# The Effect of Using Brainstorming Technique on the Essay Writing and Self- regulation Learning of the Iraqi Secondary Students

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## ABSTRACT

This study investigated the effect of using brainstorming as a teaching technique on the students' performance in writing different kinds of essays and self regulation among the secondary students. The total population of this study, consisted of (51) female students of the $5^{th}$ Secondary grade in Al –kawarzmi School in Erbil during the academic year 2015-2016. The chosen sample consisted of 40 female students, has been divided into two groups. Each one consists of (20) students to represent the experimental group and the control one. Brainstorming technique is used to teach the experimental group, and the conventional method is used to teach the control group. The study instruments used for collecting the data are an essay writing test and Academic Self-regulated Learning Scale. The performance on an essay writing task and Academic Self-regulated Learning Scale has been taken into account as the pretest and posttest in both groups. The validity and reliability of the study instruments are acceptable. T-test formula is used to analyze the data collected. The analysis results show that the experimental group's performance and self- regulation are significantly higher than the performance and self regulation of the control group at (0.05) level of significance. Therefore, the brainstorming teaching technique significantly affects the students' performance in writing essays and self- regulation.

## I. Introduction

Writing is the most difficult skill in the learning process. There are many problems faced by students in writing who occasionally complain that they lack ideas when sitting down to write about a certain topic. Some of the students are unable to express their feelings or ideas in writing as an important tool for communicating with other students (Mc Crimmon,1988:56). Moreover, teachers exert much effort and waste half the class time telling students what to write. Most of the students are not able to write successfully. Their lack of grammar and vocabulary is behind their inability to use their own language appropriately. Bereiter &Scardamalia (1987: 12) state that the writer engages in "a two-way interaction between continuously developing knowledge and continuously developing text". Teaching writing means teaching students different components such as reading, grammar, punctuation, and etc. As Myles (2002:1) states, "it is undoubtedly the act of composing, though, which can create problems for students, especially for those writing in a second language in academic contexts. Formulating new ideas can be difficult because it involves transforming or reworking information, which is much more complex than writing as telling".

The problem resides in the teaching technique. The researcher as a teacher of English notices that the English teachers do not use the proper technique of teaching writing effectively. They use a conventional method and tell their students to write a certain text based on the material given by the teacher. The teachers do not pay any attention to the students' feeling and the learning process is boring. Due to this gap between the students' needs and interests on one hand and the teachers' teaching technique on the other hand, a brainstorming in essay writing has been suggested.

Incorporating brainstorming techniques in teaching writing can help students in many ways. First, they are taught to identify the problem, find the best solutions to that problem and evaluate these solutions. Next, they make effective planning, writing, revising and editing skills to enhance their understanding of the writing process. Finally, they are equipped with techniques designed to instill self regulation in students as writers in which they are taught how to monitor (assess) and manage (self-regulate) their own writing. Consequently, the researcher is inspired to study the effect of brainstorming as a teaching technique on Iraqi students' performance in writing different kinds of essays and self- regulated learning. The present study is an attempt at filling this gap in Iraqi secondary students' essay writing performance and increasing their self- regulation in writing.

The basic aim of this study is to know whether or not there are significant effects of using Brainstorming teaching technique on the Iraqi students' performance in writing essays and self- regulated learning.

## 1.1 Questions of the Study

In light of the preceding discussion, this study aims to illuminate the following research questions:-

1. Is there any statistical significant difference ($\alpha=0.05$) between the average performance test scores of the female students in the experimental group and control group attributed to the teaching technique (brainstorming vs. conventional)?

2. Is there any statistical significant difference ($\alpha= 0.05$) between the average self-regulated learning scores of the female students in the experimental group and control group attributed to the teaching technique (brainstorming vs. conventional)?

## 1.2 Hypotheses of the Study

1. There is no statistically significant difference between the mean scores of the experimental group, which is taught by the brainstorming teaching technique and those of the control group, which is taught conventionally in the essay writing performance of the post- test.

2.There is no statistically significant difference between the mean scores of the experimental group, which is taught by the brainstorming teaching technique and those of the control group, which is taught conventionally in the post-administration of the academic self- regulated learning scale.

## 1.3  Operational Definitions of Terms

- Technique is defined as a particular strict and stratagem, that can be used to accomplish an immediate objective (Anthony,1963:64).

 - Essay writing: the researcher defines essay writing as a piece of coherent and unified composition that involves the writer in a mental process throughout various stages of brainstorming, outlining, drafting, revising, editing and evaluation.

- Brainstorming is "a group creativity technique designed to generate a large number of ideas to solve a certain problem" (Ibnian, 2011:266).

 - Self-regulated learning: the researcher adopts Pintrich& Zusho's definition who regard self-regulated learning as a "constructive process in which learners set goals for their learning and monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features of the environment" (Pintrich& Zusho, 2002: 64).

## 1.4 Limits of the Study

The present study is limited to:

1. Using the brainstorming technique in teaching different types of essay writing in the prescribed textbook "English for Iraq, 5th Preparatory Student's Book " by Olivia Johnston and Mark Farrell.
2. the Iraqi female students of the 5th Secondary grade in Al –kawarzmi School in Erbil during the academic year 2015-2016.

## 2. Conceptual Framework& Pervious Studies

### 2.1 Brainstorming

Writing process in a classroom falls into three basic writing stages: pre-writing, writing, and post-writing (Seow, 2002:316). Pre-writing represents the learner's thinking about a certain topic using various techniques that precedes the actual process of writing a draft. The pre-writing techniques such as (brainstorming, freewriting, listing, clustering, questioning and outlining) are needed to write unconfused text (Daniels, 2012:1). In this stage, writers exert an effort to establish "their purpose of the work and their audience for whom it will be written, generate ideas for the topic and write an outline for the piece"(Wilson, 2013:7).

Brainstorming means generating and flowing ideas spontaneously in one's mind before the actual process of writing. Some ideas can be kept to be useful in writing whereas others can be eliminated (Ledbetter, 2010: 18; Stanley et al., 1992:234). It is highly effective in generating ideas in writing. In addition, McDowell (1999:5) defines brainstorming as " the act of defining a problem or idea and coming up with anything related to the topic – no matter how remote a suggestion may sound. All of these ideas are recorded and evaluated only after the brainstorming is completed". Brainstorming is a vital technique in teaching students how to write ideas without worrying about grammar, punctuations, spellings, and sentences. The student's job is to record their ideas as they enter their mind (Ploeger, 1999:5 as cited in Effendi et al., 2014:2). Openness is the most important quality of a brainstorming session. Without fear of criticism, the students share their thoughts (Nordquist, 2014:1).

## 2. 2 The Procedures of Using Brainstorming Teaching Technique

Brainstorming is a technique used by a group in which the members attempt to solve a specific problem through the process of generating ideas spontaneously. As a technique, brainstorming activates ones' imagination or creativity (Hollingsworth, 1991:109). However, there are three stages to achieve brainstorming and activate student's mental abilities, namely problem identification, idea generation and idea evaluation.

In setting up a brainstorming session, Hollingsworth (1991) asserts that there are many steps involved in three stages, they are as follows:

The first stage - problem identification, is the approach to generating a great number of ideas, as in the following steps:

- The teacher should select a specific problem not a general one. A well designed challenge is a good opportunity to generate lots of successful ideas in an attempt to solve it (Hollingsworth, 1991:111).

- The teacher should present a problem by activating students' prior knowledge to generate more ideas about it and by making questions of what, why, where, when, who and how. Viewing the problem from all angles, enables students to storm their brains easily (Alrubaie &Daniel, 2014:47).

In the second stage, the actual brainstorming for the generation of solutions (ideas) will take place as in the following steps:

- The right brain (divergent thinking) of learners is activated to generate and synthesize a set of potential solutions to the problem by making connections between new knowledge with old knowledge (DeHaan, 2009:174).

- Criticism should be minimized by encouraging students to  generate lots of ideas creatively and drawing upon one another's ideas in group brainstorming session.

- Quantity is highly wanted to get more ideas. Students are encouraged to think freely in their attempts to see different perspectives and to imagine new possibilities.

- Security should be maximized without any critical evaluation of students' wild ideas.

Finally, the evaluation of ideas as a third stage is stated in the following steps:

- The students agree on certain ideas as potential solutions for the problem.

- Each idea is analyzed and evaluated by students to determine the useful or effective ideas in some way by employing critical thinking abilities (convergent thinking).

- The teacher and the students identify certain criteria for judging the ideas. They give each idea a score of 0-5 points depending on how well it meets each criterion. These criteria start with the word "should", for example, "it should be workable ", "it should be useful". The best ideas would be selected as the best solutions to the problems (Finney, 2008 :25-26).

## 2.3 Essay Writing

The aim of writing essays on a certain topic is to present a short literary composition expressing a personal view or experience in three parts : "(1) the introduction (the main points that will be discussed known as the thesis statement of the essay ), (2) the body (the supporting ideas and details found) and (3) the conclusion (the summarization of what has been expressed in the body of the essay and presenting the writer relevant final thoughts)" (Ibnian, 2011:264). An essay might discuss, describe or analyze a topic. An essay allows learners to develop ideas and arguments using a logical sequence of interrelated paragraphs (McLaren, 1995:7). Essay writing is considered a unique way of learning because it involves an-active (learning "by doing"), iconic (learning "by depiction in an image") and symbolic learning (learning" by restatement in words"). Essay writing can help learners in: (a) engaging them in critical thinking, (b) seeking information more deeply into a particular subject, (c) using technical or specialist terminology, (e) expressing their thoughts in a logical way, and (f) discovering more knowledge by making a great deal of researching (Soles, 2010:10).

## 2.3.1 Types of Essay

Ibnian (2011:264) states that the major types of essay writing are: expository essay, descriptive essay, argumentative essay and narrative essay.

**a**. Expository Essay is a genre of essay that can be made by investigating a certain idea, evaluating evidence and setting forth an argument concerning that idea. Thus, many devises such as comparison and contrast, definition, the analysis of cause and effect can be used to accomplish this genre (Ibnian, 2011:264). It is very important that the writer's tone be reasonable and that his/her presentation be factual and believable (Soles, 2010:7).

**b**. Descriptive Essay is a genre of essay by which the student describes something. It may be a person, place, object, experience, emotion, situation, etc. (Ibnian, 2011:264). This genre allows for a great deal of artistic freedom. To create an image that is vivid and moving in the mind of the reader is the goal of this genre (Soles, 2010:9).

**c**. Argumentative Essay is a type of essay in which the writer's job is to convince the reader of his / her opinion through various logical and practical examples (Ernest& Zac, 2014:2; Ibnian, 2011:264).

**d**. Narrative Essay is a type of essay about the writer 's personal experience, life-shaping event, or simply daily experience in which he tells a story and expresses himself in a creative, quite often, moving ways. The narrative essay is conversational in style to make incidents alive for the reader and convey a particular mood (ibid.).

## 2.4  Self-regulated Learning

Self-regulation is defined as a "proactive processes that students use to acquire academic skill, such as setting goals, selecting and deploying strategies, and self-monitoring one's effectiveness, rather than as a reactive event that happens to students due to impersonal forces" (Rosen et al., 2010:70). Chung (2000: 56) defines self-regulation as the situation when learners, as masters of their own learning, monitor their academic goals and motivations for themselves, manage human and material resources, and become subjects of decisions and performances in learning process. The self-regulated learner is characterized by his ability to set goals for extending knowledge and sustaining motivation (Winne, 1995: 173). Furthermore, self-regulation reflects emotional and cognitive development in learners. This level of development in learners is characterized by :

"*the ability to communicate socially;

*the possession of good meta-cognitive skills;

*trust in self and others; and

* setting and pursuing goals to tolerate frustration and  agree with reality by managing the multiple demands of life (work, interpersonal relations, value formation), and thinking abstractly" (Leaver et al., 2005: 203).

Self-regulated learning plays an important role in developing the skills involved in the writing process "i.e. planning, writing, revising and editing" (Harris et al., 1997: 5) and enhancing the quality of the text created by learners (Zimmerman& Reisemberg, 1997: 76).

## 2.4.1  Components  of Self- Regulated Learning

Self-regulated learning is consisted of  three basic components: motivation, cognition, and meta-cognition. Motivation is one's beliefs and attitudes that highly affect his use of

cognitive and meta-cognitive skills. Cognition means learners' skills necessary to "encode, memorize, and recall information". On the other hand, meta-cognition are skills that enable learners to monitor their cognitive processes (Schraw et al., 2003: 1088). The strategies used by students to promote self-regulated learning in classrooms, fall into four major categories: motivational, cognitive, meta-cognitive and resource management strategies (Kobayashi & Lockee, 2008:33-35).

### 2.4.1.1 Motivational Strategies

Motivational strategies are essential to enhance and sustain students' motivation and their engagement in academic tasks (Wolters, 1999:282). Goal setting and self-consequencing are two important motivational strategies that can be used to develop and maintain self-regulation (Dembo, 2004:10). Goal Setting is the process of deciding on a specific objective and then exerting the appropriate effort to achieve the desired result (McCarthy, 2011:104). The arrangement of rewards or punishments for success or failure on an academic task is the essence of self-consequencing (self-reinforcement) (Schunk, 2012:405).

### 2.4.1.2 Cognitive Strategies

According to O'Malley& Chamot (1990: 1), cognitive learning strategies are "special thoughts or behaviours" that enable individuals to comprehend, learn, or retain new information. To enhance memory, the basic cognitive strategies such as, "rehearsing, elaborating tactics, and organizing information" can be used by students (Weinstein& Mayer, 1986: 317). For rehearsing material, students may resort to cognitive strategies such as "underlining, summarizing and repeating information" (Schunk &Zimmerman, 2003: 62). Furthermore, "visual imagery, mnemonics, questioning, and note taking" are successful strategies to learn meaningfully (Weinstein & Hume,1998: 32). Outlining and concept mapping are two of the most important high level organization strategies that can be used be learners to retain information effectively (Tay, 2013:231).

### 2.4.1.3 Meta-cognitive Strategies

Metacognitive strategies in self regulated learning generally include the following basic strategies (Ghazi et al., 2013:99).

a. Planning

Planning is an essential process for making persons more organized before the engagement in learning tasks (Levav & Gavan, 2006: 209). How to set goals and activate prior knowledge are in the essence of planning (Schraw et al., 2003:1090). Besides, self regulation can be facilitated by converting an abstract goal into more concrete steps toward implementing a goal, making such actions more accessible and easier to self-monitor (Townsend & Liu, 2012: 688-689).

b. Self-Monitoring

Students as self-regulated learners, set their own learning goals, plan how to meet these goals, concentrate on the task at hand, and use  of learning strategies to enhance their understanding of material (Zumbrunn et al., 2011: 12).

c. Self-Evaluation

Self-evaluation is highly associated with self-monitoring in which the person makes a comparison between some dimension of his/ her behaviour and some criteria. The dimension to be evaluated may take the  form of "(a) accuracy of self-monitoring, (b) improvement or performance over time, and (c) the overall performance for one specific session" (Mace et al., 2001: 64).

## 2.4.1.4  Resource Management Strategies

Generally, resource management strategies are used to control study environment, social environment, and time (Garcia & Pintrich, 1994: 128). They involve the following:

a.  Study Environment Management Strategies help students to identify different types of distracters that interfere with attention and concentration in their attempt for regulating study environments and classifying distracters as internal or external (Ottens, 1991: 231).

b. Social Environment Management Strategies include help-seeking (Peers' feedback) and modeling (watching others modelling certain learning tasks). These strategies are related to an individual's ability to determine when he/she needs to work alone or with others, or when it is time to seek help from instructors, or nonsocial resources such as reference books (Judd, 2005 :11).

c. Time Management Strategies involve scheduling, avoiding procrastination, and prioritizing activities (Andrade, 2012:122). For achieving better academic achievement, learners must manage their time well to attain higher self-esteem, and a greater sense of competence unlike those who do not (Zimmerman et al., 1994:190).

## 2.5  Previous Studies

Maghsoudi & Haririan (2013) investigates "the effect of using brainstorming strategy on EFL learners' writing performance". A sample of eighty four Iranian EFL intermediate students was distributed into two groups (experimental and control) and then these groups were exposed to pretest and posttest in writing. As a result, the  experimental group's scores on the post test was significantly higher than that of their scores on the pre-test. Consequently, the results revealed that the brainstorm strategy had a significant influence on the students' performance in writing and made them more responsible for their own learning.

The study of   Fransisca& Zainuddin (2012) investigates the "effect of using brainstorming as a teaching technique on the students' achievement in writing descriptive paragraph". 60 students were selected and distributed into two groups  (experimental and control). An achievement essay writing was used for collecting data. The study results reveal that brainstorming technique has a positive influence on the students' achievement in writing.

The aim of Amoush 's study (2015) is to identify the effect of applying the brainstorming strategy on improving writing performance of English Major Students. A sample of 80 students was divided into experimental and control groups. Writing an essay is a main instrument for collecting the data. The analysis by using t-test showed that the experimental group's performance (taught by brainstorming) was significantly higher than the performance of the control group. The study results showed the positive effect of using brainstorming strategy on improving writing performance of English Major Students in Jordan.

The study of Manouchehry et al. (2014) investigates the impact of using heuristics and clustering  as two main brainstorming strategies on EFL learners' writing performance. 60 Iranian EFL intermediate students were divided into two experimental groups and one control group. Writing an essay was used as a pretest and posttest for the three groups. The students in the experimental groups perform on the posttest higher than the students of  a control group on the same posttest. As a result, the use of brainstorm strategies had a positive influence on the achievement of EFL learners in writing essays.

## 3. Methodology

A semi-empirical procedure is used to achieve the aims and verify the hypotheses of this study.

### 3.1  Experimental Design

This study has a quasi- experimental pretest-posttest control group design in which two classes were chosen, one class served as an experimental group and one as a control. The main goal of this research is to determine the effect (brainstorming technique &conventional one) on the students' writing essays and self regulated learning under study. For the purpose of this study, all subjects completed the same writing task and the same scale of academic self regulated learning before the study and one week later at the end of the study. The control group was taught according to the traditional product based approach in which the students are provided with practice for producing simple and complex sentences, and constructing paragraphs by expanding an outline or summary provided. However, brainstorming as a teaching technique is used to teach the experimental group with different procedures in which the student's thinking is stimulated to create and organize ideas, and to compose the raw materials into a text (see Table 1).

**(1): Experimental Design**

**3.2**

| Groups | Dependent Variables<br><br>Pre-test | Independent Variables | Dependent Variables<br><br>Post-test |
|---|---|---|---|
| Experimental | Essay Writing Test | Brainstorming | Essay Writing Test |
| Control | Academic Self-regulated Learning Scale | ———— | Academic Self-regulated Learning Scale |

## Population and Sample of the Study

The total number of the 5th secondary students' population is (51) students, and a sample of (40) female students of the 5th secondary grade has been selected from two classes enrolled in the English course for the 2015–2016 academic years in Erbil. The age levels of the students ranged from 17-18. The average age of students was 17 years old. This sample has been intentionally selected from Al- Khwarizmi school due to the fact that the researcher is a school staff member, a status which is likely to facilitate the process of conducting the experiment of the study.

The researcher has selected randomly section (A) which includes 25 students to be the experimental group, and section (B), which includes 26 students to be the control group. After excluding students who had previous experience for statistical purposes, i.e., repeaters, each group is left with 20 students. Thus, the total number of the sample is 40 students (see Table 2).

**(2): The Sample of the Study**

| Groups | Section | Number of Students before Exclusion | Number of Excluded Students | Number of Students after Exclusion |
|---|---|---|---|---|
| Experimental | A | 25 | 5 | 20 |
| Control | B | 26 | 6 | 20 |
| Total | | 51 | 11 | 40 |

**3.3 Equivalence of the Samples**

To achieve equalization between the two groups, the age of the female students has been calculated by months. Raven's intelligence test of the progressive matrices is used to find out the intelligence of both groups. Furthermore, to equalize students in the previous knowledge, a multiple choice item test has been constructed and its validity and reliability have been verified by the researcher. Additionally, the students' average scores in the previous year have been taken from the school manager. Also, the academic self regulation scale has been administered. Therefore, the variables (age, intelligence, previous knowledge, total average in English courses of the students during the academic year 2014-

2015 and the pre- test of the academic self- regulation have been controlled for both groups as shown in Table 3.

**(3): Means , Variance and T -Value of the Five Variables**

| Groups / Variables | Experimental 20 Students | | Control 20 Students | | T- Values | | Significance |
|---|---|---|---|---|---|---|---|
| | Mean | Variance | Mean | Variance | Tabled | Com-puted | Level at 0.05 |
| Age | 199.9 | 166.9 | 197.1 | 132.8 | 2.02 Degree of freedom 38 | 0.705 | Not Significant |
| Intelligence | 35.325 | 22.345 | 35.878 | 28.122 | | 1.339 | not Significant |
| Previous Knowledge | 13.9 | 9.84 | 12.8 | 9.76 | | 1.07 | Not Significant |
| Total Average | 61.9 | 177.5 | 62.7 | 152.2 | | 0.192 | Not Significant |
| Academic self regulation | 173.2 | 1430.8 | 171.9 | 1392.1 | | 0.107 | Not Significant |

## 3.4  Instruments of the Study

The instruments for data collection include the following:

### 3.4.1  Essay Writing Test

The purpose of this test is to measure the performance of the female students of the 5$^{th}$ secondary grade in writing different types of essays and to find out the effect of brainstorming as a teaching technique (see Appendix 1). Accordingly, the essay writing post-test has been conducted to both groups of students, i.e. the control and the experimental.

The topics of the essay test have been chosen from the textbook. After studying a number of analytical scoring schemes used in the field of study and consulting specialists in the field, the researcher has constructed an essay scoring  scheme (see Appendix 2). To obtain objectivity and reliability of the test, the score distributed on five dimensions according to the analytical scoring scheme designed by the researcher drawing on the relevant literature. The rating was assigned for five criteria: organization and cohesion, style, language usage, mechanics and vocabulary. The entire test has been scored out of (60). Each question in the test is given 20 scores. Each dimension in the scoring scheme is given 4 scores.

### 3.4.1.1  Face Validity of the Essay Writing Test

To achieve an acceptable level of face validity, the test and the scoring scheme have been exposed to a number of experts in the fields of ELT and Linguistics. They have been requested to give their agreements and make any necessary modifications concerning the test and the scoring scheme. In the light of the experts' views, the test and the scoring scheme are judged as being valid for measuring the essay writing performance of the

students by using the percentage of agreement. It is found to be 100% agreement. The essay writing test has been administrated to (30) students chosen from the 5th secondary students in Erbil in order to ensure the clarity of the items and test instructions, and estimate the length of time required by students to work out the test items. The length of time needed by the students to do the test is found out to range between 45 to 55 minutes. It is also found out that no serious ambiguity is found concerning the topics of the essay writing test.

### 3.4.1.2 Test Reliability

One of the characteristics of a good test is reliability. Since scoring of a written test is subjective, the test has been applied to a sample of (50) female students enrolled in Al-Amal secondary school in Erbil. Three methods have been applied to ensure reliability:

1. Alpha Cronbach Formula is used to calculate the internal consistency among the (15) components of the test (each type of essay with five components). The result has shown that the reliability coefficient is 0.94.

3. Interscorers reliability method is applied where two trained scorers have been requested to score the test. The result of using Pearson Correlation formula has shown that the reliability coefficient is 0.90.

2.Intrascorer reliability is also applied when the researcher herself has scored the students' responses to the test items twice with a time interval of two weeks. Using Pearson Correlation formula, the reliability coefficient is 0.91.

### 3.4.2 Academic Self-regulated Learning Scale (for Writing Task)

Drawing on the model of Zimmerman & Martinez-Pons (1986; 1988), Academic Self-regulated Learning Scale was constructed by Magno (2009). A 55 item scale has been used to measure students' academic self-regulation under seven constructs "Memory strategy, goal-setting, self-evaluation, seeking assistance, environmental structuring, responsibility, and organizing". The items reflect what the participants do before, during, and after writing any composition or essay in English. Each question was measured by using a 5-point Likert scale (1 = never) to (5= always). It is assumed that the higher the score, the stronger the respondent's self-regulated learning. The scale was completed by (40) secondary grade students in the experimental and control groups before and after the instruction had been completed. The self-regulated learning scale yields seven scores: an overall score and seven subscale scores.

### 3.4.2.1 Face Validity of the Self- regulated Learning Scale

In order to ensure the validity of the scale items, it has been exposed to a number of experts in Psychology and TEFL of Al-Anbar University and Kirkuk University, to judge whether the components of the scale are suitable or not. In the light of the experts' views,

the items of the scale are valid and reliable for the purpose of the study. 80% of the experts agree that the scale items are valid.

### 3.4.2 .2 Pilot Administration of the Self- regulated Learning Scale

The pilot administration of the scale is carried out to ensure the clarity of the scale's instructions, and to estimate the time needed for answering its items. The researcher herself explains the instructions to (30) students who are asked to identify the extent to which they agree or disagree with the scale items. Consequently, no serious ambiguity is found concerning the scale's instructions and items. It has been found that the suitable time to answer the whole items of the self-regulated learning scale is about (30) minutes.

### 3.4.2.3 Reliability

The reliability level of the scale items has been measured by using two methods: test-retest method and Alpha-Cronbach method. The scale has been administered to (30) students, randomly selected from the target population and then re-administrated to the same sample after two weeks. The reliability coefficient for the self-regulated learning scale is (0.90). The reliability of the separate scales are tested and reported respectively as Memory strategy (0.91); goal-setting (0.79); self-evaluation (0.80); seeking assistance (0.79); environmental structuring (0.80); responsibility (0.79); and organizing (0.80). Also, the acceptable value of Cronbach Alpha shows acceptable consistency of reliability, a total self-regulated learning (0.86). Thus, the scale items are completely appropriate for research goals.

### 3.5 Procedures of Collecting Data

After identifying the main topics on essay writing included in "English for Iraqi 5th Preparatory Students Book", the researcher reads number of previous studies on the application of brainstorming teaching technique. The researcher identifies the population and selects the samples on which instruments are applied. The test is designed by the researcher herself. Validity and reliability of the adopted Academic Self -regulated Learning Scale and questions of the test are verified.

Before the experiment, the students in the two groups are given the pre- test of essay writing and the Academic Self -regulated Learning Scale to measure their self - regulation for writing task. After that, the students participated in 16 thirty-minute study sessions, two sessions each week. Brainstorming teaching technique is used to teach the experimental group students. Both groups are taught by the instructor. A week after the instructional period, the students of both groups receive post-test of essay writing after sixteen sessions in order to observe the probable impact of brainstorming as a teaching technique on the students' performance in writing essays. Finally, both groups are also given the Academic Self -regulated Learning Scale after the experiment. Results are analyzed and the questions of the study are answered.

### 3.6 Final Administrations

After consolidating the clarity, validity and reliability of the study instruments, the researcher has administered them to the study sample. The students' responses have been assigned marks according to the options they chose. After that, the researcher has processed the data obtained statistically by the use of the computer (SPSS). The achievement test and the Academic Self -regulated Learning Scale have been applied on $3^{rd}$ April / 2016 to the study samples.

### 3.7 Statistical Tools

The statistical tools are used including arithmetic means, standard deviations, Pearson correlation formula, Cronbach Alpha, t-test for two independent groups, one way analysis of variance ANOVA, and Scheffe's test.

## 4 Study Results and Discussions

### 4.1 Results related to the First Question

In order to answer this question, the means, standard deviations and T- value of the post-essay test scores of the two study groups have been calculated as shown in Table (4).

(4): Means , Standard Deviations and T -Value of the post Essay Test for the Two Study Groups

| Groups | No. of Subjects | Mean | Standard Deviation | Variance | df | T Value* | | Significance Level at 0.05 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Com-puted | Table Value | |
| Experimental | 20 | 44.35 | 9.13 | 83.4 | | | | Significant |
| Control | 20 | 36.35 | 10.73 | 115.2 | 38 | 2.477 | 2.02 | |

Table (4) shows the means of the two groups' scores on the post-essay test as (44.35& 36.35). It is noted that there is a clear difference between the two means of the two groups. To find out the significant difference between the two means, t- test for two independent samples was applied. The computed T- value (2.477) is higher than the tabled t-test value (2.02) at 0.05 level of significance and under 38 degree of freedom. The result shows that there is a statistical significant difference between the two groups in the post essay writing test in favour of the experimental group. Thus, the first hypothesis is rejected. The result is in consistence with other studies of (Fransisca& Zainuddin,2012 ; Rao, 2007;Maghsoudi& Haririan, 2013;Amoush, 2015) which indicated a positive effect of using brainstorming in improving students' performance in writing. The study results are attributed to the positive influence of using brainstorming technique in which the students are aware of the cognitive aspects of writing different kinds of essays and this technique makes them more active.

### 4.2 Results related to the Second Question

In order to investigate the significant differences between the average self regulation scores of the female students in both groups, the means, standard deviations and T- value of the post- Academic Self-regulated Learning Scale scores of the two study groups have been calculated as shown in Table (5).

**(5): Means , Standard Deviations and T -Value of the post- Academic Self-regulated Learning Scale for the Two Study Groups**

| Groups | No. of Subjects | Mean | Standard Deviation | Variance | df | T Value* | | Significance Level a 0.05 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Com-pute | Table Value | |
| Experimental | 20 | 211.95 | 16.69 | 278.64 | 38 | 7.27 | 2.02 | Significant |
| Control | 20 | 173.10 | 16.24 | 263.7 | | | | |

Table (5) shows the means of the two groups' scores on the post- Academic Self-regulated Learning Scale as (211.95& 173.10). It is noted that there is a clear difference between the two means of the two groups. To find out the significant difference between the two means, t- test for two independent samples was applied. The computed T- value (7.27) is higher than the tabled t-test value (2.02) at 0.05 level of significance and under 38 degree of freedom. The result shows that there is a statistical significant difference between the two groups in the post- Academic Self-regulated Learning Scale in favour of the experimental group. Thus, the second hypothesis is rejected.

From this hypothesis, the following hypothesis have been derived " Is there any statistical significant difference ($\alpha$= 0.05) between the average self regulation scores for each domain of the female students in both groups attributed to the teaching technique (brainstorming vs. conventional)?

In order to find out the significant differences between the average scores of the two groups on each domain of the Academic Self-regulated Learning Scale, one way ANOVA for students' scores on each domain of the Academic Self-regulated Learning Scale has been used. Table 6 shows that there are significant differences at (0.05) level of significance between the two groups in the six domains of the Academic Self-regulated Learning Scale including memory strategies, goal setting, self-evaluation, seeking assistance, responsibility and organizing), whereas there is no significant difference at the (0.05) level of significance between the two groups in the fifth domain (environmental structuring) of the Academic Self-regulated Learning Scale and Table 6 shows the analysis results.

**(6) :One Way (ANOVA) for Students' Scores on Each Domain of Academic Self-regulated Learning Scale for the Two Study Groups (post Administration)**

| Domains | Source of | Sum of | df | Mean | F | Signifi- |
|---|---|---|---|---|---|---|

|  | Variance | Squares |  | Squares | Comput-ed Value | Table Value | cance |
|---|---|---|---|---|---|---|---|
| **Memory Strategies** | Between Groups | 670.355 | 1 | 670.355 | | | Significant |
| | Within Groups | 3548.42 | 38 | 93.38 | 7.28 | 4.1 | |
| | Total | 42187.775 | 39 | 763.735 | | | |
| **Goal-setting** | Between Groups | 133.225 | 1 | 133.22 | | | Significant |
| | Within Groups | 1111.75 | 38 | 29.26 | 4.55 | 4.1 | |
| | Total | 1244.975 | 39 | 162.485 | | | |
| **Self- evaluation** | Between Groups | 1040.4 | 1 | 1040.4 | | | Significant |
| | Within Groups | 4462 | 38 | 117.4 | 8.65 | 4.1 | |
| | Total | 5502.4 | 39 | 1157.8 | | | |
| **Seeking Assistance** | Between Groups | 265.225 | 1 | 265.225 | | | Significant |
| | Within Groups | 1960.15 | 38 | 51.58 | 5.14 | 4.1 | |
| | Total | 2225.375 | 39 | 316.805 | | | |
| **Environmental Structuring** | Between Groups | 72.9 | 1 | 72.9 | | | Not Significant |
| | Within Groups | 794.6 | 38 | 20.9 | 3.488 | 4.1 | |
| | Total | 867.5 | 39 | 93.8 | | | |
| **Responsibility** | Between Groups | 99.225 | 1 | 99.225 | | | Significant |
| | Within Groups | 896.55 | 38 | 23.59 | 4.206 | 4.1 | |
| | Total | 995.775 | 39 | 122.815 | | | |
| **Organizing** | Between Groups | 198,26 | 1 | 198.26 | | | Significant |
| | Within Groups | 978.95 | 38 | 25.76 | 7.696 | 4.1 | |
| | Total | 1168.21 | 39 | 224.02 | | | |

Table (6) shows that the computed F- value in the first domain memory strategies (7.28) is higher than the tabled t-test value (4.1) at the 0.05 level of significance and under (1, 38) degree of freedom. The analysis results concerning the second domain (goal setting) show that the computed F- value (4.55) is higher than the tabled t-test value (4.1) at 0.05 level of significance and under (1, 38) degree of freedom. With reference to the third domain (self – evaluation), the computed F- value (8.65) is higher than the tabled t-test value (4.1) at 0.05 level of significance and under (1, 38) degree of freedom. The obtained results concerning the fourth domain (seeking assistance) show that the computed F- value (5.14) is higher than the tabled t-test value (4.1) at the 0.05 level of significance and under (1, 38) degree of freedom. According to the results above, there are statistical significant differences between the two groups in the first four domains including (memory strategies, goal-setting, self- evaluation and seeking assistance) of the scale post- administration in favour of the experimental group.

As far as the fifth domain (environmental structuring) is concerned, the computed F-value (3.488) is lower than the tabled t-test value (4.1) at the 0.05 level of significance and under (1, 38) degree of freedom. Thus, no statistical significant difference is found between the two groups in the environmental structuring of the scale post- administration. Also, the computed F- value (4.206) in the sixth domain is higher than the tabled t-test value (4.1) at the 0.05 level of significance and under (1, 38) degree of freedom. Finally, The obtained results concerning the seventh domain (organizing) show that the computed F- value (7.696) is higher than the tabled t-test value (4.1) at the 0.05 level of significance and under (1, 38) degree of freedom. It means that there are statistical significant differences between

the two groups in the (responsibility) and (organizing) of the scale post- administration. As a result, the derived hypothesis from the second hypothesis is rejected with reference to the analysis results concerning the first, second, third, fourth, sixth and seventh domain of the scale post administration. Whereas, the derived hypothesis from the second hypothesis is accepted with reference to the analysis results concerning the fifth domain of the scale post administration.

Moreover, to find out the differences between the two groups in the seven domains of the scale, Scheffe's Test is used to compare the means of the two groups in the post administration of the Academic Self-regulated Learning Scale as shown in Table (7).

**(7) :Means and Scheffe Values in Each Domain of the Academic Self-regulated Learning for the Two Study Groups (Post Administration)**

| Domains | Groups | Mean | Differences between Means | Critical Scheffe Value | Significance |
|---|---|---|---|---|---|
| Memory Strategies | Experimental | 57.2 | 8.25 | 6.14 | Significant |
| | Control | 48.95 | | | |
| Goal setting | Experimental | 18.6 | 3.65 | 3.45 | Significant |
| | Control | 14.95 | | | |
| Self -evaluation | Experimental | 48.3 | 10.2 | 6.887 | Significant |
| | Control | 38.1 | | | |
| Seeking Assistance | Experimental | 30.2 | 5.15 | 4.588 | Significant |
| | Control | 25.05 | | | |
| Environmental Structuring | Experimental | 19.1 | 2.7 | 2.92 | Not Significant |
| | Control | 16.4 | | | |
| Responsibility | Experimental | 17.4 | 3.15 | 3.102 | Significant |
| | Control | 14.25 | | | |
| Organizing | Experimental | 21.2 | 4.45 | 3.24 | Significant |
| | Control | 16.75 | | | |

The comparison between the Means and Scheffe values in each domain of the Academic Self-regulated Learning post administration for the two study groups has been used. The result shows statistical significant differences between the two groups in all domains of the Academic Self-regulated Learning (except the fifth domain) in favour of the experimental group attributed to brainstorming.

Table (7) shows that there are statistically significant differences at the 0.05 level of significance because the differences between the means of the two groups (8.25, 3.65, 10.2, 5.15)  in the first four domains (memory strategy, goal setting, self –evaluation, and seeking assistance) of the post administration of the Academic Self-regulated Learning

Scale are higher than the computed critical Scheffe values (6.14, 3.45, 6.887, 4.588) respectively, in favour of the experimental group.

Also, table (7) shows that there is no significant difference between the two groups in the fifth domain (environmental structuring) at the 0.05 level of significance since the difference between means (2.7) is lower than the computed critical Scheffe value (2.92). As far as the sixth and seventh domain (responsibility) and (organizing) are concerned, there are significant differences between the two groups at the 0.05 level of significance in favour of the experimental group since the differences between means (3.15, 4.45) are higher than the computed critical Scheffe values (3.102, 3.24) respectively, in favour of the experimental group.

## 4.3  Recommendations

In view of the study results, the following recommendations are presented:

- It is recommended that the pre-service and in-service teacher education programmes should include the brainstorming teaching technique in their English method course content. Pre-service English teachers should embrace brainstorming teaching technique and other participatory strategies during instruction. Consequently, learners would be guided to learn meaningfully and would be assisted to develop self regulation.

- Conducting research on the usage of preparing the educational programmes based on the brainstorming teaching technique and its usage in developing the different mental processes in fields other than the English language subject.

  - Conducting the experimental studies to show the effect of the brainstorming teaching technique in developing creative thinking skills through the English language subject.

## أثر استعمال طريقة العصف الذهني في كتابة المقالة والتعلم المتوجه نحو تنظيم الذات لدى الطلبة العراقيين في المرحلة الثانوية

د. سناء خليفة صالح

الخلاصة:

يهدف البحث الحالي إلى معرفة أثر طريقة العصف الذهني في كتابة المقالة والتعلم المتوجه نحو تنظيم الذات لدى الطلبة العراقيين في المرحلة الثانوية. أن مجتمع البحث الحالي يتمثل بطالبات المرحلة الثانوية / الصف الخامس العلمي / في ثانوية الخوارزمي في أربيل للسنة الدراسيةِ ٢٠١٥- ٢٠١٦ والبالغ عددهن الكلي (51) طالبة وتم اختيار عينة مكونة مِنْ ٤٠ طالبة توزعن على شعبتين ، الشعبة الأولى (أ) (٢٠ طالبة) وهي المجموعة التجريبية التي تم تدريسها بطريقة العصف الذهني، و تمثل الشعبة الثانية (ب) (٢٠ طالبة) المجموعة الضابطة و التي تدرس باستعمال الطريقة التقليديةِ. اشتملت أدوات جمع البياناتِ اختبار كتابة المقالةِ و مِقياسِ التَعَلّم المتوجه نحو تنظيم الذات. و اخذ بالحسبان أداء الطالبات على مهمّةِ كتابة المقالةِ و مِقياسِ التَعَلّم المتوجه نحو تنظيم الذات في الاختبارين القبلي و البعدي و لكلتا المجموعتين التجريبية والضابطة. وكانت أدوات الدراسةِ ضمن المستوى المقبول للصدق والثبات. وحللت البيانات باستعمال صيغةِ الاختبار التائي. و أظهر التحليلَ بأنّ اداء و تنظيم الذات لدى طالبات المجموعةِ التجريبيةِ أعلى بكثير مِنْ اداء وتنظيم الذات لطالبات المجموعة الضابطة عند مستوى دلالة (٠.٠٥). وقد كشفت النتائج إلى أن استعمال طريقة العصف الذهني يؤثرِعلى أداء الطلابَ بشكل ملحوظ في كتابة المقالاتِ وتنظيم الذات.

## References

- Alrubaie, Farah & Daniel, Esther Gnanamalar Sarojini (2014) Revisiting the Cognitive Processes of the Brainstorming Technique: Theoretical Considerations from a Synthesis of Piaget, Vygotsky and SIAM for Learning Science. *International Journal of Thesis Projects and Dissertations (IJTPD)*, 2( 3), 44-57.

- Amoush, Kholoud Hussein (2015) "The Impact of Employing Brainstorming Strategy on Improving Writing Performance of English Major Students at Balqa Applied University in Jordan". *Journal of Education and Practice*, 6(35), 88-92.

- Andrade,M.(2012)."Self-Regulated Learning Activities: Supporting Success in Online Courses". In Moore, J. ,& Benson, A.(eds.), *International Perspectives of Distance Learning in Higher Education*. Rijeka, Croatia: InTech, pp.111-132.

- Anthony, E. M. 1963. *Approach, Method and Technique*: English Language Teaching 17: 63-71.

- Bereiter .c. &Scardamialia, M.(1987), The psychology of written composition Hillsade, NJ:Lawrence Erlbaum Associates. ELT Documents 131. Modern English Publications and the British Council.12

- Chung, M.(2000)."The Development of Self-Regulated Learning". *Asia Pacific Education Review*,1(1),55-66.

- Daniels, A. (2012). "Prewriting: A Neglected Stage of the Writing Process".Available at: *www .revolutionarypaideia.com/.../prewriting-a-neglected-stage-of-the-writing-*

- DeHaan, R. L. (2009). "Teaching creativity and inventive problem solving in science". *CBE-Life Sciences Education*, 8(3), 172-181.

- Dembo, M. (2004). *Motivation and Learning Strategies for College Success: A Self-Management Approach*.(2nd ed)Mahwah, NJ: Lawrence Erlbaum Associates.

- Effendi, Achmad Maulidi, Wiwiek Eko Bindarti & Asih Santihastuti (2014) "The Effect of Using Brainstorming on The Seventh Grade Students'Writing Achievement at SMPN 8 Jember in the 2013/2014 AcademicYear". Available at *http://repository.unej.ac.id/bitstream/handle/123456789/63137/AC*

- Ernest, L. & Zac, E.( 2014). "Reflective Essays" .Writing Center Tutors. Available at: *condor.depaul.edu/writing/writers/Types_of.../ reflectiveessay.html*

- Finney, S. (2008 ). Renewed objectives for the common essential learning of critical and creative thinking (CCT) and personal and social development (PSD). Regina, SK: Saskatchewan Ministry of Education.

- Fransisca,M. & Zainuddin, Z. (2012). "The Effect Of Applying Brainstorming Technique On The Students' Achievement In Writing Descriptive Paragraph". *GENRE Journal of Applied Linguistics of FBS Unimed*, Vol 1, No 1.

- Garcia,T. & Pintrich, P.(1994)."Regulating Motivation and Cognition in the Classroom: The Role of Self-Schemas and Self-Regulatory Strategies". In Schunk, D. ,and Zimmerman,B.(eds), *Self-Regulation of Learning and Performance Issues and Educational Applications*. New Jersey: Lawrence Erlbaum Associates ,pp. 127-153.

- Ghazi ,S. , Gilani ,U. , & Fatima,Z. (2013)." Effectiveness of Cognitive and Metacognitive Strategies in Scaffolding-Based Self-Regulated Learning System and Formal Learning System". *International Journal of Academic Research in Progressive Education and Development*,2(3), 97-104.

- Harris, K., Schmidt, T., and Graham, S. (1997). "Strategies for Composition and Self-Regulation in the Writing Process". Available at: *Http://www.Ldonline.Org/Article/6207*.
- Hollingsworth, Paul. M. 1991. *Elementary Teaching Method.* Needham Heights: Simon & Schuster Inc.
- Ibnian, Salem Saleh Khalaf (2011) "Brainstorming and Essay Writing in EFL Class". *Theory and Practice in Language Studies*, 1( 3), 263-272.

- Judd, J.(2005)."*The Relationship between Self-Regulatory Learning Strategies* and the Academic Achievement of High School Chemistry Students". *M.A. Unpublished, University of Hawai'i.*
- Kobayashi,M. & Lockee, B. (2008). "Evidence -Based Approaches for Self -Regulated Learning" .*Revista Reginal De Investicacin Educativa*,3(5),33-43.
- Leaver, Betty Lou, Ehrman, Madeline & Shekhtman, Boris (2005) *Achieving Success in Second Language Acquisition.* USA: Cambridge University Press.
- Ledbetter, M. E. (2010). *The writing teacher's activity-a-day*. San Francisco: Jossey-Bass.
- Levav, J., & Gavan, J. (2006). "When Questions Change Behavior: The Role of Ease of Representation". *Psychological Science*, 17 (3), 207–13.
- Mace, F., Belfiore, P., & Huchinson, J.(2001)."Operant Theory and Research on Self-Regulation". In Zimmerman, B. , and Schunk, D.(eds.),*Self-regulated Learning and Academic Achievement: Theoretical perspectives.* New Jersey :Lawrence Erlbaum Associates ,pp. 39-66.
- Maghsoudi, Mojtaba & Haririan, Javad (2013) The impact of brainstorming strategies Iranian EFL learners' writing skill regarding their social class status. *International Journal of Language and Linguistics*,1(4-1): 60-67.
- Magno, C. (2009). Self-Regulation and Approaches to Learning in English Composition Writing. *TESOL Journal*, Vol. 1, 1-16.
- Manouchehry, A., Farangi,M., Fatemi,M.,& Qaviketf,F (2014). The Effect of Two Brainstorming Strategies on The Improvement of Iranian Intermediate EFL Learners' Writing Skill*, International Journal of Language Learning and Applied Linguistics World,* 6 (4) 176-187.
- McCarthy, T. (2011). "Achieving Your Goal :A Case Study of Three Learners". In Morrison, B.(ed.). *Independent Language Learning: Building on Experience, Seeking New Perspectives*. Hong Kong : Hong Kong University Press,pp.103-118.
- Mc Crimmon. 1988. Writing with Purpose. Boston: Houghton Mifflin.
- McDowell, D. (1999). *Process guide: brainstorming.* The triton and patterns projects of San Diego unified school district.
- McLaren, S.(1995).*Essay Writing Made Easy*. Canada: Pembroke Publishers.
- Myles. J.(2002). Second Language Writing and Research: The Writing Process and Error Analysis in Student Texts .TESLEJ. 1-20.
- Nordquist, R.(2014). "What is Brainstorming?".Available at: http://*grammar. about.com/od/yourwriting/a/brainstorm07.htm*
- O'Malley, J., and Chamot , A.(1990). *Learning Strategies in Second Language Acquisition* . Cambridge: Cambridge University Press.
- Ottens, A. (1991). *Coping with Academic Anxiety.* (2$^{nd}$ ed.). New York: Rosen.

- Pintrich, P. R., & Zusho, A. (2002). Student motivation and self-regulated learning in the college classroom. In J. C. Smart & W.G. Tierney (Eds.) *Higher Education: Handbook of Theory and Research,* Volume XVII. New York: Agathon Press.
- Rao, Zhenhui( 2007). Training in brainstorming and developing writing skills, *ELT Journal* , 61 (2): 100-106.
- Rosen, J. , Glennie, E. , Dalton, B., Lennon, J. , and Bozick, R. (2010). "Non-cognitive Skills in the Classroom:New Perspectives on Educational   Research". RTI Press. Available at: *www.rti.org/pubs/ bk-0004-1009- rosen.pdf*
- Schraw,G.  Kauffman,D., & Lehman,S.(2003). "Self-regulated Learning". In Nadel, L.(ed.), *Encyclopedia of Cognitive Science*. U.S.A :John Wiley and Sons Inc., pp.  1088-1098.
- Schunk, D.(2012).*Learning Theories:An Educational Perspective*.(6th ed.). New York: Pearson.
- Seow, A.(2002)."The Writing Process and Process Writing". In Jack, C. Richard ,W. ,and Renandya, A.(eds.), *Methodology in Language Teaching: An Anthology of Current Practice*. Cambridge: Cambridge University Press, pp.315-320.
- Soles, D. (2010).*The Essentials of Academic Writing*. Boston: Wadsworth.
- Stanley et al. 1992. *How to Write a Sentence*. New York: Oxford University Press
- Tay, B.(2013). "Elaboration and Organization Strategies Used by Prospective Class Teachers while Studying Social Studies Education Textbooks". *Egitim Arastirmalari-Eurasian Journal of Educational Research*, 51, 229-252.
- Townsend, C., &  Liu, W. (2012)."Is Planning Good for You? The Differential Impact of Planning on Self-Regulation". *Journal of Consumer Research, Inc*, 39(4), 688-703.
- Weinstein, C. & Hume, L.(1998).*Study Strategies for Lifelong Learning*. Washington : American Psychological Association.
- Weinstein ,C. & Mayer, R. (1986)."The Teaching of Learning Strategies". In Wittrock, M. (ed.), *Handbook of Research on Teaching* . New York: Macmillan, pp. 315–327.
- Wilson,C. (2013). *Brainstorming and Beyond: A User-Centered Design  Method.* Oxford: Elsevier, Inc.
- Winne, P. H. (1995) "Inherent details in self-regulated learning". *Educational Psychologist*, 30 (4), 173–187.
- Wolters, C. (1999)."The Relation between High School Students' Motivational Regulation and Their Use of Learning Strategies, Effort, and Classroom Performance". *Learning and Individual Differences*,11 (3), 281-299.
- Zimmerman, B. , Greenberg, D. ,& Weinstein, C. (1994). "Self-Regulating Academic Study Time: A Strategy Approach". In Schunk ,D., and Zimmerman,B. (eds.), *Self-Regulation of Learning and Performance: Issues and Educational Applications*. Hillsdale, NJ: Lawrence Erlbaum Associates, pp. 181-199.
- Zimmerman, B. & Risemberg,R. (1997). "Becoming A Self-Regulated Writer: A Social Cognitive Perspective". *Contemporary Educational Psychology*, *22*, 73–101.
- Zumbrunn, S., Tadlock, J., & Roberts, E. (2011)."Encouraging Self-Regulated Learning in the Classroom: A Review of the Literature". *Invited   Paper for the  Metropolitan Educational Research Consortium (MERC)*,pp.1-28.