

ENHANCEMENT OF CREATIVE THINKING CAPABILITY IN NIGERIAN LEARNERS, A PANACEA FOR CREATIVITY AND INVENTIONS

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Abstract

This article is essentially a philosophical discussion on one of Nigeria's ideals of providing functional education to its citizens. It is argued, from our examination of the idea of the provision of functional education that creative thinking is the engine for creativity, innovations and inventions. Creativity or inventions is the bringing into being of something which did not exist before, either as a product, a process or a thought, or working on the old with a view of producing a harmonized new. Our view in this paper is that creativity or inventions do not just occur in a vacuum. It originates from the human mind. That being the case, deliberate effort must be made at enhancing the performance of the human mind for optimal performance. Creative thinking is an aspect of philosophy which aims at boosting Critical thinking in man. Creative thinking must therefore, not be left to chance because there are identified barriers that inhibit its progress in man, if not checked. A deliberate effort at enhancing creative thinking ability in man through instruction is therefore, a *conditio-sine-qua-non* for creativity, innovation and inventions

From a historical survey of ideals of education, Orok (1990) noted that it is the social, political and economic needs of a particular society that determine its expectations of education. This is particularly true of the Nigerian society where the ideals of

education have been aptly documented. The Federal Government of Nigeria (FGN. 2013) in her National Policy on Education stated that one of the purposes of pre-primary education, for instance, is the "the inculcation in the child the spirit of enquiry and creativity

through the exploration of nature, environment, art, music and playing with toys, etc.” It is the researcher’s contention, from his examination of the concept of creative thinking, that this ideal is the foundation for all the other ideals. This research further examined the idea of creativity and inventions to demonstrate that creative thinking is indeed the pivot upon which other ideals of education are to be centered on if learners are to be adequately prepared to be innovative and inventive. The paper, after identifying some of the barriers to creative thinking skills also suggested ways on how the quality of instruction in formal education can be organized and executed to achieve this all important ideal of education. First, what is “Creative thinking”?

Meaning of Creative Thinking

According to Namwambah (2003) “Creative thinking” is the creation or generation of ideas, processes, experiences or objects while creativity is the bringing into being of something which did not exist before, either as a product, a product of thought, or working on the old with a view of producing a harmonized new. Creativity is demonstrated if people;

1. Invent something which never existed before,
2. Invent something which exists elsewhere but you are not aware of,
3. Invent a new process for doing something,

4. Re-apply an existing process or product into a new or different market,
5. Develop a new way of looking at something (bringing a new idea into existence, and
6. Change the way someone else looks at something.

Aristotle, described man as a rational animal. According to Mason (2003), Aristotle means by this that man is to be differentiated from other animals because man is endowed with reason. Man can think, reflect and act purposefully. He can plan, choose and adopt means and is able to control his environment. He can memorize, imagine, foresee, predict, hypothesize and create. Rationality therefore, is a veritable tool for creativity, innovation and invention. But the fact that all normal men have the capacity to think does not mean that all are equally good at thinking, just as virtually all men have the ability to see, they do not see equally well. And so when the researcher talks of aiming to promote creativity or to make learners more creative, he means that he wants learners to think well.

All normal people are by nature creative in a way because they are constantly changing the ideas which they hold about the world around them. Creativity can be used to open up understanding and make the product of thinking, its processes and services between the sources and recipients better, least to mention that it can be

used to create them in the first place. It is expected that increasing our creativity will help us, our institutions, organization and global interactions more transparent and lead to an improvement in the quality of our thinking output. Creative thinking is the process which we use when we come up with new and constructive ideas. It is the merging of ideas which have not been merged before. Brainstorming is one form of creative thinking; it works by merging someone else's ideas with your own to create a new one, using the ideas of others as a stimulus for our own.

Namwambah (2003) noted that creative thinking process can be accidental or deliberate. Without using special techniques, creative thinking does still occur, but usually in the accidental way; like a chance happening making you think about something in a different way and then discovering a beneficial change. Other changes happen slowly through pure use of intelligence and logical progression. Using the accidental mode of creative thinking is taking chances with human progress whereas the use of a logical progressive process often produces desired products to develop and improve upon. In an accelerating and competitive world such as ours, this obviously is advantageous and positive.

Using special techniques, deliberate creative thinking can be used to develop new ideas. These techniques force the merging of a wide range of ideas to spark off new thoughts and processes. As earlier mentioned,

brainstorming is one of these special techniques, but traditionally it starts with unoriginal ideas but with a sense of caution not to fall into prejudices and biases. Development of a balanced and acceptable approach to proper thinking can occur much more rapidly using these deliberate techniques than by accident and imposition. Many people known for being creative use these techniques, with or without being aware they are doing so either because they have been or have not been formally trained in them. If these deliberate techniques are used during the initial policy design and decision-making stage, a balanced approach is attainable at the implementation and execution stage.

With practice, ongoing creative thinking (the continuous investigation, questioning and analysis develop through education, training and self-awareness) occurs all the time. According to Gomerep (2009) on-going creativity can maximize both accidental and deliberate creative thinking. Ongoing creativity takes time and deliberate practice to become skillful at, but it is surprising how quickly it becomes an attitude, not a technique if married to the process of policy evaluation and implementation. The first step to take is to learn the creative thinking techniques so that one can deliberately use them to come up with new ideas. One can then be at an immediate advantage over those who do not know how to use them. The person can then practice the techniques to

increase his skills at ongoing creative thinking in various realms of his thinking process. After a while one may even find it unnecessary to use specific techniques because one may be having too many ideas anyway.

In simple terms, creative thinking is generally considered to be involved with the creation or generation of ideas, processes, experiences or objects. As mentioned earlier, normal people are capable of generating some ideas. However, ideas generated, depending on the motive can either be biased, mixed up or even just confused. The real problem begins when we have to sort them out and make sense of them. When we need to apply them to the practical situation and when we need, as a baseline, these ideas to appeal to the greatest number. This is when the notion of evaluation becomes important and so critical.

Due to low level of creative thinking skills, obtainable in Nigeria, students at all levels of education commonly “believe” what they are taught by teachers without sufficient understanding. Students hardly process what they are fed with because they do not possess creative thinking or reflective thinking abilities to examine issues in order to find out truth for themselves. Obviously, students are often simply indoctrinated and therefore gullible. They often memorize facts without comprehending, and even the memorization is on fixed contents which the students are programmed on. Indoctrination suppresses the

development of Creative thinking in learners in the sense that it closes the forum to criticize, question, evaluate or reject information presented to him. The result is often the inculcation of beliefs in learners. Kani (2012) noted this when he said, a primary school pupil for instance, can memorize a multiplication table of 1×2 up to 20×2 , but cannot tell 21×2 because that is what he was “told” not “taught”. He can tell that $2+2 = 4$ but cannot prove or do the same arithmetic on another. He can also memorize an arithmetic table of “even” numbers and when asked he can give correct answers, but cannot do same with “odd” numbers which are between the even ones. At secondary and higher levels, students mostly prefer direct questions like; define, mention, list, enumerate, what is, identify; while such students dislike application questions like; justify, analyze, examine and compare, or questions on Logic because the actual knowledge of the questions are not there, and so students often graduate with certificates but without the required knowledge. Learners’ low level of creative thinking and lack of innovation are linked to poor level of inventions. Other more worrisome manifestation of poor creative thinking in the education system includes rampant cases of examination misconduct in the school system, often orchestrated by the very individuals who are supposed to prevent it: examination agencies, school administrators, teachers and parents.

Creative thinking in Science and Technology

Irrespective of the manner in which one understands the concept of creative thinking, the fact is that creative thinking is the engine of growth and development. This is most pronounced more than anywhere else, in science and technology. It has facilitated many innovations which in turn have led to unprecedented growth and progress in different areas of human life and activities in the last two centuries. Toffler (1970) has well argued that scientific and technological advancement in the twentieth century has taken humankind in an astronomical speed of progress, and it is becoming difficult for man to cope with it. Man is in for shock, and I think his forecast has come true in our own times when we are trying to cope with the speed of technology, especially in the fields of genetic engineering and information technology. Friedman (2006) succinctly described the effects of digitalization in the globalized world. He spoke of the transformative power of information technology in the contemporary world. The hierarchy has been demolished by the new information technology and the new order of level playing field has been established which he called "the flat World". In the "flattened world", information is no longer the prerogative of a privileged few, but is available to all at their fingertips. All that they need to do is to log on to the World Wide Web (www) of information; it opens to the new knowledge horizon. The World

Wide Web has also created new ways of human relationships. The social networks on the cyber space have redefined the manner in which human relationships are initiated and maintained. We are inhabitants of cyber space; and cyber culture is something we need to get used to in contemporary style of life.

Before discussing strategies of enhancing creative thinking in learners through instruction, it is important first to identify some common barriers or obstacles to creative thinking

Barriers to the Attainment of Creative Thinking

a. Social Influence

When one tried to count the number of direct attempts to control one's thoughts and behaviour in a single day, one would inevitably discover people requesting one to do things, asking one to buy things, suggesting how one should think about things, offering one slogans to repeat, songs to remember, attitude to change, and ideologies to believe. This is not to consider the influence of newspapers and radio programmes. We live in an environment dense with influence attempts. Society is a massive group of people influencing, persuading, requesting, demanding and manipulating each other to further their ends. Today, people still rely on the use of persuasive tactics much more than did the ancients. However, the modern approach to persuasion does not take the form of

reasoned argument and debate. Today, the appeal to the masses is through manipulation of symbols and of people's basic human emotions to achieve certain ends. The question is, since the ability to persuade, and to resist persuasion is directly related to one's success in life, one would expect the topic would be taught in school. However, how many people know the principles of persuasion? How many people are even aware of the thousands of times each day they are influenced by someone else? When one takes a look at his medicine cabinet, or pantry, or garage, each item one sees is a war trophy, representing some company's victory over their competitors. For some reasons, or may be for no reason at all, they convinced one to trade his hard earned money for their product. How did they do that, exactly? There are legions of influence agents operating in our society today. They thrive by getting people to think things and do things they want them to think and do. Most people are either unaware of these influences, or when they are, vastly over estimate the amount of freedom they have to make up their own minds.

b. Prejudice

Prejudice is prejudgment, or forming an opinion before becoming aware of the relevant facts of a case. The word, according to Dovidio (2010) is often used to refer to preconceived, usually unfavourable judgments towards people or a person because of gender, political opinion, social class, age,

disability, religion, sexuality, race/ethnicity, language, nationality, or other personal characteristics. In this case, it refers to a positive or negative evaluation of another person based on their perceived group membership. Prejudice, according to Rosnow (1972) can also refer to unfounded beliefs and may include any unreasonable attitude that is usually resistant to rational influence. Allport (1954) on his part sees prejudice as a "feeling, favourable or unfavourable towards a person or thing, prior to, or not based on, actual experience. The older we get, the more preconceived ideas we have about people and things. These preconceptions often prevent us from seeing beyond what we already know or believe to be possible. They inhibit us from accepting change and progress, which are important aspects of creative thinking. The caution however, should extend further that the ease and readiness with which we accept our whims and caprices on the former issues is no guarantee that they are true. This is because emotions may have been called upon in connection with such particular thoughts. Hence the questioning of our habits of thought may lead us to a clearer insight into the nature of our situations with increase chance of our behaviours being reasonable. This is to say that our thought habits are not to be passively accepted, but rather subjected to rational scrutiny, so that our deepest beliefs may be based on reason and not merely on thought-habit which are likely

to be colored by ethnic, superstitious, and other interests.

c. Fear of Problems

A reaction to a problem is often a bigger problem than the problem itself. Many students avoid challenging problems like Mathematics, Physics, and Logic until it is too late, largely because the students have never learned the appropriate emotional, psychological, and practical responses. A problem is an opportunity to enhance reasoning. The happiest people welcome and even seek out problems, meeting them as challenges and opportunities to improve thinking. A problem is, seeing the difference between what you have and what you want or recognizing or believing that there is something better than the current situation or an opportunity for a positive act. Seeking problems aggressively will build confidence, increase creative ability in learners and give them a better sense of control over their lives and situations.

d. Fear of Failure

Thomas Edison is noted in Gomerep (2009) to have remarked that in his search for the perfect Filament for the incandescent lamp, had tried anything he could think of, including whiskers from a friend's beard. In all, he tried about 1800 things. After about 1000 attempts, someone asked him if he was frustrated at his lack of success. He said "I have gained a lot of knowledge; I now know a thousand things that won't work". Fear of failure is one of the

major obstacles to attaining creativity. The cure is to change students' attitude about failure. Failure along the way should be expected and accepted; they are simply learning tools that help focus the way towards success. Not only is there nothing wrong with failing, but failing is a sign of action and struggle and attempt... much better than inaction. The go-with-the-crowd types may never fail, but they are essentially useless to humanity, nor can they ever enjoy the feeling of accomplishment that comes after a long struggle. Mistakes are not fun, but they are surely educational.

e. Faulty Analogy

Analogy is the way in which much of our thinking in Nigeria is guided. Analogy therefore proves to be a reasonably good guide to conduct. Analogy becomes dangerous when the conclusion to which it points is regarded as certain instead of being probable. Analogy is supposed to be just a guide to expectation, not a proof of a conclusion. Very often analogies are wrongly used to proof conclusions, which is a crooked way of argument. Mwajim (2008), for instance, noted a Nigerian situation where one ethnic group uses analogy to proof their beliefs about another ethnic group is an indication of false analogy. Preachers in Churches and Mosques make use of analogies very often. Such wrongful use of analogy can hinder the development of creative attitudes among the learners of different ethnic groups. Hence, the educator should guard against such

wrongful use of analogies in educating learners.

Having outlined some of the impediments to attaining rationality and since our findings also demonstrates that the level of rationality has not reached satisfactory level among our people; our assumption is that this unsatisfactory state of affairs is neither natural nor peculiar to Nigerians and therefore can be overcome, especially when such impediments are systematically dealt with through education. Before we delve into the identification and selection of contents, and the pedagogy necessary for the programme of action however, it is necessary at this stage to consider the path followed by iconic philosophers in history. This will serve not only as a guide to our steps but also reveal exhaustively the variables that are required for the successful attainment of our objectives.

Enhancement of Creative Thinking through Instruction

Virtually all researchers on this subject discuss the indispensability of rational skills in connection with creative thinking. Robinson (1972) for example stated that:

Teaching children to become effective thinkers is increasingly recognized as an immediate goal of education.... If students are to function successfully in a highly technical society that we find ourselves, then they must be equipped with

life-long learning and thinking skills necessary to acquire and process information in an ever-changing world.

Educators generally agree that it is in fact possible to increase students' rational capacities through instruction and practice. Ristow (<http://www.studentachievement.org/up-content/>) noted that in the past, these capacities have often been regarded as "...a fluke of nature, a genetic predisposition..., qualities that are either possessed or not possessed by their owner and that education can do very little to develop these qualities". Ristow then rightly goes further to say: "However, a great deal of the research currently being reported indicate that the direct teaching of creative thinking can produce better, more creative thinkers". The whole idea is to develop in a person the mental ability to analyze, synthesize, and evaluate problems, find alternatives and options, to break down information into its constituent parts and to be able to put together given elements to form an entirely new pattern or situation, as well as assess the value of such information. A rationally competent person should be able to solve problems which may involve generalization, evaluation, proof, deduction, induction and facilitate the development of a broad mind and outlook through the processes of verification, vindication and appropriate reflectivity. Consequently, the action plan will lay emphasis on the

rationality of subjects rather than the facts underlying the subjects. This is because the content of the action should enable the learner to make responsible, personal and moral decisions after being adequately sensitized into a self-knowing and self-controlled person capable of imaginative weighing of alternative courses of action, understanding of other people's choices, views and ways of life, liberated from stereotyped ways of thinking and perceiving. The content of the action plan therefore, will be committed to the rationality of the subject. For example, Macityre

([http://www.australiancurriculum.edu.au/humanities-and-social](http://www.australiancurriculum.edu.au/humanities-and-social-science/history/rationale)

science/history/rationale) noted that the rationality of History as a subject should be based on evidence derived from remains of the past. It is interpretative by nature, promotes debate and encourages thinking about human values, including present and future challenges. The process of historical inquiry develops transferable skills, such as the ability to ask relevant questions; critically analyze and interpret sources; consider context, respect and explain different perspectives; develop and substantiate interpretations, and communicate effectively.

Practical science subjects which are necessarily based on observation and logical thinking are generally the best preparation for the enhancement of creative thinking because such study helps learners develop habits of responsible criticism and interpretation

of events and situations. To train learners such science subjects is not only to transmit factual knowledge but also to mould and transform learner's outlook into a scientific one following rational principles. Secondly, having a scientific outlook also develops the spirit of intellectual modesty, humility and tolerance of diversity of viewpoints knowing that there are many different defensible answers to different questions. Hence, learners come to appreciate that no view point is either absolutely correct and final or absolutely wrong and final because of support or otherwise of it by people. Thirdly, the scientific outlook will engender in learners intellectual qualities of curiosity, expectation of progress, confidence in human intelligence, a sense of reliability and orderliness of the natural world.

The rationality of mathematics consists in the logic and reasoning of problems, formation of mathematical concepts, mathematical analysis, measurement, comparison, evaluation, and synthesis. Burton (1984) noted that "mathematical thinking is the natural means through which we classify, combine, relate and transform information". Furthermore mathematical reasoning is very logical in character and so the mastery of it is not possible without the mastery of logical reasoning. Logic has to do with following the principles of correct reasoning from premise to conclusion; hence, it is necessary to establish canons for judging the validity of deduction which is

provided by mathematical logic. This process develops the learner's reflective powers and feelings at the moment of expression which is the consequent development of Creative thinking.

Conclusion

This essay examines the concept of creative thinking as an ideal in Nigerian education. To do justice to that the paper started by delineating the meaning of the concept of creative thinking and its benefits to society while at the same time identifying some of the barriers to the attainment of it. Creative thinking centers around the idea of seeking evidence, closely examining reasoning and assumptions, analyzing basic concepts, and tracing out implications not only of what is said but of what is done as well. This inevitably leads to creativity and innovations which are themselves essential bases for inventions. Next, we recommend introduction of some special subject contents into school curriculum at all levels. We also suggested a new pedagogy that can be adopted in instruction.

Recommendations

Virtually all writers on this subject discuss Creative thinking skills in connection with the two related phenomena of modern technology and fast-paced change. Robinson in Gomerep (2009) for example, stated that: teaching children to become effective thinkers is increasingly recognized as an immediate goal of

education.... If students are to function successfully in a highly technical society that we ourselves, then they must be equipped with life-long learning and thinking skills necessary to acquire and process information in an ever-changing world.

Secondly, Nigeria' young people, in general, do not exhibit an impressive level of skill in creative thinking. This is apparent in poor manufacturing ability in all fields (Carpentry, Music, Movie, etc.). Educators generally agree that it is in fact possible to increase students' creative thinking capacity through instruction and practice. Ristow in Gomerep (2009) noted that research currently indicates that the direct teaching of creative thinking can produce better, more creative thinkers.

At the primary education curriculum level, we suggest the introduction of the following;

- a. **Computer Assisted Instruction (CAI):** Although the approach taken differed across the various kinds of instructional software studied, all CAI programs designed to improve student' thinking were effective. The programs focused on skill building in areas such as verbal analogies, logical reasoning and inductive/deductive reasoning.
- b. **Comprehensive School Mathematics Programmes:** This is an elementary-level mathematics curriculum that focuses on classification,

elementary logic and number theory. Children use computers, explore concepts, develop skills, and define new ideas.

c. **Philosophy for Children:** It is designed to develop thinking and reasoning skills through class-room discussion of philosophical topics. The program is organized around six novels in which children apply philosophical thinking to their daily lives.

d. **Think:** This program requires secondary school students engage in problem-solving activities in which they are encouraged to discuss the rationales leading to the conclusions, consider other points of view and analyze various reasoning processes.

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