

EDUCATION

IN THE INFORMATION AGE:

GLOBAL CHALLENGES AND ENHANCEMENT STRATEGIES

PROCEEDINGS OF FIRST INTERNATIONAL CONFERENCE OF
THE FACULTY OF EDUCATION, UNIVERSITY OF NIGERIA, NSUKKA

Volume 2



B.G. NWORGU

**PROCEEDINGS OF THE FIRST INTERNATIONAL CONFERENCE OF
THE FACULTY OF EDUCATION, UNIVERSITY OF NIGERIA, NSUKKA**
VOLUME 2, 2008

**EDITED BY:
PROFESSOR B.G.NWORGU**

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UNIVERSITY TRUST PUBLISHERS

First published in 2008 by
University Trust Publishers
Nsukka

ISBN 978-2955-73-6

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24 CONTEXTUALIZING CREATIVE AND INNOVATIVE COGNITION IN THE GLOBAL AGE: AN IMPERATIVE FOR PRODUCTIVE EDUCATIONAL SYSTEM

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Abstract

The paper examined the need to engender creative and innovative cognition that is relevant to our societal problem through domestication and contextualization of our instruments of cognitive development. It is argued that creative and innovative thinking is culturally, symbolically and contextually laden, and that the use of alien change agents to engender creative and innovative thinking creates conflict of dual-perception. Such conflict of dual-perception skews the creative cognition away towards the alien system and the resulting cognitive product is therefore less relevant to the local system. The role of language, symbols, culture, social peculiarity in research and instructional materials in engendering or hindering creative thinking were discussed. The paper explored ways in which our creative and innovative cognition has been and is being externalized. Recommendations on how to remedy the situation in the face of increasing information globalization was made.

Introduction

There is a growing awareness of the importance of creativity in national development. This phenomenon has led some analysts to equate the myriad of the problem facing Africa as a symptom of creativity inertia. Etuk (2007) in his analysis of the problem facing Africa adduced and concluded that the problem of Africa is largely a problem of creativity, which he called "creativity crisis". In his words,

"...Africa's crises are essentially, a creativity crisis – the inability of the vast majority of our brothers and sisters to recognize, to develop, and to engage their creative abilities – their distinctive and most important human attribute – in significant and beneficial local, national, continental, and/or planetary actions. The result of this deprivation is widespread: personal sense of inadequacy, frustration, and meaninglessness of which most of the other "crises" are but the symptoms" (p.13).

This colossal indictment on the vast majority of Africans including Nigerians is questionable when examined from empirical and scientific grounds. The word "inability" according to Oxford Advanced Learner's Dictionary of Current English reflects "the lack of power or means" or being unable to do something. Such views invariably allude to the hegemonic belief that Africans are incapable and should be helped. The above assertion arouses some scientific questions. Such as, are Africans incapable of creative thinking? Are Africans incapable of producing creative products? Or is it that the psychological, social, and political climates are not conducive for creative manifestations?

Above questions reflect the myriad of dimensions that creativity research can take. For instance "a primary distinction has been made between creativity as a (mental) process and

creativity in terms of the outcome of that process" (EUA, 2007: 16). Gilhooly (1982) also identified three dimensions of creativity to include creative products (products of creativity), creatives (creative individuals), and creative process (cognitive activities involved in creativity). Others have also argued that creativity cannot be discussed independent from environment as its manifestation is not much of a personality factor but more of the enabling environment (Simonton, 1990; Lubert, 1990). Also creativity has recently been identified as a complex exchange between individuals and the context (Choi, 2004). The emerging idea now is that creativity is domain specific (Runco, 2004) and not diffused. For instance, one can be creative in arts but not in science or one can be creative in fashion designing but not in sports.

All these conceptions of creativity have informed and influenced research in creativity with each researcher focusing in a particular area. Thus, one wonders from which of the dimensions Etuk (2007) is writing from. Such assertion obviously must have emanated from the inability to specify or distinguish between the various dimensions of creativity as shown above.

The Creativity Crisis in Africa

The premise upon which this paper is based is that Africans are capable of creative and innovative cognition, and that they do think creatively but the type of creative and innovative cognitive change agents (cognitive resources) being used to engender creative thinking in Africans are largely alien to the society and creates a problem of mismatch between what is known and what is out there in the society. The use of such alien cognitive change agents creates a creative thinking system that is not relevant to the African society. The consequence is that the product of such creative thinking will largely be irrelevant to the African society.

It is therefore argued that the creativity problem in Africa does not stem from any inherent incapability or personality deficit among the masses of Africa as alluded to by Etuk (2007). It partly stems from the method and system of engendering creative and innovative cognition in our institutions of development, specifically, our educational system. When an individual cognition has been calibrated to an alien system, the product of such calibrated cognition will become irrelevant to the surrounding context.

In the process where such calibration did not result in an entire change of cognition a problem of dual-cognition may arise, creating cognitive dissonance (confusion). An individual with such cognitive state does not belong to any system. He does not belong entirely to the foreign system and does not belong entirely to the local system. His system of thought becomes half foreign and half local. The resulting output becomes less relevant to the home problem and less relevant to the foreign system. This may account for why our educational system has been described as producing "half-baked" graduates. Half-baked implies that only half of the training is relevant. The other half is irrelevant. We should remember that the educational system certified them as complete using its own standard but the society, which remains the receptionist, has declared them half-baked. It could be argued therefore, that the other half is there, but it is foreign and is alien to the society.

The product of creative thinking cannot be divorced from the cognitive rudiments that were used in the process. This cognitive rudiments involves those cognitive artifacts such as language, believe, culture, symbols and the instructional materials present in the thinkers environment. Social, economic, and political problems emerge largely when there is a

mismatch between the prevailing collective cognitive style and the environmental (social, political, economic or psychological) structure. This condition creates dual-perception (Ozioko, 2000). Obviously, context can either be inimical to innovative cognition or accelerator of innovative cognition (Eyo, 1995). The basic aim of this paper is to show that our educational system to a large extent skewed our cognitive style to alien system.

Conceptualizing Creative and Innovative Cognition

The search to delineate what constitute the creative process has led to varying conceptualization of creativity and its associated concept (Isaksen, 1991). This is not unconnected with the elusive nature of the concept (Firestein, 1973). The first conception of creativity was based mainly on the traditional implicit theory of human behaviour. On this view, creative thinkers were believed to be superhuman beings with statistically uncommon ability. Creative thinkers were then conceptualized as people with exceptional talents far beyond those of the masses (Eysenck & Keane, 2000). In contrary, Researchers now differentiate between different aspects of creativity.

Gilhooly (1982) identified four related concepts associated with creativity to include creativity, creative products, creatives and creative process. Creative products refer to the observed outcomes of creative process such as poems, scientific theories, paintings or technological advances that are both novel and acknowledged to be valuable or useful in some way. Creativity according to Gilhooly, refers to attributes ascribed to those individuals who show long term tendency to generate novel products that are also influential. Creatives on the other hand refer to those individuals that exhibit creative ideas. This classification has informed various definitions of creativity with some focusing either on the person (e.g Peavy, 1979), the products (creative products) or on the process (e.g Onu, 2006; Torrance, 1967), while those who conceptualize creativity as occurring in a context define creativity with more emphasis on its relationship with the environment (Eyo, 1995).

Innovation on the other hand has been sometimes used synonymously with creativity (King, 1990; Amabile, 1988). However, some distinctions have been made. To some, it is the "successful implementation of creative ideas" (Amabile, 1996:1). Innovation is the process of implementing new ideas to create new process or products (Galbraith, 1982). For Gurteen (1998), creativity is "the process of generating new ideas, whilst ... innovation the sifting of those ideas" (p.7). Innovations seem to be the final effort in bringing creative ideas to reality. One of the main differences between innovation and creativity is that whilst a creative idea is a function of individual activity, innovation involves collective effort (Tushman & Anderson, 2004). Both creativity and innovation are treated as synonymous concept in this paper.

The above review shows how difficult it could be trying to define a concept in the field of creativity. However, as earlier stated, creativity can be defined in terms of the product, the person, or the process. Process refers to those cognitive activities that individuals undergo or engage in when performing creative thoughts (Gilhooly, 1982). It is these activities that are referred to as cognition. Therefore, creative and innovative cognition refers to those mental processes or mental activities that an individual or group of individuals undergoes while producing novel ideas. These mental activities include imagination (imagery), memorization (memory), decision making, speaking (language), etc. The cognitive process and mental

activities involved in the innovation process is what is referred to in this paper as innovative cognition.

Is creativity relative?

Asking the question whether creativity is relative arouses a lot of question. Such as whether our cognitive structure that produce creative products are different. Several theoretical positions have postulated different cognitive processes involved in creativity (Gilhooly, 1982). None of the theoretical postulates implies cultural relativism in their positions. Thus, emphasis is always on individual differences in cognitive styles (e.g Kirton, 1976, 2003). Even researches that tend to relate cultural, social and psychological context to creativity phenomenon tend to do so by concentrating on the psychological climate engendered by socio-cultural phenomenon which may encourage or hinder creativity (Fleith, 2002; Amabile, 1996). The thesis of this trend is that the cultural environment has strong influence on creativity either by supporting it or inhibiting it (Fleith, 2002). This climatic factors involves to what extent a culture encourages uncertainty avoidance (Galbraith, 1982), individualism or collectivism (Morris, Davis & Allen, 1994), and masculinity (Converse, 1972). Other culturally climatic factors implicated in creativity includes organizational or social support (Alencar & Bruno-Faria, (1997), mutual trust, collaborativeness, mutual respect, supportiveness, openness and authenticity, pleasure, and humanness (Knowles, 1984). Eyo (1995) listed some of the psychoclimatic factors that inhibit creativity to include authoritarianism, conservatism, prejudice, jealousy, stereotypes, sycophancy, unnecessary conformity and compliance, superstition, fatalism and belief in luck or chance.

These studies do not in any way allude to the relativity of creativity. The objectives of the above reviewed studies were to characterize a set of universal factors that may hinder or enhance creativity no matter wherever people live. However, it is pertinent to note that creative products are relative (Gilhooly, 1982). Such relativity of creative products is implicit and explicit in various definitions of creativity (e.g Onu, 2006; Eysenck & Keane, 2000). Almost every definition of creativity alludes to the fact that creative products must be **useful and acceptable** in the society in which it occurs. The implication of this is that what is creative must not only be somehow useful in solving a problem in the society but also acceptable in the society. Vernon (1989) concurred with this position when he stated that:

Creativity means a person's capacity to produce new or original ideas, insights, restructuring, inventions, or artistic objects, which are accepted by experts as being of scientific, aesthetic, social, or technological value. In addition to novelty...we must incorporate in our definition the acceptability or appropriateness of the creative product, even though this valuation may change with the passage of time (p.94).

Therefore, that which is accepted as creative in a particular society may not be accepted or valued as creative in another society because such creative product may be solving a problem in one society but not useful in solving a problem in another society. The reason should not be far fetched. Different societies pose different problems. What may be a problem in Nigeria may not be a problem in another country. For instance, earthquake is a major environmental problem in Asian countries. Creative solution to such problem may require devising ways of constructing houses that will be resistant to earthquakes. Here in Nigeria, no one thinks of such thing as a problem nor is bordered by it.

Thus, if we need to develop creative ideas to solve our problems, we must reason with our problem, we must teach students our problem; we must research our problem and talk our problem. By thinking our problem, we ponder on solutions. But how do we ponder on solutions to our problems when the problems we read about and encounter everyday in our institutions of learning are either alien to our society or global problem. Anyakoha (2006) while describing her experience at the Creative Education Foundation in New York stated that: *The problems people came up with in my Spring Board class were not our (Nigeria and Africa) problems and my problems seemed strange to the other participants...this situation emphasizes the need for Creative Problem Institute with the African perspective. We, from Nigeria and Africa need to acquire the skills, knowledge and attitude which CPSI of USA offers and bring such to bear on our Nigerian and African situations, so that we can effectively explore our African challenges, generate ideas that are consistent with the Nigerian and African peculiarities and prepare for actions (p.36).*

This experience clearly attests to the fact that creativity is relative and does not just stop in problem solving but in discovering the problem. But our problem discovering and problem solving strategies have been externalized. The next part of this paper discusses the way in which such externalization has been done and is been done and how we can remedy the situation. It will be shown that the externalization has been done through the use of alien cognitive change agents such as in the instrument of research, language and mass media.

In fact, the emerging trend is that creativity is situated (Matuga, 2004). Csikszentmihalyi (1988) has developed a system view of creativity that identified three important components of a creative system. These include the individual (who generates ideas), the domain (the cultural or symbolic system from which the individual draws the knowledge), and the field (the social or interactive component). The central idea in the system approach is that individuals' creative ideas and products are largely a function of what the society offers.

A Cautionary Note

This paper is not advocating an entire withdrawal from the global system. It should, however, be understood that no matter how global the world or societies become, each society is confronted with unique problems that require unique solutions. Such problems require unique creative ideas which must be relevant to the society. In as much our educational system strive to produce human capitals that can contribute to the world at large, we should not loose sight of our own society and its peculiarity.

Mediating Factors in Creative and Innovative Cognition

Language and creative/innovative cognition

The actual impact of language on human cognition has evolved into an intensive debate among scholars (Bloom & Keil, 2001). One version of the debate always associated with Whorf (1956) assumes that differences in language lead to differences in thoughts. Actually, Worf's proposition has been classified into two perspectives. The first is the strong version which states that language determines thought and is known as *language determinism*, while the weak version states that language *influences* thought (Eysenck & Keane, 2000). The stronger version of the hypothesis has been vigorously falsified both by theoretical analysis

and reinterpretation of the evidences upon which it was founded (Bloom & Keil, 2001; Carruthers, 2002, 2008).

Another version attributed to Vigosky (1962) is that thought is mediated by language. Some aspects of this view have survived such as the language *scaffolding effect* in children (Carruthers, 2008). The scaffolding concept is used to represent the enhancing effect of acquisition of language on children's cognition. Bloom and Keil (2001) reviewed the arguments and concluded that the debate is not whether language actually influences thought because it does, but whether the structure of language (syntactic, morphological, lexical phonological, etc.) has an affect on thought. In fact, a strong version that shows how language is the integrating factor between the input and output system of thought has been proposed (Carruthers, 2002, 2008).

In as much as the strong claim of language as the determinant of cognition has become unpopular, there is still a very wide acceptance among scholars that language, even though it may not be a *sufficient* condition for thought, is a necessary condition for cognition at least in the sense that it may give direction to what an individual thinks (Baker, 1993). In fact, research in eye movement has demonstrated enormous evidence that words direct our gaze and cognition (Altman, 2004). This is what I refer to as the directive function of language. The finding in this trend of research is that when a word is mentioned, people tend to search for the correlate of the word in the environment (Cooper, 1974, Altman & Kamide, 1999). Also researches in embodied cognition have shown that abstract concepts are equally grounded metaphorically in embodied and situated knowledge (Lakoff & Johnson, 1999). What this means is that even when abstract words that seem to have no object reference is mentioned, people construct the meaning around concrete metaphor (Barsalou, 2008). If cognition is involved in the creative process, which seem to be accepted among scholars, then these functions of language in directing thoughts undoubtedly is involved in creativity.

The language of impartation is important in the process of engendering creative and innovative cognition. It is important in the first instance because it is the medium of impartation, the medium by which value and culture are transmitted, and the medium of communication among members of the society (Uguru, 2007; Carruthers, 2002). If creativity is teachable, then the way and manner in which it is taught and communicated matters a lot. We use language to direct thought as could be seen in the advertising industries (Baker, 1993). In the same vein, we could use language to direct cognition in the classroom.

One way in which we have used language to externalize our cognition is through the use of foreign concepts that have no bearing in our society. For instance, teaching a child in Nigeria about the seasons with the concepts of summer, winter, fall, and spring does not only skew the child's knowledge about season, but makes the child to acquire concepts that have no bearing in our society. The child cannot associate such concepts with anything in Nigeria. Assuming we want to test the child in verbal fluency and ask the child to make a sentence with summer, winter and spring. If we take the speed of production as the criterion variable, we may well find out that the child performed poorly. The question is whether the performance was the Childs inability to make sentences with such words quickly or because the child lacks the appropriate association between the concept and the things he/she encounters everyday in the society.

Although it may seem somehow practically impossible to change the language of communication in our modern schools, effort should be made to use the second language to communicate concepts relevant to our society. Children from typical African society grow up totally under the influence of their mother tongue. When they go to school, they start to learn a new language. They will be required to speak, write and communicate in that new language. As shown above, if this language does not contain concepts that he/she has seen and touched. It becomes a different new world to him or her. Thus, cognitive dissonance occurs. The child instead of undergoing a progressive normal cognitive development that has started at home would then be regressed towards restoring equilibrium. Such cognitive dissonance if not sufficiently resolved may result in what Ozioko (2001) called dual-perception.

Such problem may result in poor expression and poor communication. It is a truism that literary works such as poems and novels are today recognized as creative products (Eyo, 1995). Alexander, Schallert, and Hare (1991) outlined three kinds of relevant knowledge necessary in literary writing: 1) Conceptual knowledge, this includes concepts and schemas stored in the long-term memory; 2) Sociocultural knowledge, which are information about the social background or context; and 3) Metacognitive knowledge, which is the knowledge about what knows. The first two factors outlined above speak volume. If the concepts that feel our heads are concepts not relevant to our culture and sociocultural background, how then can we creatively articulate literary works that represents our society?

The argument been advanced in this section is that some of the concepts and irrelevant languages we use in educating the students have no social relevance in the society. Such phenomenon creates a continuum between what the individual sees and what he knows. For us to engender creative cognition that will produce relevant products we need to bring our societal, economic and political problems to the doorsteps of the students through the use of socially relevant language concepts. By this way, our cognition could be directed to such problems. What the educational system should endeavour to do is to carry such concepts along with the environmentally relevant concepts. Distinctions should be made between such concepts, showing the students the differences and what it portends to the society.

Research

Our creative ability has been largely externalized by the instrument of research. Research is all about identifying problem and seeking ways to solve the problem (Keling, 1989). In the modern society, research does not only end up in problem seeking and problem solving, but the problem must be relevant to the society. Research obviously is an instrument of uplifting the society. Research invents new ways and more efficient ways of doing things. The policy of assessing research in some African countries today has largely encouraged researchers to seek for problems that are not relevant to our society. For instance, in the University of Nigeria, Nsukka, research papers are graded on the basis of impact factor (IF) (University of Nigeria Yellow Book, 2006). In as much as the intention may be genuine - to encourage the researchers to publish internationally accepted papers - it diverts research endeavours away from local problems to alien problem.

Most of the IF factor journals are based overseas. The editors are alien to our society and cannot adequately assess a paper that rests squarely on local issues. So for a researcher to publish in an Impact Factor Journal, the researcher must seek and research on problems

acceptable to the editors. By this, the local researchers are creatively solving other people's problem while leaving their local problem unsolved. Undoubtedly, research is a creative tool. This can be seen from the definition of creativity by Onu (2006) who defined creativity as "a mental process undertaken by an individual or a group of people to produce new ideas, new concepts, new designs, process information in such a way that the result is new, original and meaningful" (p.40). Research is all about producing new ideas, new concepts, and new designs that is sometimes original but ultimately meaningful. By engaging in research that should be accepted in alien society, we develop new ideas, new designs and new concepts that are of more relevance to the outside society.

Permit me to infer that it is these same foreign amenable concepts, ideas, and designs that the researchers transmit unto their students. The students are therefore meant to learn things that are not relevant to the society. So you see, the students produced in such systems possess the certificate of the producing society but the knowledge he/she possesses is not of the society. This may be why there is a mismatch in what the students learn inside the school and what is outside there. We must find a way of domesticating our research endeavours for them to be applicable to our society.

This matter can be connected to the issue of language. If we must research on what the British or the American will understand, then we must use the concept and tone they can comprehend. What this paper is advocating is not an entire withdrawal from the international community. It is advocating an adaptation of skill, knowledge and attitude if there is any to adapt. The system should encourage creative research papers that concerns local issues and local problems. For instance, the problem of corruption in Nigeria is not a global problem but a local problem. Research in it may likely not excite a foreign editor. Rather a research paper in terrorism may likely gain more acceptance than such paper. The assessment method should therefore not be restrictive as such culture of restrictiveness has been found to be inimical to creativity (Eyo, 1995). Researcher should be assessed more on how relevant their research work is, methodology, and accuracy, rather than *where* it is published.

Cultural artifacts/Instructional Materials

There is a reawakening interest in the research literature about the role of cultural artifacts in cognition (Norman, 1991). Cole (1990) has argued that cultural psychology is situated on two important principles – 1) the ability of human beings to create artifacts; and 2) the corresponding ability to transmit accumulated knowledge to subsequent generation. In fact, research in cultural psychology has shown that mathematical thinking arises out of historic socio-cultural practices and is shaped by artifacts and goal-directed social and work practices (Ascher, 1991; Lave, 1988; Stigler, 1984).

Thus the artifact we use and grow up with actually impacts our creative thinking. In what may seem a clear demonstration of how cultural artifacts can impact our creative cognition was done by Ezeilo (1978). In her studies with Zambian children, she discovered that a particular task in which the Zambian children was found to perform poorly in could be done better when local instruments were used. The phenomenon could be attributed to from the fact that the children has been conversant with those objects and sees its relevance to there environment than the foreign instrument. We should endeavour to use culturally relevant artifacts in conjunction with alien artifact in educating the students in other to engender relationship between what is learnt and what is in the society.

The Press and Mass Media

The role of the press and mass media as cognitive change agents cannot be overemphasized. The role of mass media in shaping behaviour is epitomized in the following citation from Lazarfeld by Okoro (2007):

Mass communication engender social consequences not only reporting on changes in the environment and thereby reinforcing existing forces for changes, but also by creating or shaping our impression of various aspects of the environment through selective presentations and through emphasizing or de-emphasizing certain themes ... mass communication have the power to shape our impression of many situations and our conceptions of norms for behaviour in those situations – they provide a “real definition of the situation (Okoro, 2007: pp 87 – 88).

The implication of this assertion is that that mass media has a very great power to direct and change how we perceive and view issues. What the press promotes largely affects all the spheres of the society. Thus, there is an increased emphasis on the issue of contextualizing the programmes being run in our electronic media. The mass media plays a critical role in educating the people about the problems of a society. In the educational system, one area of communication that is playing an important role in disseminating scientific problems that require creative solutions is the World Wide Web. Almost all the students in the tertiary institutions in Nigeria access the internet for their assignments and project works.

The great question is: how much of the works done in Nigeria or in Africa can one access from the Internet. Obviously, it is with great effort and energy can one assess those works. In these days of increasing open access to research findings, we are much more acquainted with other people problems than our own problems. If the problem we know is other peoples problem, then the solution that we may obtain from any endeavour to solve such problem will only be applicable to the owners of the problem unless we equally share the same predicament.

Effort should therefore be made by publishers and institutions including the government to create websites dedicated solely to publishing research findings that are relevant to our society. Like other governments, African government should in addition to providing grants to researchers, develop a national website dedicated solely to publishing research findings in Africa. Such websites should be an open access web to enable students and researchers gain more knowledge about African problems.

Conclusion

This paper has tried to show that the creativity problem in Africa is not much of the inability of Africans to think creatively, but is much of where our creative energy has been directed. We make effort not to become Africans but to become Americans and Europeans by the way we communicate and the problem we seek to solve through research and mass media.

Our creative and innovative cognition cannot be relevant to our society if we continue to imbibe other people's problem and concepts. There is no doubt that some of the issues raised in this paper are controversial like the role of language in cognition. Effort was made to avoid pitching tent with any side of argument rather those factors that seem to be universally accepted were discussed with reference to creative and innovative cognition.

The implication of this discussion to policy makers in the educational system, researchers, and students are enormous. It hinted on what may be a new way of evaluating the low academic standards in Africa by suggesting that what students learn in the school is not actually of low standard but irrelevant to the society. The same thing applies to the research output in the system. These two important tools of engendering creativity were shown to have been externalized. The paper therefore advocated a total change in how these issues are carried.

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