorming guidelines (Johnson, Parrott, & Stratten, 1968; Meadow, Parnes, & Reese, 1959; Parnes & Meadow, 1959).

One of the effective tools in teaching English as a foreign language is brainstorming. This method is a "method of ideation" (p.14), through which can generate many notions by a group of language learners. (Mongeau & Morr's, 1999).

Brainstorming is regarded as an effective tool in creative problem solving (Fernald & Nickolenko, 1993; Leclef, 1994; Stein, 1975). Its popularity can be traced back to the pervasive need to enhance the productivity of groups. The need for high-quality creative ideas likely achieved through brainstorming (Ganji, Sharifi & MirHashemi, 2005; Madandar-Arani & Kasia, 2007) is considered of utmost importance in the field of ELT because when ample opportunities of discussion are provided to learners in language learning contexts, learners' critical abilities concerning learners' lives, their social intelligence, novelty, problem-solving, etc. are going to be enhanced.

One of the main benefits of brainstorming is the activation of readers' prior knowledge. As it is expressed by Feather (2004, p.82) "brainstorming provides plenty of materials for making prediction". Furthermore, it is likely that through this strategy, the reader becomes conscious concerning what he knows about a given text's topic before he goes on reading it. Feather (2004, p. 84) argues that brainstorming enhances the activation of the reader's schema globally; so that they will know in advance about the ideas, vocabulary, culture, grammatical

features and genre structures which are most probably met in the text to be read. It has been documented in Labiod's (2007) study that prior knowledge activation through brainstorming enhances learners' reading comprehension.

The rationale behind the brainstorming strategies applied in this study is that the human brain deals with matters in a patterned way. Hence, brainstorming can develop the students' cognitive toolkit while approaching a reading task through considering a topic from different angles as well as taking their classmates' perspectives into consideration which entails broader range of ideas facilitating creative thinking.

2. Review of the Related Literature

2.1 Reading and Reading Comprehension

One of the basic components of second/foreign language teaching and learning is reading comprehension (Sharafi-Nejad et al., 2014). Many reasons pointed by Richards and Renandya (2002) that why it takes many focuses in second or foreign language teaching situations. One of the important goals of many EFL/ESL students who want to read for information, study purposes, pleasure, career, etc. is reading comprehension (Richards and Renandya, 2002). They introduced extensive reading as a method that can accelerate the process of language learning. Moreover, according to Richards and Renandya (2002), reading can introduce many new grammatical rules ,vocabularies, expressions and also provides novel topics for discussion and good models for writing. So reading comprehension skill is highly valued by the students and teachers based on some of these reasons .

According to Bbayigit and Stainthorp (2011), reading comprehension is a complicated procedure which contains many variables. Reading comprehension requires the integration and application of multiple strategies or skills (Hamidi & Montazeri, 2014). Based on Suyanto (2010), reading comprehension is a complex intellectual process including a number of abilities. The two important abilities relate to word meaning and reasoning with verbal concepts. Based on Wray (2004), reading comprehension is regarded as an interaction between what the text provides and what the reader brings to it. Effective learning, based on Vygotsky (1978), which originates by student's activity and participation can absolutely cause their language achievement.

2.2 Schema Theory

The term schema theory was first used by Piaget in 1926 and it was developed by R.C. Anderson (1977) who is a respected educational psychologist; however, it was not a totally new concept. R.C. Anderson (1977) expanded the meaning though.

Schema theory is based on the assumption that readers develop a coherent interpretation of text through the interactive process of combining their previously formed textual information with the new textual information (Widdowson, 1983). This assumption that any act of comprehension involves the comprehender's knowledge of the world is called schema theory (R. C. Anderson, Pichart, & Shirey, 1983).

The notion of schema expanded in the field of learning and education by Richard Chase

Anderson in 1977. After expanding the notion of schema, the researchers used schema theory further to justify the readers' thought processes while reading (R. C. Anderson and Pearson, 1984). Accordingly, readers make use of their prior knowledge to make sense of the text, when they read a text. Moreover, when the reader has got relevant organized knowledge packages, or schemas that can be used to interpret the information, reading comprehension is facilitated.

2.3 Pre-reading Activities

According to Chastain (1988), increasing students' motivation to read the assignment and preparing them to be able to read is one of the important purposes of pre-reading activities.

Attention of pre-reading activities has shifted from exclusive focus on preparing the reader for likely linguistic difficulties in a text to a focus to cultural or conceptual difficulties recently. However, pre-reading activities remind readers of what they do that is to activate existing schematic knowledge in addition to offer compensation for second language readers' supposed linguistic or socio-cultural inadequacies.

3. Research Questions

To fulfil the aims of the present study, the following specific questions guide the collection and analysis of data:

1. Does brainstorming have any effect on Malaysian EFL learners' Reading Comprehension Ability?
2. Is there any statistically significant difference between the two age groups: group 1(12-15) and group 2 (16-18)?

4. Research Hypotheses

The following hypotheses have been set for the study:

1. Brainstorming has no significant effect on developing reading comprehension ability of Malaysian EFL learners.
2. There is no statistically significant difference between the two age groups (12-15 and 16-18) who received brainstorming technique.

5. Methodology

5.1 Participants

The participants of the present study were seventy female students at intermediate level between 12 to 18 studying at Asian EFL Academy Language Institute in Pinang, Malaysia. Concerning the homogeneity of the participants for meeting the requirements of an experimental research, fifty students were considered as homogenous members after running the OPT based on one standard deviation above and below the mean.

5.2 Instruments

Concerning the homogeneity of the participants for meeting the requirements of an experimental research, the Oxford Placement test of Proficiency with an Immediate and Delayed test of reading comprehension were considered as measuring instruments. Oxford Placement test of Proficiency consisted of some parts such as structure, and vocabulary in the form of multiple choice questions. The time of the test was 30 minutes. The pilot study was conducted on 30 intermediate students registered at British Council language institute in Pinang to make sure about the reliability of the instruments and methods.

Based on the similar studies in the field, the researcher intended to use a sample reading of New Interchange 2 by Jack C. Richards. The book comprises 16 chapters, out of which 5 chapters were covered. Immediate-test consisted of 5 reading comprehension questions, 5 questions were added by the researcher. Immediate test which contained 10 questions was carried out every two session at the end of each reading comprehension. The allotted time was ten minutes. Then; she used the same questions as delayed-test that contained 50 questions at the end of the treatment.

5.3 Procedure

At the beginning, the researcher chose 2 intermediate classes from Asian EFL Academy Language Institute in Pinang, Malaysia. Concerning the homogeneity of the participants for meeting the requirements of an experimental research, the participants took OPT test. Then 50 students were considered homogenized. At the beginning of instructional treatments, all of the students received the class program that explained the activities and dates of the class. The researcher divided the participants into two groups, control and experimental. The participants took a pretest before the formal instruction and a delayed test after the implementation of the proposed method on the experimental group.

6. Results and Data Analysis

The researcher was administered the Oxford Placement Test (OPT) in order to have homogenized participants in terms of their general English language proficiency. As it can be seen in table 6.1 below, based on one standard deviation above and below the mean, fifty participants were considered homogenous out of the seventy participants.

Table 6.1. The Descriptive Statistics of the OPT score

Statistics	N OPT	Mean	Median	Std. Deviation	Variance	Minimum	Maximum
Valid	70	21.4714	20.0000	5.10107	26.021	11.00	37.00
Missing	10						

Based on the Kolmogorov-Smirnov Test, the two sets of scores are normally distributed. As it can be seen it table 6.2 below, the Sig value of the posttest of control and experimental groups is higher than 0.05. Therefore, the Independent t-test is the best test for mean

comparison.

Table 6.2. Test of Normality for the Reading Comprehension Scores

	Tests of Normality					
	KolmogorSmirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Cont Posttest	.150	25	.153	.920	25	.050
Exp Posttest	.121	25	.200 ^a	.959	25	.402

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

The mean and standard deviation for the control and experimental groups are 28.32, 7.42 and 41.08, 2.9 respectively based on the table 6.3 below.

Table 6.3. Group statistics for the two sets of scores

	Group Statistics				
	ConPost	N	Mean	Std. Deviation	Std. Error Mean
Scores Con Exp	Control	25	28.3200	7.42024	1.48405
	Experimental	25	41.0800	2.99889	.59978

The assumption of the homogeneity of variances has not been met ($F=15.38$, $p=0.071 > 0.05$). It could be concluded that there was a significant difference between the mean scores of the two groups on the posttest of reading. Based on the results, as it can be seen in table 6.4 below, the probability of $t(31.63)$ had the sig of (.000), that is much lower than the significance level of .05 ($t(31.63)=7.92$, $p < 0.05$). According to the results, brainstorming technique leads to more efficient learning.

Table 6.4. Result of the independent t-test for the two groups

Independent Samples Test									
		Levene's Test for Equality of variances				t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	
Scores Con Exp	Equal variances assumed	15.388	.000	7.972	48	.000	-12.76000	1.60067	
	Equal variances not assumed			7.972	31.636	.000	-12.76000	1.60067	

Based on the results, it could be concluded that the two sets of scores are normally distributed. As table 6.5 shows, the Sig value of the Kolmogorov-Smirnov Test is higher than 0.05 for the two age groups in the experimental group.

Table 6.5. Test of Normality for the Post test of Reading Comprehension

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Age 10-13	.179	12	.200*	.914	12	.237
Age 14-16	.237	12	.061	.921	12	.290

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

The mean and standard deviation for the two age groups are 40.08, 2.67 and 42.00, 3.08 respectively based on the statistics for the two age groups on table 6.6 below.

Table 6.6. Group Statistics for the Two Age Groups

Group Statistics							
		10-13	14-16	N	Mean	Std. Deviation	Std. Error Mean
Age Score	dimension1	10-13	12	40.0833	2.67848	.77321	
		14-16	13	42.0000	3.08221	.85485	

Based on the results at the first row of the Independent T-test, there was not a significant difference between the mean scores of the two age groups who received the brainstorming technique. Based on these results, the assumption of the homogeneity of variances has been met ($F = .214$, $p = .648 > 0.05$). In table 6.7 below, the probability of t (1.65) had the sig of (.112), that is much higher than the significance level of .05 ($t(23) = 1.65$, $p > 0.05$). Therefore, the null-hypothesis was accepted, meaning that there is not any significant difference between the two age groups who received brainstorming technique.

Table 6.7. Result of the Independent T-test

Independent Samples Test										
		Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		
Age Score	Equal variances assumed	.214	.648	1.653	23	.112	-1.91667	1.15939		
	Equal variances not assumed			1.663	22.927	.110	-1.91667	1.15266		

The present study investigates the impact of brainstorming strategy on the learners' reading comprehension ability in an English language institute in Pinang, Malaysia. The findings revealed that brainstorming had a significant role in promoting the participants' reading comprehension ability. Therefore; the first null hypothesis is rejected according to the T value to prove that student's reading comprehension by the help of suggested method which was

better than the same teaching to control group who did not receive any instructions such as brainstorming.

The t-test, statistical test administered on the findings indicated that age did not play any significant role. Therefore; the second null hypothesis is accepted according to the T value to prove that there is no statistically significant difference between the two age groups who received brainstorming technique.

The objective of all teaching strategies is to facilitate learning, in so doing, brainstorming strategies are the ones which seek to involve all learners in generating their own ideas through accessing the prior knowledge and information, and they foster active learning through mental activity and spontaneous discussion in finding new opinions, ideas and views. Applying brainstorming in class helps students reach synergy through peer learning, access their current level of knowledge, its depth and extent, involve in class discussion, organize their thoughts, and reach group consensus, be responsible and reflective for their own learning and finally be creative and innovative in the learning process .

Brainstorming is considered as a tool for prior knowledge activation and an alternative which can lubricate critical thinking formation. The present study is based on the theories of reasoning as it refers to activating prior knowledge and information in approaching a situation, updating the models by incorporating new information, and eventually arriving at a deduction through analyzing the possibilities (adapted from Johnson-Laird, 1983; Johnson-Laird & Byrne, 1991). Discussion on findings indicates that pre reading activities positively influence on students' performance in reading comprehension.

EFL teachers are invited to recognize the importance of prior knowledge activation in their reading sessions. Brainstorming proved to give valuable results in understanding the informational text based on this work of research. According to the results, EFL teachers have a possible solution for increasing learners' comprehension and motivation in dealing with this type of texts. Teachers can also use from other prior knowledge activation strategies fitting other text styles for increasing their readers' knowledge.

Prior knowledge activation through brainstorming may have other effects on other language skills like writing in addition to reading comprehension. This work of research may pave the way for many possible future papers of research.

Acknowledgements

Our special thanks to Universiti Sains Malaysia for their support in providing USM Fellowship Scheme for this study.

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