

ORIGINAL ARTICLE

The Effect of Mind-mapping on Students' Descriptive Writing Skills with Particular Reference to Grade 11 Students at Woreta Preparatory School

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Abstract

Mind mapping, a popular international technique for visualizing the relationships among different concepts, assists students in recognizing these connections using a meaningful radial display. Mind-mapping plays an important role in simplifying the learning of English language in general and writing skills in particular. However, the quality of writing entirely depends on the methodology chosen by the teachers' attitudes and uses of mind-mapping techniques. Though different scholars believe mind-mapping has a power to strengthen the teaching learning process, still there is no enough practice in the context of our schools. This study investigated the effect of mind-mapping on students' descriptive writing skills. It mainly followed quasi-experimental design with quantitative and qualitative methods. The population of the study consisted of grade 11 students at Woreta Preparatory School comprising 100 students and two English teachers using systematic random and purposive sampling respectively. The study resulted that there were statistically significant differences between the mean scores of the experimental group and the control one in the post-achievement test appearing in favor of the experimental group as the effect of mind mapping on students' descriptive paragraph writing abilities at ($P=.000$, which is < 0.05). Besides, the positive attitudes of English teachers reflected as mind-mapping allows students to effectively process the descriptive paragraph writing. Mind mapping is one of the techniques that immensely contribute to education by association that is brainstorming, summarizing, note-taking, consolidating information, thinking through complex problems, presenting information and retaining and recalling information. Thus, the finding of this study suggested that teachers should implement the mind mapping techniques at all academic levels.

Keywords: *Mind-mapping, writing skill, and descriptive paragraph writing*

Introduction

Writing requires consistent effort and regular practice to develop a certain proficiency level to give way to one's thoughts and ideas in a rational order. Along with the mastery of grammatical and linguistic devices, it requires conceptual and judgmental elements (Heaton, 1998). Writing is stated as the basic language skill by Harmer (2002) and is never left ignored in language learning process because it is as important as reading, speaking and listening; but it requires consistent efforts and regular practice to develop certain proficiency.

Likewise, Byrne (1997) states that writing serves for a variety of pedagogical purposes. Even though writing skill is important, still it does not get enough attention and proper time allocation in teaching and learning process. According to Venkateswaran (1995), writing is a productive skill, which involves manipulating, structuring and communicating. 1 M.A, Teacher at Woreta Preparatory High School, Amhara Region, Ethiopia

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ing.

There are many different techniques that EFL teachers apply when they teach writing. These techniques vary according to the day to day teaching amounts requirements. Some very common techniques to gather ideas or to generate thoughts on any topic are e.g. brainstorming, listing, note taking, concept maps, lucid charts, tree structure, and flow charts. Each technique is applied with its own specific structure, flow and modification by the teachers and/or the learners when the adopted technique is used in a certain pattern to gather related thoughts either by working alone or in collaboration with peers in class. The concepts gathered with the application of the technique show linking lexical items which create relationships with other ideas (Novak, 1990).

Writing is more permanent through documentation than speaking, and it requires more careful organization. It is also less spontaneous because it involves a process, from organizing ideas in the mind to setting the final document on paper. Like speaking, writing can be both formal and informal, depending on its purpose. Teaching the skill of writing involves familiarizing students with various formats of informal and formal written texts. Also, teaching writing includes taking students through a process of series steps such as brainstorming for ideas, organizing and sequencing them, revising and editing the draft and so on (Foggin, 1991).

For a long time, the only definition people could provide for writing was the use of symbols and graphs in writing composition. But this term had gone through several improvements. For instance, Weigle, (2002:36) defines writing as the act of “encoding internal representation (ideas) into written text.” Writing is one of the major skills for using language, through which one can convey her/his thought. In fact, writing is not taking a pen and jotting down one’s ideas, it takes also into consideration the mental activity which is the most essential part in the writing process. These statements indicate that writing is an activity that produces knowledge and pieces of information in real form. As a result, writing is a unity which composed by sentence structure and the development of a good idea.

Mind-mapping can make teaching and learning more impressive for the students; it is a graphic representation or picture of one’s thoughts, ideas, and attitudes toward a key concept. Hence, mind mapping is one of the current methods that support students to understand and remember new information; moreover, the students can describe the concept of the knowledge represented by diagrams or drawings (Mansoor, 2011:1).

The term ‘mind mapping’ was first used by Buzan (1993) who describes it as an instructional strategy where the learner “places supra-ordinate concepts on paper and subsequently links sub-ordinate concepts as appropriate”. It is seen as a powerful tool to help students overcome problems with the organization of their ideas and thoughts. In line with this, mind-mapping is described as a representation of cognition and comprehension, and as an excellent way to help learners to express themselves both verbally and visually. Indeed, in their mind-map, learners may use graphic representation which may help them in brainstorming process. In fact, relating images to concepts is a creative task which requires thinking instead of memorizing. A recent study shows that students who could express their learning with visual skills had a 40% higher retention rate than that of just verbal learners (Adam and Mowers, 2007). This shows the potential importance of using this technique in writing classes, and it is a useful strategy to support students during writing tasks.

Consequently, looking for a technique to make writing a fascinating and interesting expe-

rience for EFL writers and to improve their ability to write well, specifically with regard to the organizational aspect, is heavily required. Generally speaking, mapping may be seen as a type of brainstorming. Brainstorming can be used to encourage the generation of new ideas, and to establish possible relationship between the writer and the text (Pishghadam and Ghanizadeh, 2006). Also, McGriff (2007) stated that mind maps are seen as a powerful tool to help students overcome problems with the organization of their ideas and thoughts. Therefore, by mastering this technique, writers can have the ability of creating and organizing their ideas and thoughts.

As explained by Tony and Barry (1994), mind-mapping is an expression of radiant thinking which includes in the nature-function of brain. A mind map is a diagram used to visually outline information which often created around a single word or text, placed in the center, to which associated ideas, words, and concepts are added." Major categories radiate from a central node and lesser categories are sub-branches of the larger branches. Categories can represent words, ideas, tasks, or other items related to a central key word. Based on the definition above, it can be concluded that a mind map is a creative way to represent idea or information through diagram.

Buzan and Barry (2002) stated that mind-mapping was designed to increase memory retention and productivity. It is because the brain works in different ways; different people think in different ways. However, while students' thinking and reasoning follow a structure that is personal to them, they still use a number of techniques that apply to most people. There are four essential characteristics of mind mapping: a) The subject of attention is crystallized on a central image; b) The main theme of the subject radiates from the central image as branches'; c) Branches comprise a key image or key word printed on associated line. Topic of lesser are also represented as attached to higher level branches and d) the branches form a connected modal structure.

Statement of the Problem

Buzan and Barly (2000) explained that mind-mapping can be maximized in using through colors, pictures, and connections. These terms will be more useful when the students also use their creativity in the process. It is undeniable that creativity lets students to think free in mapping their minds about writing materials. Hence, students can understand the writing materials much easier. Mind-mappings go under a variety of names. They are known as concept maps, semantic mapping, knowledge mapping, think-links, graphic organizers or cognitive maps (Svantesson, 1989). According to Buzan (1993), mind-maps attempt to visually and graphically portray relationship of ideas/concepts.

The researcher's experience shows that teachers of preparatory school in Woreta have the following major problems that might be attributed to use appropriate methodology such as low readability of the textbooks, inadequate familiarity of teachers on the materials, lack of professional support to teachers and lack of adequate exercises in the textbooks. As a result of the aforementioned facts, this study endeavors to measure the effects of mind-mapping on grade 11 (sections A and K) students' classroom practices in their descriptive writing skills at Woreta Preparatory School. Therefore, the study investigates if there is any significant difference between the control and the experimental groups mean scores in applying mind- mapping techniques on students descriptive writing skills; it also identifies the attitudes of grade 11 English teachers toward the role of mind mapping on students' descriptive writing skills.

Methods

The Research Design

Creswell, (2003) states a mixed method combines quantitative and qualitative methods through quasi-experimental design because this design takes place among non-randomly assigned groups. Thus, a mixed research method is a profound research due to its methodological pluralism or eclecticism. It also asserts that with quantitative research the researcher starts with a theory, collects data that supports or contradicts the theory, makes revisions, conducts additional tests. On the other hand, the researcher may use a qualitative research method to describe the views of a subject while interpreting and attempting to understand an event.

McMillan and Schumacher (2006) also stated that quasi-experimental design provides reasonable control over most sources of validity; it focuses on treatment and outcome. Hence, the data were taken from pre-test and post-test measurements in order to know whether or not mind-mapping is an effective technique in improving students' writing skill. In this research design, there were two classes: one is the experimental group which used mind- mapping technique and the other one is controlled group depended on the regular textbook.

Participants of the Study

The target population of the study was grade 11(sections A and K) from Woreta Preparatory School. The total number of grade eleven students in the School was 930 (that is, section A - P) of which grade11 (sections A and K) students, totally 100 were selected (55 male and 45 female). Their age ranged from 14 to18. The reasons for selecting this study area are: 1) the researcher of this study has been teaching in the study area, and has closely observed the teaching and learning process and 2) experienced teachers are assumed to be available in the study area. The technique of sampling used was systematic random sampling method. The researcher took one of the classes as the experimental group that has 50 students; and the other as the controlled group that has 50 students. The experimental class was taught writing through mind-mapping technique, while the other was taught through expository technique. The teaching and learning process were carried out for six weeks.

Data Collection Instruments

The study utilized quantitative and qualitative methods as it allowed the researchers to describe the effect of mind mapping on students' utilization and knowledge development in their descriptive writing. To know the practice effect of mind mapping technique in this quasi experimental research, the researcher utilized pre-posttest measurements to get the data through descriptive writing paragraphs on the given topics; pre and post testing and interview were used to collect the data which were accomplished from a group of students. More specifically, the tests indicated how the students were learning English language. Therefore, two kinds of test were used.

Pre-test

Pre-test was delivered at the first time before the researcher has applied the treatment in

both experimental and controlled class. Due to this, there are several benefits associated with pretesting including that the use of a joint pretest allows researchers to analyze differences that may initially exist between control and experiment groups which then allows researchers to adjust for such differences (Green, Camili, and Elmore, 2006). Another benefit of pretesting was that such a test can show the magnitude of differences between control and treatment groups since researchers typically assume that differences between groups can be identified with pretests. This assumption requires that researchers look specifically at the size of the difference of pretest scores. Smaller differences in pretest scores indicated that they existed between control and treatment groups. Finally, pretesting also assists researchers while they statistically analyze data.

Post-test

The purpose of post-test was to see whether mind-mapping had an effect on students' descriptive writing skill or not. Post-test was held as the final test after the researcher has applied the treatment. Each test was arranged into two items of writing paragraphs taken from some participating students' English books. Therefore, groups were differed at skill level. The ultimate goal of quasi-experiment was used as non-equivalent samples and, thus, post-test design was employed to compare its results with the pre-test scores within the control and treatment groups.

Interview for Teachers

The main objective of the interview was to find out the major problems that teachers faced (if any) in teaching descriptive paragraph writing and the teachers' attitudes towards mind mapping on descriptive paragraph writing activities during the experiment. Kumar (1999:109) stated "interview is person to person interaction between two or more individuals with a specific purpose in mind." Interviews vary in type from structured, which is organized in advance by the interviewer, to unstructured, in which the respondents discuss freely without much interruption from the interviewer. In this study, a semi structured interview was conducted with two English teachers for one hour each, who participated in the main study.

Procedure for Data Collection

This study focused on students' achievement of writing skills in descriptive text. After preparing the manual, and providing orientation in the first meeting, the pre-test was given to get students' background knowledge and then the two raters participated in correcting the tests. Next to providing the pre-test, the students were grouped into two independent groups, by taking the half of the low, middle and the higher achievers through systematic random sampling. In the second meeting, the students were taught about writing a paragraph through different treatments. The experiment class was taught through mind mapping technique whereas the controlled class was taught by expository technique. Giving the treatment, the students in each class answered questions related to the text. This helped to know that students improved in their writing achievement after using mind mapping than while using expository. Thus, the post-test was administered to check whether students' achievement of writing a paragraph has increased or not.

Method of Data Analysis

The data were used to find out the differences of students' achievement in experimental class and in controlled class. In line with this, the researcher used descriptive statistics

through paired t-test and independent t-test. Because paired-samples t-tests compared scores on two different variables but for the same group of cases; independent sample t-tests compared scores on the same variable but for two different groups of cases and SPSS was used to calculate the correlation of the scores collected by the two raters. According to Sudijono (2006:314) it is used to examine the significance difference of students' writing a descriptive paragraph achievement between experimental class and controlled class.

Validity and Reliability

It is evident that the concept of reliability and validity is central when considering a research instrument. According to Selinger and Shohamy (1989:184), "Reliability provides information on the extent to which the data collection procedure elicits accurate data; validity provides information on the extent to which the procedure really measures what it is supposed to measure. In testing writing skills, a test should first be reliable as a measuring instrument; therefore, an attempt was made to consider test reliability." In order to achieve this, the test was administered to the same group with no language practice taking place. This is because a test must be consistent in its measurement without any language input given. In this study, the researcher considered test reliability for the pre and post-tests prepared during the pilot study.

Weir (1990:39) stated, "The pilot test should undergo a further validation check at this stage by inviting professionals in the field (language and subject) to comment on the suitability of texts, formats and items." Furthermore, in preparing the pre-and post-tests, the researcher has consulted different books on testing (for example, Weir, 1990; Heaton, 1991). Finally, the tests were scrutinized again and approved for testing that was later administered.

Results

The main purpose of this study was to find out whether or not mind mapping could enhance students' descriptive paragraph writing abilities. To answer this question, the two groups identified as control and experimental group were subjected to tests on two occasions. One was pretest, in which both the control and the experimental group subjects took a test before interventions were made. The post-test was also conducted with both the control and the experimental group subjects after the experimental group subjects were treated with the independent variable, mind-mapping. On each test occasion two raters scored students test papers. Then, the average of the two raters for the pretest and the post-test for the control and the experimental group subjects were taken and treated using independent and paired samples of t-tests.

Table 1: Pre Independent t-test on Students' Descriptive Paragraph Writing Results

| Group | N | M | SD | Std. Error difference | D/f | T | Sig. |
|--------------|----|-------|------|-----------------------|-----|-----|------|
| Control | 50 | 23.07 | 7.53 | 1.39 | 98 | .34 | .737 |
| Experimental | 50 | 23.54 | 6.35 | | | | |

*Significant at the level of 0.05

As the above table shows that there is no statistically significant difference in descriptive paragraph writing test scores as indicated between the mean of the control and the experimental group at (M=23.07 and 23.54) respectively. Hence, the independent t-test result confirmed that $P=.737 > .05$. This shows that the two groups had no prior descriptive paragraph writing score difference and therefore, they are comparable. Related to this,

Peterson and Snyder (1998) discovered that the mind-mapping technique had several benefits in helping students build an understanding of basic social science thinking. Mind-mappings allowed students to literally “see” the independent, dependent and intervening variables involved in a social problem, and they also promoted critical thinking.

To determine if the intervention had made a difference, an independent t-test was conducted in the post-test using the mind mapping techniques in the descriptive paragraph writing for the experimental group, and using conventional way of teaching for the control group students.

Table 2: Post Independent t-test on Students’ Descriptive Paragraph Writing Results

| Group | N | M | SD | Std. Error difference | D/f | T | Sig. |
|--------------|----|-------|------|-----------------------|-----|-------|------|
| Control | 50 | 22.01 | 7.34 | 1.52 | 98 | -3.96 | .000 |
| Experimental | 50 | 28.03 | 7.84 | | | | |

*Significant at the level of 0.05

As table 2 indicates, there is statistically significant difference in descriptive paragraph writing test scores between the control and the experimental group at level $P = .000 < 0.05$. This shows that the experimental group subjects have higher mean score on the test. Thus, post-test scores were found to be indicating that the Experimental group made statistically significant improvement over its post-test compared to the control group. Therefore, the findings of the tests seem to indicate that the experimental group benefited greatly in improving mind mapping technique on descriptive writing. The researcher believes that since Grade 11 students are preparing themselves for universities and colleges, they need to improve their writing.

In this connection, Holland et al (2003) found mind mapping to be a useful technique for helping students to plan and structure their essays and projects more effectively. Students were able to improve the structure, coherence, and consequently, the quality of their written work and were able to draw value from the technique for project managing practical work. Likewise, Steele (2004:1) describes “mind mapping as a diagram used for linking words and ideas to central key words. It is used to visualize, classify, structure, and generate ideas”. Moreover, mind mapping is ideal for English writing experience, especially for pre-writing activity, in which students expand and explore their ideas about the topics that are going to be written. In relation to this, Gerson (1993) says that mind mapping is an excellent prewriting technique because it easily allows students to gather information and develop their thought. It also helps students determine if they have omitted or included any irrelevant ideas.

In sum, mind mapping works well as prewriting technique since its visual design enables students to see the relationship between ideas and in expressing their ideas in the form of descriptive paragraph. Based on the statements above, the writer assumes that teaching writing through mind-mapping can play central role in English written language for organizing ideas in writing descriptive paragraphs. Hence, the findings of the tests facilitate students’ development of writing accuracy which they need for university entrance examination and other proficiency tests.

Table 3: Pre-post Paired T-test Students' Descriptive Paragraph Writing Results

| Test occasion | N | M | SD | Std. Error difference | D/f | T | Sig |
|---------------|----|-------|------|-----------------------|-----|-------|------|
| Pre-test | 50 | 23.54 | 6.35 | .91 | 49 | -4.93 | .000 |
| Post-test | 50 | 28.03 | 7.84 | | | | |

*Significant at the level of 0.05

As the results of paired T-test show, there is a difference between the means of the pre-test and post-test results of both variables in the experimental group and the difference is significant at the level of $P=.000 < 0.05$. Such a significant difference between both dependent variables is beneficial to the post-test, while such a difference in the control group is not significant. To clarify, it should be pointed out that improvement in the test scores in the experimental group is apparent. This shows that the experimental group subjects performed better in the post-test than on the pretest on the descriptive paragraph writing test. Thus we can conclude that mind mapping has a positive effect on descriptive paragraph writing. In line with this, Boyson (2009) states that mind mapping technique can boost teaching confidence and facilitate the smooth running of lessons. As a study by Polsen (2003/2004) indicated, it is proved that using mind-mapping as a pedagogical strategy led to improvements in pupils learning. This was primarily built on helping them to develop sound categorization skills and then supporting them in depicting this information within a visual format. In relation to the opportunity, students get in practicing the selected mind mapping techniques, both the teachers confirmed that students had the opportunity in using mind mapping in their descriptive paragraph writing.

As shown in the qualitative data, the main objective was to find out teachers' attitudes towards the mind mapping on descriptive paragraph writing activities prepared for this study. Regarding the effect of mind mapping on students' descriptive paragraph writing, the two teachers reported that mind mapping technique helped students to improve their descriptive paragraph writing.

The other interview questions presented to both the teachers lie on the problems that teachers encounter while teaching during the experiment. In line with this, teachers mentioned that students were not accustomed to working in groups; they also reported that the students' lack good language background. Moreover, large class size was the other challenge for the teacher to interact with individual and the whole class of students. Finally, teachers reported that though mind mapping technique is a new technique, it was helpful for students in improving their writing. They further said that this technique should start in the elementary school itself.

Discussion

The main purpose of the experiment was to find out if mind-mapping could enhance students' descriptive paragraph writing skills. In this study, a pre-test was given before the experiment began for both the control and the experimental groups. This indicated that there is no statistically significant difference in descriptive paragraph writing test scores between the control ($M=23.07$, $SD=7.53$) and the experimental group ($M=23.54$, $SD= 6.35$), $t(98)=.337$, $P=.737 > .05$

The statistical findings regarding the effect of mind-mapping on students' descriptive paragraph writing skills were found to be statistically significant at $p = .000$, which is < 0.05 . After the students in the experimental group were taught for 6 weeks using the mind-mapping in descriptive paragraph writing activities., and using conventional grammar exercises of the grade eleven textbook for control group, again a post-test was given for both groups in order to see if there was any significant difference in the grammatical accuracy in the paragraph writing produced by the control and the experimental groups. An Independent t-test was used to compare the average scores of the two groups and the result showed a significant difference in performance between the two groups favoring the experimental group in mind mapping descriptive paragraph writing. In line with this, Li, Yang and Chen (2010) stated that mind mappings are commonly used for note making, creative thinking, report writing and decision making in education sector. According to Gardner (1985), there are many techniques applied by multiple teachers around the world. Some Mind mapping have also been applied for the enhancement of the areas related to vocabulary, grammar, and mechanics; and the Mind-mapping techniques.

The results of the statistical analysis of the independent sample test in the post-test showed that the students in the experimental groups improved mind mapping on students' descriptive paragraph writing in all cases at ($P = .000$, which is < 0.05) level of significance. This implies that mind-mapping techniques did improve the students' descriptive paragraph writing abilities. On the post-test there is statistically significant difference in descriptive paragraph writing test scores between the control ($M=22.01$, $SD=7.34$) and the experimental group ($M=28.03$, $SD= 7.84$), $t(98)=-3.96$. This shows that the experimental group subjects have higher mean score on the test. Thus, post-test scores were found to be statistically significant indicating that the experimental group made improvement over its post-test compared to the control group. Related to this, Buzan (1993) describes mind-mapping as a representation of cognition and comprehension and as an excellent way to help the learners to express themselves both verbally and visually. Indeed, in their mind map, learners may use graphic representation which may help in the brainstorming process.

This shows that although the control groups were taught grammar items appended to the Grade 11 textbook (English for Ethiopia), they did not improve their grammatical accuracy in their post-test results. On the other hand, the experimental groups performed better in post- as a result of practicing mind mapping on students' paragraph writing.

The two teachers involved in the main study were interviewed to know whether mind-mapping techniques helped the students to improve descriptive paragraph writing. Both teachers reported that integrating skills with writing activities helped their students to improve descriptive paragraph writing. They also noted that integrating grammar with mind mapping descriptive writing is an essential way to improve students' writing.

As indicated above, the teachers on their part suggested that the mind-mapping techniques were very helpful for their students in developing their descriptive paragraph writing skills. However, teachers reported some problems they encountered during the experiment. For instance, the teachers stated that the large class size created a problem during the experiment. As a result of all these, students could see some improvements in mind mapping descriptive paragraph writing abilities. They also stated that this technique was helpful for their students in improving their writing. The teachers pointed out if this technique was started in the elementary school, it would be more helpful for improving the students' writing because they can learn a lot by practice. It is obvious that learning is more effective by a lot of practice. It could also help them develop confidence and partici-

pate actively in any activity given to them.

Conclusions

The results of the post-test experimental section demonstrated that there was a significant difference in the grades of the students' descriptive writing that were taught through the mind-mapping than those who learned through conventional techniques. From the findings, it also became evident that students' showed a significant improvement in the use of cohesive devices, grammatical accuracy, sequential patterns, and organized ideas which ascertained the role of mind-mapping techniques in writing descriptive paragraph. From the results of the pre-and post-tests and teachers' responses to the interview, it was reasonable to conclude that integrating mind-mapping skills with descriptive writing activities is valuable in improving students' overall writing skills. It was also proved that students were involved in pair and group to brainstorm using how they could use the mind-mapping in their process paragraph writing.

Based on the above concluding statements, the following recommendations are drawn. Teachers can use mind-mapping strategy in teaching writing since the results of this research show significant increase on students' writing ability. In addition, the EFL teachers should use Mind-mapping in the pre-writing phase during the teaching of paragraph writing process. Moreover, teachers should make their students use mind-mapping independently to construct their own ideas on different topics so that they realize the power of this tool.

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