

## MIND MAP FOR ACADEMIC WRITING: A TOOL TO FACILITATE UNIVERSITY LEVEL STUDENTS

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### ABSTRACT

Learning involves new ways of collecting, understanding and implementing knowledge in various. Writing paragraphs, essays, papers, journals, reports within disciplines are called academic writing. In education sector, creativity is a high level process to develop disciplined reading and writing. The case study aimed to know student's performance before the use of mind map and the improvement level after using it. Result of the research shows that use of Mind Mapping enhances the learning capacity in terms of number of ideas generated as well as improves writing focus. This happens in spite of the language limitations of the students who are more familiar with Behaviorism learning methods, i.e. rote learning. This research paper will facilitate the students, teachers and the researchers who seek ways to enhance the tertiary level educational experience. It will also be valued in the field of innovative teaching and learning methodologies.

**KEYWORDS:** Academic writing, Mindmap, Research

### INTRODUCTION

"Academic writing" is one of those terms that is often invoked, usually solemnly, as if everyone agreed on its meaning, and so is used imprecisely yet almost always for what the user regards as a precise purpose; e.g., commonly by teachers in explaining what they want from students. According to Thesis at al. (2006), writing that fulfill purpose of education is called "Academic Writing". From teachers' point of view, this term focuses students' writings for assignment, report, essays, paragraphs, lab report or any kind of professional writing within university etc. In whole education system around the world, all university level students must write in such a level which must meet some standards with appropriate grammar, spelling and must be relevant of the topic they are asked to write. All undergraduates are required to write at a level which meets academic standards, where essays are coherent with acceptable grammatical structure and accurate spelling. Northedge (1990) said "*Writing can present a challenge for some students as it is cognitively demanding, and invokes a deep and powerful kind of learning*". The challenge is even greater for second language students for it includes additional linguistic and cultural differences. According to Spack(1988), lack of cultural knowledge and target languages might hamper students development and organization success. A good academic writing focuses on generating idea,

organizing and presenting in acceptable ways and re write it after getting feedback from readers or teachers. The keywords here are "in an acceptable way" and this means, ultimately, acceptable to the academic community the student is going to join. This involves helping the students become aware that differences may exist between their previous experience of academic writing and what is now expected. However, the challenge of academic writing also includes such psychosocial considerations as sense of class community, self-efficacy, and writing anxiety, all of which can impact academic writing. Graph, charts, flow charts, diagrams or any kind of mapping tools can facilitate students for organizing the concepts for academic writing. The idea of displaying complex information visually is, of course, quite old. Flow charts, for example, were developed in 1972 (Nassi and Shneiderman 1973) pie charts and other visual formats go back much earlier (Tuft 1983). More recently, visual displays have been used to simplify complex philosophical issues (Horn 1998). Formal ways of ‘mapping’ complex information—as opposed to the earth’s surface, countries, cities and other destinations—began at least 30 years ago, and arguably even earlier. In the current research, academic writing is looked at, in particular, whether students in a developing country university experience increased combination of their own ideas, both in terms of increased number of ideas generated and the resulting synthesis of ideas, before and after the use of a technique called Mind Mapping. The paper claims that the type of information mapping tool to be used is largely a function of the purpose for which it is intended.

## **TEACHING WITH MIND MAP**

Developed by Tony Buzan in 1970, Mind Mapping is a revolutionary technique for capturing ideas on a horizontal surface. Mento, Martinelli and Jones (1999) found the use of mind mapping for understanding case studies very useful among post graduate EMBA students. According to Buzan (1989), mind mapping can be used in every activity where thought, planning, recall or creativity is involved. A mind map allows a user to record a great deal of information in the form of linked ideas with keywords and images. Essentially, a user records or inscribes gathered information on a page while showing the relationships between the concepts involved. According to Zhang et al (2010) “It fully utilizes both the left and right brain, and can be used as a memory aided tool in any field of study, work and life. The use of mind mapping can be assisted with “the adoption of colors, images, codes, and multidimensional approaches to help human memory, so that one could concentrate the mind on the central part, which is, the crucial subject” .If students can represent or manipulate a complex set of relationships in a diagram, they are more likely to understand those relationships, remember them, and be able to analyze their component parts. This, in turn, promotes “deep” and not “surface” approaches to learning (Biggs 1987; Entwistle 1981; Marton and Saljo 1976a, b; Ramsden 1992). Secondly, for most people, maps are also much easier to follow than verbal or written descriptions, although reservations need to be made in terms of the kinds of “maps” under consideration, for not all maps are equal (Larkin and Simon 1987; Mayer and Gallini 1990). Thirdly, the work involved in mapmaking requires more active engagement on the part of the learner, and this too leads to greater learning (Twardy 2004). “Using Mind Mapping as a study technique”: Farrand et al. (2002) shows, retention and recall are better among students when mind maps were used as a study technique. However, they point out that the users must be

motivated towards the use of mind maps, i.e. the students must enjoy using it and obviously be conversant in their use. Chan (2004) studied whether mind mapping can be used as a pre-writing strategy to help explore and generate ideas for writing. He suggests that Mind Mapping tend to help students plan in the following ways:

- to find clearer focus;
- to have better organization of ideas;
- to have clearer ideas;
- to have better ordering of ideas;
- to include more relevant and appropriate ideas;
- to delineate more ideas;
- to have better paragraphing.(YMI)

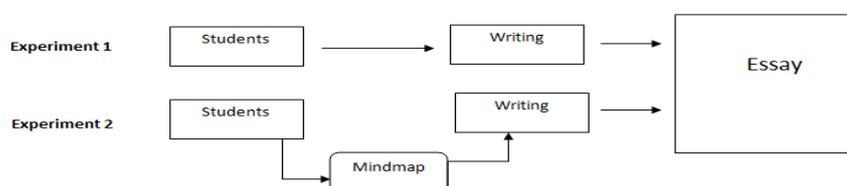
## EXPERIMENTAL DESIGN

The design of the experiment has been held on 30 students of agriculture department at International University of Business Agriculture and Technology on their course ENG 101- Basic English Composition. The research timeline was in between on January 2011 to April 2011.

Design was separated into two parts.

- i. Write an essay on “Uses of ICT in agriculture sector” (Without Knowledge of Mindmap)
- ii. Write an essay on “Uses of ICT in agriculture sector” (With Knowledge of Mindmap)

First of all, lecturer discussed about importance of ICT in various sectors which is appropriate for this experiment using traditional teaching method with simple PowerPoint presentation. At that moment, students had no idea about any mapping techniques. After the lesson, teacher asked the students to make a presentation of uses of ICT tools in agricultural sector. When their writing is completed then teacher introduced different types of mapping techniques specially paper based mindmap. A framework of this experimental design is given below



*Figure 1: Experimental Design*

## DATA ANALYSIS AND FINDINGS

After the experiment, the result is quite impressive; researchers found that without the knowledge of mindmap, students focused average of 7 point of interest (POI) or different sectors of using ICT in agriculture in their writing. But after having the concept of mindmap, no of sectors or point of interest(POI) increased as an average of 13 which is almost double than their previous writing.

*Table 1: Calculation of Experiment*

	Mean	Standard Deviation
Total POI (Without Mindmap)	7	1.891810606
Total POI (With Mindmap)	13	9.052631579

In the chart, it was clearly visible that, standard deviation of students writing without help of mindmap they have covered relevance sectors is 1.81. That means most of the students covered relevant areas of 5.11—8.89 which is even less than the average of sector covered by students writing after using mindmap. In our two sets of 20 measurements, both data sets gave a mean of consistently 7 and 13, but both groups size were small. How confident can we be that if we repeated the measurements thousands of times, both groups would continue to give a mean of 7 and 13

To estimate this, we calculated the standard error of the mean (S.E.M. or  $S_{\bar{x}}$ ) using the equation

$$S_{\bar{x}} = \frac{S}{\sqrt{n}}$$

Where  $S$  was the standard deviation and  $n$  was the number of measurements.

- In our first data set, the student not using mind map S.E.M. was .42

$$S_{\bar{x}} = S / \sqrt{n}$$

$$S_{\bar{x}} = 1.89 / \sqrt{20} = 1.89 / 4.47 = .42$$

- In the second group the student using mind map S.E.M. it was .67

$$S_{\bar{x}} = S / \sqrt{n}$$

$$S_{\bar{x}} = 9.05 / \sqrt{20} = 9.05 / 4.47 = .67$$

95% confidence limits,

It turned out that there was a 68% probability that the "true" mean value of any effect being measured falls between +1 and -1 standard error (S.E.M.). Since this was not a very strong probability, most workers preferred to extend the range to limits within which they can be 95% confident that the "true" value lies. This range is roughly between -2 and +2 times the standard error.

So

- for our first group,  $.42 \times 2 = .84$
- for our second group,  $.67 \times 2 = 1.34$

So

- If our first group was representative of the entire population, we were 95% confident that the "true" mean lied somewhere between 6.16 and 7.84 ( $7 \pm .84$  or  $6.16 \leq 7 \leq 7.84$ ).
- For our second group, we were 95% confident that the "true" mean lied somewhere between 11.66 and 14.34 ( $13 \pm 1.34$  or  $11.66 \leq 13 \leq 14.34$ ).

Put another way, when the mean was presented along with its 95% confidence limits, the workers were saying that there is only a 1 in 1.34 chance that the "true" mean value was outside those limits. Put still another way: the probability (**p**) that the mean value lied outside those limits is less than 1 in 1.34 (**p** = <0.05).

According to Chebyshev's theorem, the interval (7, 19) can be written as  $(13-2*3, 13+2*3)$  which is same as  $(\text{Mean} - k*SD, \text{Mean} + k*SD)$ , where  $k = 6/3 = 2$ .

According to Chebyshev's theorem, at least  $1 - (1/k\text{-squared})$  of the measurements will fall within  $(\text{Mean} - k*SD, \text{Mean} + k*SD)$

But  $1 - (1/k\text{-squared}) = 1 - (1/2^2) = 1 - 0.25 = 0.75$

Thus 75 percent of the values will fall between 7 and 19 for a data set with mean of 13 and standard deviation of 2.

That result said that the 75 percent possibility was that the average student using the mind map can generate more ideas than the traditional system with 2 standard deviation.

According to Empirical rule, approximately 95% of the measurements (data) will fall within two standard deviation of the mean. Therefore  $(\text{Mean} - 2*SD, \text{Mean} + 2*SD) = (13-2*3, 13+2*3) = (7, 19)$  will contain 95 % of the observations.

Thus the two values are 7 and 19. That result said that the 95 percent possibility is that the average student using the mind map can generate more ideas than the traditional system with 2 standard deviation.

As a result, researchers concluded the research with a positive view on Mindmap and from the experiments to show that it is really a powerful tool to improve academic writing. This research will help the researchers of the field of contemporary research, academic research, academic reading, academic writing, poster presentation, academic presentation, and innovative teaching and learning methodologies.

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