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TEACHING METACOGNITIVE SKILLS FOR THE PROMOTION OF SELF-REGULATED LEARNING AMONG SECONDARY SCHOOL STUDENTS IN NIGERIA

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ABSTRACT*: The dwindling good performances of students in both private and public examinations call for a serious concern among every individual especially the stakeholders in the education sector. More worrisome is the yearly poor performances of students in public examinations in all subjects. The remedy for this situation is by employing the metacognitive skills. The students need to be taught the metacognitive skills to help them regulate their learning. Metacognition is higher order level of thinking that aids learning. The three skills involved in metacognition: planning, monitoring and evaluation when effectively taught will in no small measure promote self-regulated learning that will enhance students' performances in all examination. It is against this backdrop that this study is carried out to highlight the importance of teaching metacognitive skills to promote self-regulated learning among secondary school students in Nigeria.*

KEYWORDS: Teaching, Metacognitive Skills, Self-Regulated Learning, Secondary School Students, Nigeria

INTRODUCTION

Learning should be made as easy as possible in order to realize the mass literacy advocated by the Federal Government of Nigeria, and to actualize the objectives of the National Policy on Education. After the school activities, students retire to study on their own. For that personal learning to be meaningful, the students require the skills that would help them to regulate their learning. It therefore becomes necessary for teachers to teach the students metacognitive skills which have been found to aid students in the regulation of their learning. Metacognition is thinking about thinking. Lovett, (2008) clearly defines metacognition as an appreciation of what one already knows, together with a correct apprehension of the learning task and what knowledge and skills it requires, combined with the ability to make correct inferences about how to apply one's strategic knowledge to a particular situation, and to do so efficiently and reliably. The more students are aware of their thinking processes as they learn, the more they can control such matters as goals, dispositions, and attention.

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Self-awareness promotes self-regulation. "If students are aware of how committed (or uncommitted) they are to reaching goals, of how strong (or weak) their disposition to persist is, and of how focused (or wandering) their attention to a thinking or writing task is, they can regulate their commitment, disposition, and attention"(Schneider and Artelt2010).This goes to show that if students were aware of a lack of commitment to writing a long research assignment, noticed that they were procrastinating, and were aware that they were distracted by more appealing ways to spend their time, they could then take action to get started on the assignment. But until they are aware of their procrastination and take control by making a plan for doing the assignment, they will blissfully continue to neglect the assignment. When students thus receive teaching on metacognitive skills, it will open their understanding on their learning strengths and weaknesses. This knowledge will necessitate their applying the skills to surmount those weaknesses in order to actualize their strength.

This paper thus expounds the three metacognitive skills: Planning, Monitoring and Evaluation and how they can be taught the students to enhance self-regulation. To teach the planning skill, the teacher should first explain the concept and then teach students how to set learning goals.For example, the students should learn self questioning such as "What do I intend to achieve as I undertake this learning task? Teaching planning skill entails teaching the students planning to meet set goals. Thus, the students should be taught that reading and learning should not be half-hazardly done but planned, and that there is need to have a study timetable to help them plan their learning tasks. Students should also be taught how to breakdown their reading or assignments into clearly defined sub-tasks; they need to know that all the subjects or topics are not to be studied at the same time: each subject and topic is to be assigned specific time of study.Students should also apply a lot of thinking during planning to get the desired result.

The next thing is to teach the students how to monitor their learning. This can be achieved by the teacher giving the students, for example, a reading material and asking them to reflect on what they have read and then match it with the goals they set before reading. Monitoring requires various strategies which include thinking on what has been read to see whether comprehension has taken place. The essence of monitoring is to detect errors, correct them and improve learning.
The students need to be taught how to appraise the final product of a learning task and the efficiency at which the task was performed. Teach the students to pass judgment on the learning task performed by self questioning to ascertain whether there was any problem encountered during a learning task that affected learning so as to think of a way of solving it .as well as whether comprehension has taken place. When all these are in place, the students would be in a better position to regulate their learning which would subsequently improve their academic achievements.

Metacognition refers to a level of thinking that involves active control over the process of thinking that is used in learning situations. Planning the way to approach a learning task, monitoring comprehension, and evaluating the progress towards the completion of a taskrequire metacognitive skills.Russell (2012)advises that to increase their metacognitive abilities, students need to possess and be aware of three kinds of content knowledge: declarative, procedural, and conditional.

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Declarative knowledge: This is the factual information that one knows; it can be declared (spoken or written). Declarative knowledge can also be referred to as "world knowledge". It equally refers to knowledge about oneself as a learner and about what factors can influence one's performance. For instance the knowledge that one cannot read in a noisy environment with understanding and would therefore wake up in the mid-night when everywhere is quiet to read.

Procedural knowledge: This is knowledge of how to do something, of how to perform the steps in a process; for example, knowing that to write a good essay requires writing an introduction, the body explained in paragraphs and then the conclusion.

Conditional knowledge: This is knowledge about when to use a procedure, skill, or strategy and when not to use it.It allows students to allocate their resources when using strategies so that the strategies become more effective.For example, the knowledge that reading a particular subject gives me a difficult time to comprehend and I immediately start dosing when I try to read it. I therefore will read other subjects first and read this difficult one last.
This notion of three kinds of knowledge applies to learning strategies as well as course content. Schraw, Crippen and Hartley (2006)indicate that when students study, they need the declarative knowledge that:

- All reading assignments are not alike; for example, a history textbook chapter with factual information differs from a primary historical document, which is different from an article interpreting or analyzing that document. They need to know that stories and novels differ from arguments. Furthermore they need to know that there are different kinds of note taking strategies useful for these different types of texts.
- Students need to know how to actually write different kinds of notes (procedural knowledge),
- And they need to know when to apply these kinds of notes when they study (conditional knowledge). Knowledge of study strategies is among the kinds of metacognitive knowledge, and it too requires awareness of all three kinds of knowledge.

Research shows that explicitly teaching study strategies in content courses improves learning (Oyserman and Destin 2010). Research also shows that few instructors explicitly teach study strategies; they seem to assume that students have already learned them in the primary school(Russell 2012). Rote memorization is the usual learning strategy—and often the only strategy—employed by primary school pupils (Lysaker, Gumley and Dimaggio2011).

Study strategies are diverse and do not work in every context. For example, reading for information acquisition will not work in a literature course and will not work if students are supposed to critically evaluate an article. But students who have learned only the strategy of reading to pass examinations and the information will not go beyond this strategy. Study strategies do not necessarily transfer into other domains. Students need to know they have choices about which strategies to employ in different contexts. And students who learn study skills in one course need to apply study strategies in other contexts than where they first learned it.

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Students need to monitor their application of study strategies. Metacognitive awareness of their learning processes is as important as their monitoring of their learning of the course content (Lysaker, Gumley and Dimaggio2011). Metacognition includes goal setting, monitoring, self-assessing and regulating during thinking and writing processes; that is, when they are studying and doing homework(Smith, Beran,Couchman, Coutinho, and Boomer,2008).It is alsoindicated that an essential component of metacognition is employing study strategies to reach a goal, self-assessing one's effectiveness in reaching that goal, and then self-regulating in response to the self-assessment.

Metacognitive Skills

Metacognitive skills are important organizers of all of the tasks that we perform. They enable planning, setting goals, initiating work, sustaining future-oriented problem solving activities, monitoring and managing progress on tasks to detect and correct errors, and keeping track of the effect of one's behaviour on others**.**According toSemerari, Carcione, Dimaggio, Falcone, Nicol ` o, Procacci, Alleva, (2003), metacognition contains three skills that are essential: planning, monitoring, and evaluation.

Planning

Planning refers to the appropriate selection of strategies and the correct allocation of resources that affect task performance. Good readers plan before reading and students must learn the steps needed to accomplish this task. According toHenderson and Dweck, (1990), through modeling and practice, the students need to be taught to:

- Think about the text's topic.
- Think about how text features can help in understanding the topic.
- Read the title and author, front and back cover blurbs, and table of contents.
- Study illustrations, photos, and graphics, including labels and captions.
- Skim for boldfaced words, headings and subheadings, and summaries.
- Think about what they know, what connections they can make, and what questions they might want answered.
- Think about the way the text might be organized, such as: cause and effect, compare and contrast, sequence of events, problem and solution, description, and a combination of these text structures.

.Planning and setting goals include the following:

- Teach planning as breaking assignments into clearly-defined sub-tasks
- Teach the student to identify short-term, medium-term, and long-term goals
- "Walk the student through" the first part of the task, or the first few examples
- Provide a scoring rubric that shows what a quality product will include for the assignment.

Initiating or getting to work, and following through to completion

- Teach the students to estimate the time needed and to check it against the time taken for each part of the task
- Use the "Anticipation Guide" pre-learning strategy to activate the student's prior knowledge about a topic to be studied
- Teach the students "think aloud" strategies, by providing them with the language and vocabulary of thinking.
- Teach planning as breaking assignments into clearly-defined sub-tasks

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Monitoring

Monitoring refers to one's awareness of comprehension and task performance.Good readers take charge of their reading by monitoring their own comprehension. Students need direct instruction on how and why to do this. The first step is recognizing whether or not confusion exists by asking "Do I understand what I just read? Or what does the author really want me to know about this text?" Readers who take responsibility for their own comprehension constantly question the text and their reactions to it. It is one thing to monitor comprehension and it is another thing to know what to do when comprehension is not taking place. It therefore lies on the onus of the teacher to properly guide the students on what to do.

Azevedo and Cromley, (2004)indicate that other ways that readers monitor comprehension during reading are to: make connections, predictions, inferences; use context clues, text features, identify text structures, use graphic organizers to pinpoint particular types of text information, and write comments or questions on self-stick notes or in the margins.

Readers become confused during reading for a variety of reasons (Niemi 2002):

- The voice inside the reader's head is not talking to him any longer about the text. It may simply be reciting the text.
- The reader's mind begins to wander; he is no longer reminding himself to "pay attention."
- The reader can't remember what has been read.
- The reader can't answer his own questions.
- The reader re-encounters a character but does not remember how or when the character was introduced in the story.

Monitoring of the student's performance focuses on:

- planning and setting goals
- initiating the work
- following through to completion
- evaluating and monitoring for errors, and making corrections.

Monitoring Problems with Learning

When students monitor their learning, they can become aware of potential problems. Shimamura (2000)has categorized several types of problems with learning which the students need to monitor while learning, to include:Problems with Process, Making errors in encoding, operations, and goals.

Evaluating

Evaluating refers to appraising the final product of a task and the efficiency at which the task was performed. This can include re-evaluating strategies that were used,evaluatingwork, and monitoring for errors in order to make corrections.When good readers finish reading, they reflect on the strategies they used to determine whether their plan worked or whether they should try something else next time.Oyserman and Destiny (2010) indicate thatto help the students to evaluate their learning will require the teacher to teach the students to ask self the following questions, and then employ the following strategies:

- How did you solve that problem? Can you think of another way of doing that?
- What can you do to help you remember that?

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- Provide an error-monitoring strategy for the students to use with each assignment
- Provide a proof-reading checklist as part of each assignment
- Teach the student the skill of monitoring their performance on task
- Define the problem
- Plan a strategy for finding the solution
- Monitor self to make sure that plans are followed.
- Evaluate how well you did in following the plan and completing the work
- Teach the students to explain what was hard about an assignment, and what was easy

Assessment Strategies:

While evaluating, the teacher may apply various assessment strategies. Parmentier, Elford and Maybery (2005) indicate that this may include providing scoring rubrics that inform the student what an answer will include. Examples include telling students to:

- Write four paragraphs of at least three sentences each
- Show all of their calculations for each question
- Use two research sources for their project
- Employ higher-order thinking that enables understanding, analysis, and control of one's cognitive processes, especially when engaged in learning.

How to Teach Metacognitive Skills

Metacognition is a key ingredient in becoming a lifelong learner. It helps students use compensatory strategies, generalize learning, and seek help when needed.Papaleontiou-Louca and Eleonora (2008) holds thatstudents need metacognitive skills in order to self-advocate and feel a sense of control.It is possible to craft very specific, measurable goals for teaching metacognition. Below are a variety of metacognitive goals a teacher may target in the course of teaching the skill.

- Akpan will ask for clarification in at least three out of five sets of ambiguous directions.
- Udoka will accurately rate his reading fluency, as measured by no greater than five deviations from the teacher's appraisal on the Multidimensional Fluency Scale.
- Sola will name and demonstrate at least 3 strategies she can use for editing an essay.
- Ngozi will independently state her learning profile, including her affinities, strengths, and weaknesses.

A teacher may introduce metacognition to his/her students by telling the story of "The Tortoise and the Hare" (or, the teacher can show a little animation).Then discuss how the tortoise knew himself, how he worked best and thought about the big picture, while the hare did not consider these important ramifications and paid dearly for that lack of insight. Similarly, students need to think about their thinking and the 'Big Picture' in order to be successful. There are concrete ways of teachingstudents learning profile, learning strategies, and problem solving. There are also activities and tools for teaching, such as role-plays, rating scales, and video feedbacks.

Self-Regulated Learning

Self-regulated learning is vital to students' learning success. According to Lysaker (2011) expert learners consider their learning goals, plan accordingly, and monitor their own learning as they carry out their plans. Novice learners, in contrast, don't have explicit learning goals, fail to plan, and often have only one learning strategy, which they apply without thinking about whether it's

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appropriate to the situation. Not surprisingly, novice learners are often disappointed in the results of their studying, while expert learners are generally satisfied with their results (and will make adjustments if not).

Expert learners engage in Self-Regulated Learning. A Self-Regulated Learner begins with goal-setting and planning, taking into account his or her time constraints, strengths and weaknesses relevant to the learning task, and motivation for learning. Having set reasonable goals and planned his or her learning strategies, the Self-Regulated Learner then implements his or her plan, monitoring the results as he or she studies. If the chosen strategies are working well, he or she continues; if not, he or she makes adjustments and monitors the results until they are in line with his or her learning goals. The duty of the teacher is to make novice learners apply the same method.

Metacognition which involves thinking about one's own cognitive processes is an important concept to understand for both improved study skills and gains in content learning and it helps in regulating one's own learning.Schraw, Crippen and Hartley (2006) indicate that the process of self-regulating one's own learning is interactive. It involves identifying a topic, planning/setting goals to examine the topic, applying strategies to grapple with the topic, evaluating and adapting those strategies as ones understanding deepens.

Metacognition is important because it gives someone the ability to recognize what he/she understands, or don't understand, about a given problem and the means to approach that problem in a systematic way.To become an expert in self-regulating learning, the most obvious first step is becoming aware of one's metacognitive process. The teacher has to tap into this and explicitly design activities and assignments to help students become proficient in those same self-regulating skills.Demetriou and Kazi (2006)advise that by doing some reflection on how your students learn, the teacher can scaffold his/her subject so that the students will also be able to self-regulate their learning and master the materials that are most important.

Empowering Students through Self-Regulated Learning

Empowering students to become self-regulated learners is something that the teacher can do in any course by providing students with opportunities to reflect on their mastery of both course content and course skills. The key goal is that by teaching students how to become proficient self-regulated learners they will improve their learning.

The following steps can be employed, based on Zohar and David's (2009) proposal, to inculcate metacognitive skills in the students so as to aid self-regulated learning.

Step 1: Teach students that the ability to learn is not a fixed quantity

The key to a student's ability to become a self-regulated (i.e., metacognitive) learner is understanding that one's ability to learn is a skill that develops over time rather than a fixed trait, inherited at birth. Students who believe that the ability to learn can improve over time earn higher grades (Hartman 2001). These students set reasonable learning goals for themselves and have the self-efficacy to choose and use productive learning strategies. These strategies then result in learning gains. Moreover, students can be taught that their ability to learn can improve over time; those who learn this simple lesson show increased motivation to learn and improved grades (Aronson et al., 2002; Blackwell et al., 2007).

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Step 2: Teach students how to set goals and plan to meet them

Many students don't set explicit learning goals for themselves, or make plans to meet any goals they might have. Yet students who received as little as half an hour of training (in the form of one-to-one tutoring) on the process of self-regulated learning outperformed students who did not receive the training in several important ways(Azevedo and Cromley, 2004). This category of students learnt more. Thus, teach the students to set goals for themselves of what they intend to achieve in a particular reading task and plan how they would spend their time in the learning task. They should have a study timetable and keep to it, spend more of their time in goal-oriented searching of the learning materials that strictly relate to the topics to be learnt, and periodically reminded themselves of their current goal.

Step 3: Give students opportunities to practice self-monitoring and adapting

There is serious need to grant the students opportunities to practice self monitoring as well as adapting. Accurate self-monitoring is quite difficult. Many first years under graduates in particular, are over-confident. Zohar and David's (2009) site an example of first-year students at Carnegie Mellon University who were asked what grades they anticipated earning in their science and math courses. While results varied somewhat by subject area, more than 90% of students in biology, chemistry, physics and calculus courses expected to earn A's or B's. These expectations were clearly not realistic and suggested some problems on the horizon for these students.

Teaching Self-Monitoring Strategies

In the Nigerian schools, a lot of important things are taken for granted. It is quite unfortunate that despite a lot of researches that have been made to improve learning, very few teachers make use of them to facilitate learning. A good example is the use of wrappers. A wrapper is one tool for teaching self-monitoring behavior; it is an activity that surrounds an existing assignment or activity which encourages metacognition. For examplewrappers can be used with lessons, homework assignments, or exams. Wrappers require just a few extra minutes of time, but can have a big impact. According to Semerari, Carcione, Dimaggio, Falcone, Nicol ` o, Procacci, Alleva, (2003), they are effective because they integrate metacognitive behavior where it is needed - when the student is in a learning situation where self-monitoring can be helpful. Students can also get immediate feedback on the accuracy of their perceptions, thus alleviating the problem of over-confidence. Wrappers also require minimal faculty time.

Lesson Wrappers

The use of wrappers can be adapted to the Nigerian class for effective teaching and learning. This is the format to be followed by the teacher for the use of wrappers: before starting the lesson, the teacher gives students some tips on active listening. In particular, students are encouraged to think about the key points of the lesson as they listen and take notes. At the end of the lesson, students write what they think the three most important ideas of the lesson were intheir jotter. After they hand those in, the teacher reveals the three most important ideas from the lesson. This immediate feedback allows students to monitor their active listening strategies. After three successive lesson wrappers (with successively less faculty support, from a mini-lesson on active listening to no advance warning), Lovett (2008) records that student's responses increasingly matched the teacher's: 45% the first time, 68% the second time, and 75% the third.

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Homework Wrappers

Before beginning a homework assignment, students are to answer a brief set of self-assessment questions focusing on skills they should be monitoring. Students complete the homework as usual, and then answer a follow-up set of self-assessment questions. The teacher should monitor the homework done by the students by asking them before they start the assignment how quickly and easily it would take them to do the assignment. Azevedo and Cromley, (2004) indicate that homework wrappers imensely help the students in self-regulation.

Exam Wrappers

When graded exams are returned (as soon as possible after the exam was given), students complete an exam reflection sheet. They describe their study strategies, analyze the mistakes they made, and plan their study strategies for the next exam. These reflection sheets are returned to students before the next exam, so that they can make use of the ideas they had when the previous exam was still fresh in their minds. Students identified several new approaches they would use in future exam preparation. When the students are taught these skills, they would begin to enjoy self-regulated learning which will subsequently improve learning.

RECOMMENDATIONS

- Teachers should be encouraged to attend workshops and in-service training where they themselves will receive more training on the teaching of metacognitive skills by metacognitive experts so as to be properly grounded on the term before imparting the knowledge on the students.
- Because of the rigorous nature of the teaching of these skills, the teacher should apply patience as it will take some of the students a little time to properly apply the skills.
- Teachers should identify and use the strategy that best suits their students learning to facilitate the teaching of the metacognitive skills so that the students would maximally benefit from the lesson.

CONCLUSIONS

The Nigerian school teachers need to step up their efforts in working to improve the academic achievements of students by learning more about metacognitive skills and inculcating same in their students to promote self-regulated learning. Metacognition is a high-powered thinking that improves learning. Its components are three skills namely: planning, monitoring and evaluation. Teaching of the metacognitive skills will help students in self-regulation of their learning. Self-Regulated Learninginvolves the students having active control of their learning by setting learning goals and planning how to achieve those goals. The learner, having set reasonable goals and planned his or her learning strategies, then implements the plan, monitoring the results as he or she studies and evaluates the whole process to ascertain whether comprehension has taken place.Teaching metacognitive skills will greatly promote self-regulated learning among secondary school students in Nigeria.

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