TEACHING CONTENT AS A SYSTEM OF THINKING

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Abstract
This paper submits that one of the products of education is the ability and disposition to solve problems – personal and societal and that education is meant to bring about emancipation and transformation, and when it fails, it becomes an agent of mental confusion and slavery. Content, in the form of curriculum and, or instruction must be so tailored to show evidence of emancipation and transformation. Therefore, the premise of this paper suggests that the foremost important insight necessary for the appropriate design of curriculum, instruction and certification that is relevant to our continent, is that content is, in the final analysis, nothing more and nothing less than a system or mode of thinking. There is no learning of the content without the thinking process explicitly engaged. To learn content separate from thinking is as good that students never learned at all within the discipline that defines and creates the content. It is to deny students the opportunity to become self-directed, motivated learners. Therefore, if we want to develop curriculum, schemes/units for learning in general, they should be expressed in terms of the thinking one must do to succeed in that learning. Furthermore, it is apparent that the only way to learn any discipline is to learn to think critically within that discipline. It enables students to master systems, become more self-insightful, analyze and assess ideas more effectively, and achieve control over their learning, their values, and their lives. Conclusively, the paper suggests in strong terms the importance of curriculum and instructional designers seeing content as a system of thinking, the mode of thinking that emancipates and transforms the learner, and should explicitly come alive in curriculum and instructional design.

Introduction

The education that is relevant to today's world is the one that equips the learner (from the kindergarten pupil to the university student) to become effective thinker. Education is meant to: emancipate and transform the individual into a refined and civilized individual as well as the society to which he belongs, and when it fails, it becomes an agent of mental confusion and slavery, a challenge in most of our African nations today. One other product of education is the ability and disposition to solve problems – personal

and societal. "Life has no meaning until one engages in problem solving – personal, others and societal…" – (Ogbe, 2011 in Ogbe, 2016). Education is meant to help each individual locate where they fit in life.

The school system in Nigeria and other parts of West Africa is in dire need of a new approach, a new vision or sense of direction and of course an assurance of its essence in national development. The speed of attainment, growth and sustainability of any nation largely depends on the focus, standard and improvement of her curriculum and educational system and of course how well equipped and experienced the educators are. Significantly, "how" the citizenry think.

Definition of key concepts

Content: Subject matter: the various issues, topics, or questions dealt with in speech, discussion, a piece of writing or taught in a classroom. Academic "content" can be best understood as a system of interconnected ideas defining a subject field. The matter dealt with in a field of study, a part, element, or complex of parts.

System: Suggests a fully developed or carefully formulated method often emphasizing rational orderliness. Method here implies an orderly logical arrangement usually in steps.

It is a way, manner, or form, for example, a way of doing something, or the form in which something exists. System is the means or procedure for doing something. It is a mode/modus operandi: the means taken or procedure followed in achieving an end.

Thinking: The action of using one's mind to produce ideas, make decisions, acquire information etc. It is the process of considering or reasoning about something. Thought (also called thinking) are the mental process in which human beings form psychological associations and models of the world. Thinking is manipulating information, as when we form concepts, engage in problem solving, reason and make decisions. From the psychology point of view, the mind is the idea while thinking is the processes of the brain involved in processing information such as when we form concepts, engage in problem solving, reasoning and make decisions. In Ryle views, thinking is as an activity that terminates in a thought, which is a state of being prepared for a performance.

The thinking process enables us to create innovative solutions by identifying, challenging and correcting unexamined assumptions. Thinking can be divided into several opposing categories; Concrete Thinking vs.

Abstract Thinking. Convergent Thinking vs. Divergent Thinking. Creative Thinking vs. Analytical Thinking. (Types of Thinking - The Peak Performance Center).

The problem

The disparity between what Educators teach and what the evidences or outcomes are in the lives and behaviours of the learners is most undesirable. The question is, is learning really taking place in our institutions? What could be the cause of this disparity or gap?

It has been a national concern that most of our Undergraduates do not demonstrate enough ability to make sense of what they are taught in school. As a result, transfer of knowledge and its relevant application is a notable deficiency. This is explicitly evidenced by their low productivity when they graduate and fuse into the society. The catalogue of serious challenges facing African societies is enough indicators. There is hunger, drug addiction, and lack of equity in income distribution, environmental threats and the scourge of killer diseases such as AIDS (Acquired Immune Disease Syndrome). Some previous attempts have been made in addressing these issues over the last couple of years, but most (if not all) have gotten worse, and, some new challenges have arisen, in addition to political concerns. So, what's the problem? Why are we making so little progress in overcoming our many, very pressing social and political concerns?

The answer is obvious; the way we think, learn, and act or communicate what has been learnt is outdated. As a result, the way we act creates problems with diverse consequences for ourselves and others. Furthermore, educators are ill-equipped to address the problems because of the manner we have been taught to think, learn, and act or communicate. Apparently, as Ogbe (2008) observes, the existing patterns and traditions of formal education in Africa do not incline school leavers toward a very critical reflective style of thinking or a very transformative and participatory mode of instruction and learning. Such an education system, with a central focus on external examinations, does not facilitate the type of critical reflective thinking necessary for life.

This submission agrees with Asuzu (2014) who lamented that the higher institutions curriculum has not exposed students to think. In his interview statement he noted that a gap has been discovered between our graduates and the requirements of industries. According to Asuzu (2014), the gap found is because of our curriculum, our curriculum has not exposed students to the ability to think, because "when you think, then you can be innovative" – Vanguard News Nigeria, Thursday March 27, 2014 (Pg 31).

Most new students (Freshers) come into the higher institution without the ability to take charge of their lives in relation to the new busy and provocative environment. They are easily attracted and negatively influenced or coaxed into wrong groups by peers and even unscrupulous lecturers. This has gone a long way to pervert the goals and destiny of many promising undergraduates as they regrettably lose focus of their studies. The biggest problem facing educators today is the inability of most students to think independently, critically and creatively. They are unable to engage in self-regulation, make right decisions or draw accurate inferences. Consequently, students are unable to engage in effective problem-solving practices. All related problems in school subjects and life have their root in poor thinking. As a way out, students resort to examination malpractices which have become cankerworm that is tenaciously eating up the concept of quality in education and consequently affecting the wellbeing of our overall national standard. Learning in the Tertiary Institutions, and I dare say, in all levels of learning institutions, is in dire need of a new approach, an approach that gives assurance of quality and productive graduates. Research conducted in Nigeria reveals that most educators and students lack the knowledge of the thinking skills, particularly, critical thinking (Ogbe, 2011) As already mentioned, a significant barrier to the development of student thinking is the fact that having been taught by instructors who primarily lectured, many educators teach as if ideas and thoughts could be poured into the mind without the mind having to do intellectual work to acquire them.

Education that is relevant to today's world is the one that equips students to become effective thinkers. The assertion of Paul and Elder (2005) is significant enough to demand for a paradigm shift. Schooling should challenge both teachers and students to think more deeply and widely and in more systematic process. As students learn to think more critically, they become more proficient at the thinking that underlies their various courses. They finally develop skills, abilities and values crucial to success in everyday life and in academics.

From the discussion so far, it is obvious that the most important educational question to consider today will not be "what body of knowledge should be provided in our classrooms?" rather, "what kinds of human beings do we wish to produce?" We must first figure out the right answer to this question before determining what body of knowledge to provide; And this should lead us further to ask the question "how best can we acculturate learners to engage in thoughtful, fair-minded problem solving and effective decision-making, self-assessment and self-monitoring practices which are seen to be explicit results of the thinking skills?"

Everyone thinks, but how we think is more important to worry about. The function of our thinking is to make decisions that eventually guide our behaviour. The world has become more complex, more difficult for the average person to understand. Our thinking is therefore instrumental to how we act and respond to the world. Thinking is productive, so if we are not making progress in the society, it means we are not doing the right thinking.

Students and educators cannot perform better than their thinking. Quality thought begets quality performance and quality performance begets good success.Providing learners with thinking skills helps them fulfill their social and intellectual potentials and this ultimately benefits the wider national society. Paul and Elder emphasize that:

> "The only capacity we can use to learn is human thinking. If we think well while learning, we learn well. If we think poorly while learning, we learn poorly." Paul and Elder (2006)

The relationship between content and thinking

To enable students to become effective learners, they must learn what intellectual work looks like, how the mind functions when it is intellectually engaged, what it means to take ideas seriously, to take ownership of ideas. To do this, students must understand the essential role of thinking in the acquisition of knowledge.

Thinking leads man to discover knowledge. He may see and hear and read and learn whatever he pleases, and as much as he pleases; he will never know anything of it except only that he has thought over, that which by thinking he has acquired or possessed in his own mind.

Paul and Elder (1999) observed that, the first and most important insight necessary for the appropriate design of instruction and curriculum is that content is, in the last analysis, nothing more nor less than a mode of thinking. They suggested ways to grasp the profound truth that all content is nothing more nor less than a mode of thinking (about something), a way of figuring something out, a way of understanding something through thought. Here are three suggested ways of beginning to grasp this truth posited by Paul and elder (1999):

All "content" in school is content in a subject. All subjects are areas of study. All areas of study are "things" that we are interested in "figuring out". All fields of study have been advanced insofar as we have discovered ways to figure out whatever is being studied. There is no way to figure out something without thinking. There is no way to learn how to figure something out without learning how to think it through. There is no way to learn mathematical content without learning how to figure out correct answers to

mathematical questions and problems. There is no way to learn historical content without learning how to figure out correct or reasonable answers to historical questions and problems. Any subject or "content area" can therefore be understood as a mode of figuring out correct or reasonable answers to a certain body of questions. We study psychology to figure out people (to answer questions about certain human problems). All subjects can be understood best in this way.

All "content" involves concepts. There is no way to learn a body of content without learning the concepts which define and structure it. There is no way to learn a concept without learning how to use it in thinking something through. Hence, to learn the concept of democracy is to learn how to figure out whether some group is functioning democratically or not. To learn the concept of fair play is to learn how to figure out whether someone is being fair in the manner in which they are participating in a game. To learn a particular body of content, therefore, it is necessary to learn to think accurately and reasonably with the concepts that define the content.

All "content" is logically interdependent. To understand one part of some content requires that we figure out its relation to other parts of that content. To learn a particular body of content, therefore, is to figure out (i.e., reason or think through) the connections between the parts of that content. There is no learning of the content without this thinking process.

They lament that to this point, the majority of teachers and students approach content, not as a mode of thinking, not as a system for thought, or even as a system of thought, but rather as a sequence of stuff to be routinely "covered" and committed to memory.

Furthermore, Paul and Elder maintained that when content is approached in this lower order way, there is no basis for intellectual growth, no deep structures of knowledge formed, no basis for long term grasp and control. They conclude that Content Is Thinking, Thinking is Content.

On teachers thinking, Clark and Lampert (1986) in Huang (2015) noted that thinking is the foundation of teachers decision making, a crucial skill in a field with many competing requirements; And that how teachers absorb knowledge about the complexity of teaching, as well as their personal knowledge and methods of inquiry is a function of their thinking. They noted that, first, an ideal teacher can make proper work decisions if they prioritize thinking.

Every content, topic, subject matter is a way of thinking that is a characteristic of a particular group of such related ideas, time, period, etc. Every subject matter is meant to address some particular issues, answer some questions, and examine some assumptions. Any content taught without its

explicit relevance to man's need is a waste of students precious time and resources. It is through thinking one attempt to grasp the logic of the content. Thinking consists of search and inference. We search for possibilities, evidences, and goals within the content of a field to enable us improve on what we know and consequently change how we act. This is the logic of teaching any content. Below is a model to explain it further:
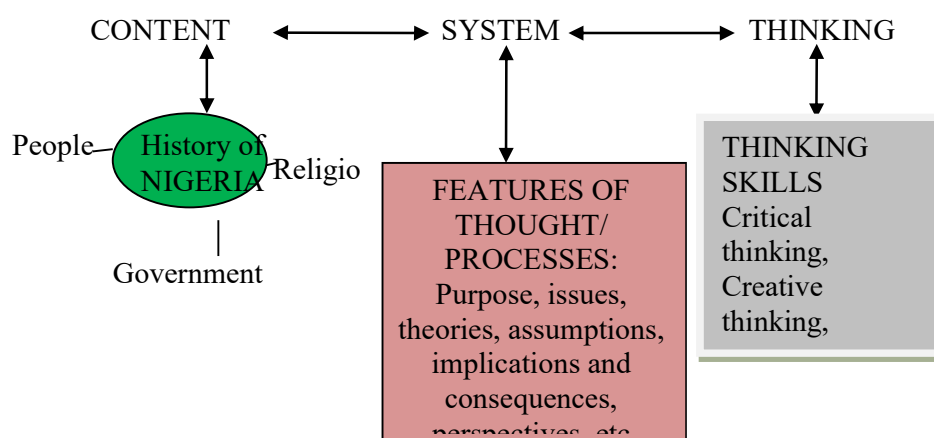
CONTENT ⟷ SYSTEM ⟷ THINKING

People — History of NIGERIA   Religio

Government

FEATURES OF THOUGHT/ PROCESSES: Purpose, issues, theories, assumptions, implications and consequences, perspectives, etc.

THINKING SKILLS Critical thinking, Creative thinking,

Diagram 1: Content as a system of thinking model – Ogbe, Mercy O.

What is the logic of the content?

Any system of, or the basis for reasoning, searching and inference. The principles of reasoning that inform a particular field. It is the relationship between specific events, situations, or objects, and the inevitable consequences of their interaction.

Content as a system of thinking is driven by questions and is regenerated in the mind of the student through thinking and the content is understood as dimensions of a thinking process. When content is taught through critical thinking skills, its purposes are clearly understood, its inherent key concepts are examined and questions and further questions are generated which lead to more researches until innovative solutions are derived that lead to the transformation of the way students think and act. This puts them into possession of a new mode of thinking. Furthermore, this translates the students into becoming perpetual generators of new thoughts, new understanding, and new beliefs. Therefore educators should design instruction with these ends in view, so that students take charge of their thinking and continually upgrade it.

 The following adapted from Paul and Elder (2016) must be viewed with all seriousness by educators:
- Only those who can "think" through the content, have it.
- Content "dies" when one tries to memorize it without thinking it through.
- Only through thinking can students "take" possession" of content and make it theirs.
- Only to the extent that a student asks genuine questions and seeks answers to them, is a student taking content seriously and thinking it through. Thought and content are inseparable.

In other words, there is no such thing as thinking about nothing. When we think we think about something (content) to produce and construct mental models or images. We simulate these models in order to make meaning out of what we are experiencing, and also to help us arrive at decisions that inform our actions. Diagram 2 below throws more light on the relationship that exist among the constructs.

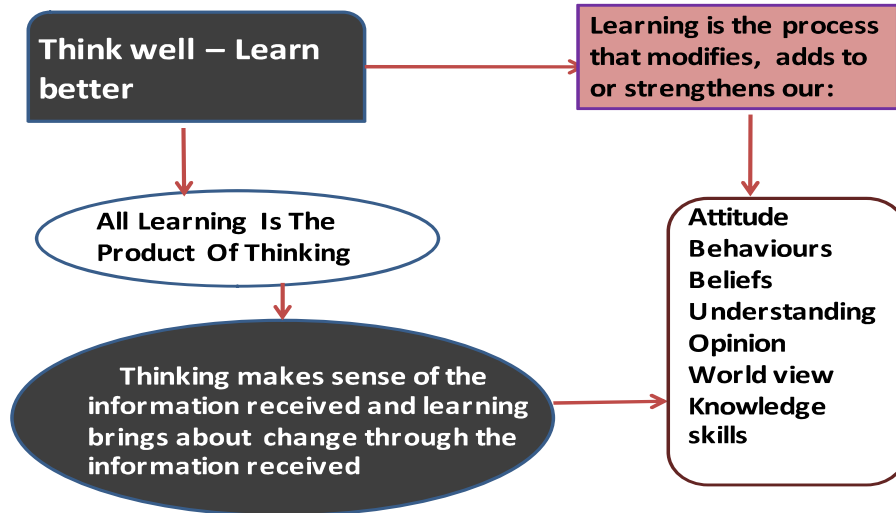**The relationship between students learning and the thinking skills.**

Diagram 2: Relationship between Thinking and learning by Ogbe (2016)

What are thinking skills?

'Thinking skills' is a term often used to refer to the many capacities and abilities involved in thinking and learning. These skills are seen as fundamental to lifelong learning, and active citizenship. Thinking is a complex process that consists of a number of general thinking skills or micro-skills. The thinking processes that make use of these general thinking skills are called higher-order processes or macro-skills. These are the tools the mind uses to make sense of, and use the information it receives (Presseisen, 1988). Critical thinking, Creative thinking, Decision-making and Problem-solving, are all higher-order thinking skills. Each of them has its own sub-skills called the micro-skills.

The place of critical thinking in learning and education

According to Ogbe (2008), critical thinking is the process of reflectively using all of one's experiences and the information at one's disposal to make rational and logical judgments or considerations before deciding on what to believe, say or do. Critical thinking is skillful, responsible thinking that is conducive to good judgment because it is sensitive to context, relies on criteria, and is self-correcting (Matthew Lipman). The "what" of education is the content we want to acquire, everything we want to learn. Critical Thinking is the "How" for obtaining every educational "What".

Critical thinking according to Paul and Elder (2002), is a set of intellectual skills, abilities and dispositions. It teaches students to think their way to conclusions, defend positions on complex issues, consider a variety of viewpoints, analyze concepts, theories, and explanations, clarify issues and conclusions, solve problems, transfer ideas to new contexts, examine assumptions, assess alleged facts, explore implications and consequences and increasingly come to terms with the contradictions and inconsistencies in their own thought and experience. Paul and Elder (2002) further posits that educated critical thinkers are able to internalize important concepts or ideas within a discipline and relate those concepts with other important concepts both within and among disciplines. They are also able to reason well enough to think their way through complex problems.

Since Critical Thinking involves skills which can be learnt, it implies therefore that they can be taught. In fact, because of the central role critical thinking is found to play in educational practice and life generally, it has been suggested by researchers that critical thinking skills be taught to students. These critical thinking skills and their sub-skills have been identified by Facione and Facione (1996) and are represented in the concept map below by Ogbe (2008).
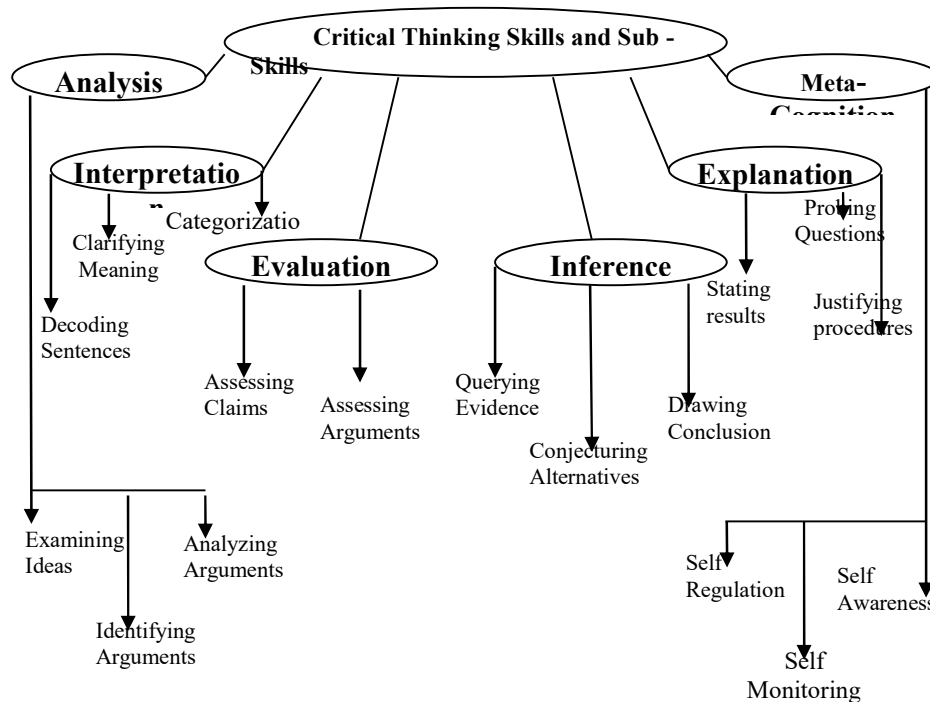
Diagram 3: A model of critical thinking and sub-skills by Ogbe (2008)

The place of creative thinking in learning and education

Creative thinking involves students in learning to generate and apply new ideas in specific contexts, seeing existing situations in a new way, identifying alternative ways and explanations, and seeing or establishing new links that generate a positive outcome. This includes constructing theories, methods, systems and objects, acting on the power of imagery and intuition, combining parts to form something new and original, examining and refining ideas to discover more possibilities. The products of creative endeavour can translate into complex images and representations, as well as outstanding performances, discovering, and representations. Evidences of creative thinking in learning has given rise to digital and computer generated output, or appear as virtual reality.

Thinking, curriculum, world of work and certification
A Higher Thinking Curriculum

In a thinking curriculum, students develop capability in critical and creative thinking as they learn to generate and evaluate knowledge, clarify

concepts and ideas, seek possibilities, consider alternatives and solve problems. Critical and creative thinking are integral to activities that require students to think broadly and deeply using skills, behaviours and dispositions such as reason, resourcefulness, imagination and innovation in all learning areas at school and in their lives beyond school.

It could be included, or infused or both into the curriculum content.

If students are to become educated persons, teachers must place thinking at the heart of their teaching; they must require students to actively work ideas into their thinking, using their thinking. Paul and Elder (2002). Students need to take charge of their own minds, to recognize their own deepest values, to take actions that contribute to their own and the good of others. To do this, they must learn how to learn and to become, in the process, lifelong partners.

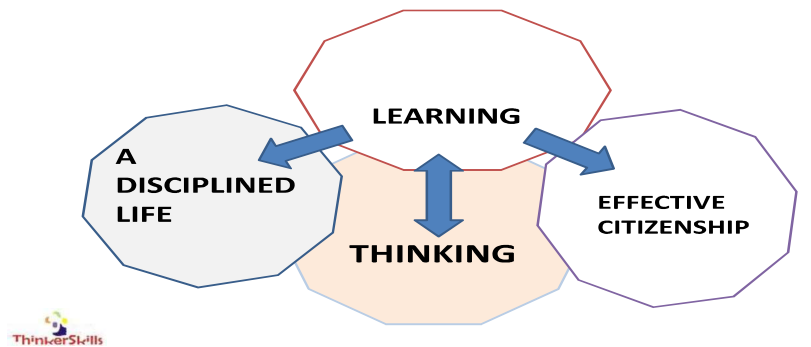**We need to focus on thinking because it is central to learning, life and effective citizenship.**

Diagram 4 - Ogbe (2015)

The World of Work:

Researchers are not alone in recognizing the importance of higher thinking skills. National governments and the employers of labour are as well. They argue that it is important for all sectors of education to prepare individuals who are able to think well and think for themselves.

- The absence of effective critical thinkers is a threat to the future survival and sustainability of the nation.
- Employers are really worried about the unfitness of our youths for work. They lack the 21st century skills. But why? Can we blame it all on the students and the government?

- The cultivation of good thinking is a necessity for effectiveness in the work place.
- If we teach students everything we know, their knowledge is limited to ours, but if we teach them to think, their knowledge is limitless (Paul and Elder, 2016). The ability to succeed in life is a function of their ability to solve the problems they encounter daily, which is directly proportional to the level of the standard of their thinking.

Certification

The hub to educational success is the educators. There is no gainsaying about it, 90% of the work of developing citizens to fit into the society positively and effectively is done in the classroom. Adequate training cannot be over-emphasized. Attendance to conferences should be to grab new knowledge with the willingness to make a change in behaviour which is the goal of learning. Part of teachers' assessment and certification should be based on their ability to demonstrate critical and creative thinking as well as effective decision making.

While the presenter of this paper is in full support of funding and other desired comfort for educators, it is absolutely necessary that we look inwards to address some of those nonchalant behaviours and make changes in attitude and teaching relationship. Lao-Tzu wrote "To know and yet think we do not know is the highest attainment. Not to know and yet think we do is a disease."

Recommendations

1. This paper postulates that the only way the higher institutions can produce the desired responsible, confident, self-achieving successful young individuals, students with enthusiasm and motivation for learning, determination to reach high standards of achievement, openness to new ideas, and who are /able to use technology positively is for students to be acquainted with the higher thinking skills early in their career. We therefore recommends that for students to be disposed to take charge of their lives, their learning and live orderly, with meta-cognitive practices, all new students (fresher) be given a two to three day seminar on the application of the higher thinking skills to learning. Our learning institutions are valued only to the extent they make themselves relevant to the world of work**.**

2. Quality thought is vital. So why don't schools foster it? Since critical thinking is about questioning motives and actions with a view to doing things right and at the right time, its explicit inclusion and infusion in the curriculum should be of great benefit to students, educators, curriculum

developers, schools administrators, the government, examination bodies such as West African Examination Council (WAEC), National Examination Council (NECO) and state examination bodies that are charged with evaluating students' learning outcomes.

3. Teachers of all categories at all educational levels in Nigeria should undergo in-service training in the thinking skills. This could be done by organising conferences, seminars and workshops by experts on the field.

Conclusion

Every nation desires and wants to grow citizens that are responsible, confident individuals, successful learners, effective thinkers and contributors. Equally, every society desires to have self-achieving successful young citizens with enthusiasm motivation, and determination to reach high standards of achievement, openness to new ideas, and able to use technology positively; Accountable, conscientious with an enterprising attitude, resilience, able to work in partnership and in teams, take the initiative to lead and are able to communicate in different ways and in different settings. This paper concludes that for the nation to achieve the above goals, schools must teach students how to think through every content.

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