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## EFFECT OF METACOGNITIVE LEARNING STRATEGY ON ACADEMIC ACHIEVEMENT OF BUSINESS EDUCATION STUDENTS AT AHMADU BELLO UNIVERSITY, ZARIA

By

**Zakari Buba, MAGAJI and Ramatu Talatu, UMAR**

Department of Vocational and Technical Education

Faculty of education

Ahmadu Bello University, Zaria

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### ABSTRACT

*The study investigated the effect of Metacognitive Learning Strategy on academic achievement of Business Education Students in the Department of Vocational and Technical Education Ahmadu Bello University, Zaria. The study had three research objectives and three null hypotheses. The researchers adopted a quasi-experimental research of pre-test posttest. The experimental group was subjected to different treatments while the control group was not. The study had a population of 280; these included business education students from three sections namely; accounting education, marketing education and office technology management. The sample of the study was 80 students who were randomly selected from all the sections. This sample was divided into groups the experimental group and control group. Three null hypotheses were tested using t-test statistic at alpha level of 0.05. Results of test of null hypotheses indicated that metacognitive strategy had great impact on students' mean performance scores. Findings revealed that students who adopted metacognitive strategy in learning business statistics performed better than students who used the conventional strategy. Hence the three null hypotheses were rejected because P-value was less than alpha value ( $P < 0.05$ ).*

### INTRODUCTION

The desire of every teacher is for his students to bring out behaviors that indicate they have actually learned from a given content of instruction. Teachers apply all manners of instructional techniques at their disposal to achieve this fundamental objective and one such strategy is metacognition. This learning strategy involves learners using highly their thinking faculty in problem-solving situations. Thinking about ourselves and what we are learning from the basics and the core of learning (Oxford, 2013). It directs learners towards better achievement. According to Brown (1994) cited in Mohammed (2015) our ability to think upon our own learning and to have feelings and knowledge about that process is one of the things that make human learning so fascinating. Metacognitive learning strategy is goal

oriented and is suitable in critical thinking development of the learners because it is important in helping students determine how they undertake the thinking process.

The metacognitive strategies are those strategies that teachers often apply to aid the students in comprehending how they learn a variety of skills in the learning environment. Ideally, these processes make students aware of their own learning capabilities. Therefore, the teachers often use it in order to help the learners to become more strategic thinkers. It helps in influencing the brain processes that aid individuals in solving various routine problems. It can also involve scientific methods that can help in the assessment of one's thought processes

According to John Flavell, metacognitive strategies have two categories that are metacognitive knowledge and metacognitive regulation. According to Edwards et al. (2014), metacognitive knowledge is the awareness to one's thinking processes. It denotes a process through which individuals become aware of their thought processes. Alternatively, Oxford (2013) notes that metacognitive regulation is the ability of individual students to control their thinking processes. Researchers such as Steinbach (2010) have noted that these two categories are significant in informing the learning theories.

Badawy (2012), explains that impacts of metacognition strategies in young children are far reaching and they need a redress to harmonize methods of learning and the natural settings of our minds as humans. The learning process should begin within provisions of natural settings of the mind. As Casey (2011), puts it, introduction of metacognition strategies in the foundation of learning affects our oral and literature abilities in wider senses. The effects of metacognition strategies in educating young children differ across disciplines. The effect may be worse in social studies that it could be in sciences (Zohar & Dori, 2012). In social studies, pupils at these tender ages of grade I level face complexities in understanding and conceptualizing different issues in their learning courses. They face challenges of understanding and being flexible in thinking because of metacognition approaches that teachers use (Shah, 2012). With reference to Kolencik (2011), metacognition approaches used in Saudi Arabia and most parts of the world, slow the learning processes as it sets out constrictive guidelines, which the learners must comply within to maintain relevance in the curriculum.

This implies that pupils or students subjected in this kind of teaching faces the difficulty to be open-minded though very sharp in addressing and tackling the questions provided within their curricular (In Hartman,

2011). This is progressive in the line of pursuing education within the provisions of curricular. The major reasons as to why most educationists use metacognitive approaches in education relate to the instant impact it has on the students (Bentahar, 2012). Metacognitive knowledge helps students in reflecting on what they are thinking or what they already know. Awareness of knowledge also helps the students to understand what they do not know (Cohen, 2014). For instance, children may have the knowledge of how individuals grow, but may not explain the process of growth. Moreover, metacognitive awareness can also help students to develop their ways of dealing with the difficult aspects of learning. For instance, students may decide to develop their shortcuts in solving problems (McInerney, 2013).

Steinbach (2010) identifies the strategies of metacognitive skills like planning, problem solving, monitoring effectiveness, self-assessment, self-correction and evaluation with the view of progress. Students have the capacity of applying these processes involved in metacognitive strategies during learning. Although the young learners may not be readily composed of these strategies, Shah (2012) contends that learners in various institutions depend on these strategies to realize better academic achievements. Students will require metacognitive strategies to gain knowledge in social studies. These strategies will help them in understanding what they know about social studies, what they should do, what they have learned and whatever they can do to improve on what they have acquired (Zohar & Dori, 2012).

According to Schmorow, Fidopiastis, International Conference on Foundations of Augmented Cognition & International Conference on Human-Computer Interaction, HCI International (2013), most researchers emphasize on the value that different metacognitive approaches and strategies give the students, while failing to address the possible side effects of using the same approaches. The focus of

studies on metacognitive effects in education has been conducted in most parts of the western world but the ideology on the geographical impact on the process and its outcomes have always been neglected. Research on the effect of metacognitive strategies in achievement and trend towards social studies for students of intermediate schools in Hafer Al Batin city in Saudi Arabia then prompts.

### LITERATURE OF RELATED STUDIES

Nigeria in retrospect; had what was called teachers training colleges an equivalent of the secondary school where young people from the primary school were given basic teacher training in principles and methodology of teaching. Upon graduation from the teacher's college, the teacher was able to use different teaching methods and strategies to impart knowledge and create understanding in his pupils. For improved pedagogy, teachers must understand the importance of teaching strategies in optimizing the comprehension and enhancement of better learning outcome. An experienced teacher knows when and how to apply each strategy at appropriate times depending on the circumstances. Using one strategy in all situations may not work for the teacher but should try quite a number of strategies. Metacognition may be tried along with other teaching strategies.

According to Evans & Jones (2013), metacognition strategies should undergo considerations in the development of oracy in different places in the world. Different students from diverse social backgrounds should be subjected to different approaches of learning not specifically metacognitive ones. Though metacognitive regulation helps in the direction of the learning processes, students should be set open to many teaching approaches (Azevedo & Alevan, 2013). After becoming aware of one's knowledge, students are capable of directing or manipulating their thought processes in various ways but always within the

curriculum outputs. Students have the opportunities to tackle different questions but are limited to work within the limits of education curricular (Omrod, 20120).

Smilkstein (2011) explains that, metacognitive strategies have myriad importance just as the insignificance of the same strategies on the pupils. Additionally, metacognitive strategies help the students to become self-directed learners. In this manner, students also help teachers in deciding some of the strategies they can apply to help the students in learning. On the same note, students using the metacognitive strategies can readily learn what they need in order to resolve the academic problems that they have as specified (Azevedo & Alevan, 2013).

On a different account of thoughts, the 2010 seminar on "Teaching Metacognitive Reading Strategies to Second Language Learners in a Classroom Setting" held in Munchen revealed different capabilities of learners in metacognition approach settings. Students are also capable of monitoring their learning progress upon which they will have to improve where necessary. According to Wathen (2010), self-assessment helps the students in reflecting on what they know and what they do not know. Through metacognition, students are capable of getting feedback for learning. This process helps in motivating the students improve their skills in learning. For instance Smilkstein (2011) postulates that it is only through metacognitive strategies that one may discover what he or she has learned and still needs to learn. It helps the students in accepting that they do not understand some concepts of learning. In this manner, it gives ways through which the teachers may apply in assisting the students in learning. According to Evans & Jones (2013), metacognitive approaches in education infringe capabilities of different students to learn oral literature and acquire oral skills on one account while the approaches may improve. These depend on the geographical location, social backgrounds cultures and exposure to the world of the student considered as the

subject. These factors require consideration in application of metacognitive approaches in learning in different regions. It is because of these outcomes that research need to be done on the effect of metacognition approaches in students in Intermediate Schools in Hafer Al Batin in learning social related studies.

Mohammed (2015) highlighted on the advantages of metacognitive strategies and he pointed out that the application of metacognitive approaches, for instance, self-monitoring or awareness helps in developing self-learners who have the ability to plan on their studies for the rest of their learning periods. This links to the self-guidance that the process inculcates in the lives of such learners. Through this, metacognition improves and develops learning experiences in the given field of study. Through improved learning experiences, learners are able to acquire higher problem-solving and learning skills. Metacognitive approaches help learners in evaluating their progress in learning and thus offer good guidance (Herrera, Holmes & Kavimandan, 2011).

### ***Disadvantages of Metacognitive Strategies***

In spite of the advantages of metacognitive strategies as highlighted by Mohammed (2015), Cullen (2013) notes that metacognition can also affect learners negatively. For instance, metacognition affects self-esteem of students. Ideally, poor metacognition makes students unable to develop proper self-esteem. Individual students with poor self-esteem normally lack the valor and art of planning, assessing, and evaluating their learning skills. For this reason, metacognitive strategies cannot be applicable to students who lack good self-esteem. Conversely, metacognitive strategies cannot work for students who lack proper reading and comprehension skills (Kagan Keskin, 2013). It requires students who are capable of understand the instructions and demands of the tasks given (Cohen, 2014).

Language and communication skills are also prerequisites of metacognition. Individual students

should have proper language and communication skills to be able to execute some of the metacognitive strategies. For example, Oxford (2013) notes that for students to be able to plan for tasks, they must be able to communicate and write. Moreover, success in the society requires individuals with good knowledge (Edwards et al., 2014).

### **Objectives of the studies**

The study has the following specific objectives:

1. To determine the difference in mean performance scores of students who use metacognitive strategy to learn business statistics and those who use conventional strategy?
2. To assess the difference in the performance of male students who adopt metacognitive strategy to learn business statistics and those who use the conventional strategy.
3. To examine the difference in mean performance scores of female students who use metacognitive strategy to learn business statistics and those who use conventional strategy?

### **Research questions**

1. What is the difference in mean performance scores of students who use metacognitive strategy to learn business statistics and those who use conventional strategy?
2. What is the difference in mean performance scores of male students who use metacognitive strategy to learn business statistics and those who use conventional strategy?
3. What is the difference in mean performance scores of female students who use metacognitive strategy to learn business

statistics and those who use conventional strategy?

### **Research hypotheses**

1. There is no significant difference in mean performance score of students who use metacognitive learning strategy and those who do not.
2. There is no significant difference in mean performance scores of male student who use metacognitive strategy and those who use conventional method.
3. There is no significant difference in mean performance scores of female students who use metacognitive strategy to learn business statistics and those who use conventional strategy?

### **RESEARCH METHODOLOGY**

The research design was a quasi-experimental study of pre-test post-test. The sample of the study was divided into control and experimental group where the experimental group was subjected to different treatments while the control was not. The study had a population of 280 final year business education students from the department of vocational and technical education Ahmadu Bello University, Zaria. The population spread across three sections that make up the department. The sample was 80 students selected using stratified random sampling. This gave every subject equal chance of being selected. According to 80 out of a population of can be used as sample.

The instrument for data collection was a test instrument tagged Metacognitive Strategy Diagnostic Test (MSDT) 1 and 2. It contained test questions in business statistics meant to assess the abilities of students in the experimental and control group and to test the efficacy of metacognitive learning strategy in

enhancing academic achievement. The validity of the instrument was determined by experts in statistics and research methodology from the faculty of education Ahmadu Bello University, Zaria. These experts scrutinized the instrument and highlighted some shortcomings that were immediately corrected. To determine the reliability of the instrument, a pilot study was carried out on twenty undergraduate students in the department of business administration, Ahmadu Bello University, Zaria. Data collected were analyzed using Cronbach's alpha. The result obtained from the analysis gave a reliability coefficient of 0.78. Uzosike (2008) explained that the average value of correlation coefficient must not be less than 0.05. The reliability coefficient obtained from the analysis, indicated that the instrument was reliable and valid for a study of this nature.

### **METHOD OF DATA COLLECTION**

The researchers divided the respondents into two, the experimental and control group. The experimental group was subjected to different treatments while the control group was taught using the conventional method of instruction. The experimental group was taught business mathematics using thought provoking and problem-solving methods, this was to spark off the critical thinking of the respondents. At the end of the experiment a pre-test post-test was administered to both the experimental and control group. Data generated from the pre-test post-test were analyzed using descriptive statistic of mean and standard deviation. The three null hypotheses of the study were analyzed using the t-test statistic to establish whether the null hypotheses were to be rejected or retained.

**Table 1:** test of difference in mean performance between students who use metacognitive learning strategy and those who use convention method

variable	N	X	SD	Df	t-cal	t-crit	P-value
MLS	54	60.00	6.86	106	2.42	1.96	0.023
CLM	54	52.44	6.71				

Significant at 0.05 level.

The result of test of null hypothesis revealed that there was significant difference in the mean performance of students who were taught using metacognitive strategy and those taught using conventional strategy. Hence, t-cal. 2.42 was greater than t-crit. 1.96. Here, P-value is less than the alpha

value  $P < 0.05$ , this implies that the null hypothesis which states that there is no significant difference in mean performance of students who were taught using metacognitive learning strategy and those taught by conventional strategy was therefore rejected.

**Table 2:** test of difference in mean performance of male students who use metacognitive learning strategy to learn business mathematics and those use conventional method

Variable	N	X	SD	Df	t-cal	t-crit	P-value
MCLS	40	62.83	8.11	52	3.11	1.96	0.000
CLS	14	47.50	6.13				

Significant at 0.05 level

The result of test of null hypothesis revealed that there was significant difference in the mean performance of students who were taught using metacognitive strategy and those taught using conventional strategy. Hence, t-cal. 3.11 was greater than t-crit. 1.96. Here, P-value is less than the alpha value

$P < 0.05$ , this implies that the null hypothesis which states that there is no significant difference in mean performance of male students who were taught using metacognitive learning strategy and those taught by conventional strategy was therefore rejected.

**Table 3:** test of difference in mean performance of female students who use metacognitive learning strategy to learn business mathematics and those use conventional method

Variables	N	X	SD	Df	t-cal	t-crit	P-value
MCLS	14	51.79	6.68	26	2.99	1.96	0.001
CLS	14	47.50	6.13				

Significant at 0.05 level

Result of test of null hypothesis in table 3, shows that t-cal. 2.99 was greater than t-crit. 1.96 and shows that p-value was less than the alpha value  $0.001 < 0.05$ . The result shows that a significant difference was found between the mean performance scores of female students who use metacognitive learning strategy and those who use conventional learning strategy. Hence, MCLS was greater than GLS. The null hypothesis was therefore, rejected.

## DISCUSSION OF FINDINGS

From the result of findings it became known that the experimental group exhibited better performance in the MCDT 1 and 2 than the control group, implying that students who used metacognitive learning strategy were better achievers in the business statistics test. The result revealed that there was significant difference in mean performance scores of the experimental and that of the control group. Mohammed (2015) explains that, it is evident that metacognitive strategies help individual students in understanding the learning skills that they are required to have in their classrooms.

Findings also revealed that male and female students who use metacognition, performed better in their mean scores than male and female students who used the conventional strategy for their studies. All the null hypotheses of the study were rejected; hence, P-value was less than the alpha value ( $P < 0.05$ ).

## CONCLUSION

The goal of education is to attain excellence in both teaching and learning. Educational excellence is when students achieve greater performance outcome from the teaching and learning process. Metacognitive strategy involves helping students develop thinking skills about themselves and the learning process they are involved in. Effective teachers employ different teaching strategies and at the same time, encourage their

students to develop learning strategies that would result in better learning outcome. The findings of the study revealed that there was significant difference in mean performance scores in favour of students who use metacognitive learning strategy; therefore, if teachers would help develop in learners' metacognitive skills the tendency is that they will possess critical thinking abilities that will promote self-directed learning and optimize their academic performance.

## RECOMMENDATION

Effective teachers are knowledgeable in the art of using teaching strategies and they encourage their students to develop learning strategies that ensure better academic performance. Teachers should always blend their teaching strategies with students learning strategies specifically, metacognitive strategy; this will help students in their understanding of business statistics and other subjects.

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