

Brainstorming: An Act of Creativity in Vocational and Technical Education Curriculum in Nigerian Secondary Schools

Gbolagade, S. O.

Adegoke, E. S.

Department of Business Education

Emmanuel Alayande College of Education, Oyo

Lanlate Campus, Lanlate, Nigeria.

E-mail: adegokelizzy@gmail.com, bolagbola@yahoo.com

ABSTRACT

This survey is carried out to investigate brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools. The aim is to examine by relevant and notable strategies of brainstorming as an act of creativity with a view to assessing their implications for vocational education curriculum in Nigeria. The researchers designed a self-developed questionnaire entitled Questionnaire on Brainstorming the Act of Creativity in Vocational and Technical Education Curriculum in Nigerian Schools "QBCVTECN". The questionnaire was classified into two sections. Three hypotheses were developed and tested using t-test. The study adopts the multistage sampling to select six States from the six geopolitical zones of the federation. From this selection, one secondary school was selected from each of the States and thirty students were randomly selected from each of the selected secondary schools. This gives a sample size of one hundred and eighty respondents. The findings of the study reveals among others that there is no significant difference between male and female students on brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools.

Keywords: *Brainstorming, Creativity, Curriculum, Vocational, Nurture*

INTRODUCTION

Various behavioural manifestations and products of human actions can be said to have their foundations in brainstorming as an act of creativity or indeed, the creativity genius was a product of nature rather than nurture. It is more tempting to reinforce this belief. Giddling's (1950) findings cited by Gulford (2004) that only two geniuses could be found in every one million of the world's population of about 7 billion. In the field of education generally, almost every other important issue on the psychology of human development and learning has received somewhat monumental treatment in both books and academic journals, but it is rather disappointing to note that only an insignificant portion has been given to brainstorming as an act of creativity, particularly in Nigeria. Yet, it has long been established that every human being is born with some creative potentials and that these potentials can be developed and maximized through education. Therefore, this work is seen as one of the few attempts to awaken or reinforce the Nigerian educators and

researchers in the concept of creativity. The major objective is to achieve by relevant and notable research works on creativity with a view to assessing their implications for vocational education curriculum in Nigeria.

Upsurge of Interest in Brainstorming as an Act of Creativity

According to Guilford's (1950) inaugural address to the American Psychological Association, the upsurge of interest and inquiry into the nature of creativity by many Psychologists, that within the past few decades, it has reasonably helped to dispel doubts and clarify certain misconceptions surrounding its origin and manifestation (Guilford 1950, 1952, Rogers 1959); Torrance 1962, Razik, 1970). Rogers (1959) opines that clinical observation shows that the intimate knowledge of the way in which the individual remould himself in the therapeutic relationship, with originally and effective skills, given one confidence that every individual has creative potentials. He further opines that based on his experience that it (creative potential) exists in every individual and awaits only proper conditions to be released and expressed. An identical view point has earlier been expressed by Guilford (1950) that:

The general psychological conviction seems to be that all individuals possess some abilities, except for the occurrence of pathologies. Creativity act can, therefore, be expected of all individuals (p. 94).

Furthermore, a critical observation of the way individual set about solving their problems particularly when their existence are obstructed, they tend to support the view that brainstorming as an act of creativity is a potential property of every individual. For instance, the researchers' observation shows that a good percentage of Nigerian teachers who lost their jobs in Osun State as a result of mass purge in the public service owing to the severe economic recession in 2004 during the regime of Chief Bisi Akande found alternative ways of earning a living and in some cases doing better than when they were on paid employment. Nevertheless, during the Nigerian Civil War, evidence emanating from the war zones indicated that series of local military equipment and other hardwares were either improvised or invented outright by the "Biafran Scientists at what is now called Project Development Agency (PRODA), Enugu. This development apparently enabled the rebel army to hold against the Nigerian armed forces with foreign made weapons for about thirty months. Furthermore, the recent bomb blast of a church near Abuja on the Christmas day which claimed about 43 lives. The August 26 suicide bombing of the United Nations building in Abuja also claimed 24 lives by the Boko Haramists (Olakojo and Adebayo (2012) also is a typical example of brainstorming. This is an indication that given appropriate environmental conditions, individual, will exhibit some appreciable level of creativity.

Brainstorming as an Act of Creativity and Its Nature

In general, creativity is defined as the capacity to originate, invent, reflect, analyze and synthesize. To the Psychologist what constitutes creativity may vary depending upon this school of thought. The Behaviourist may define it along the line of stimulus-response process, and a trait factor theorist along that of personality trait factor. The cognitive

psychologist would view it in terms of mode of thinking and problem-solving skill, and to the humanistic psychologist, creativity may be defined along the line of motivational process. According to a Behaviourist perspective, Medrick (1962) defines creativity as the formation of association between stimuli and responses which are characterized by the fact that the elements so associated are not usually associated. He further suggests that divergers tend to link stimuli with responses that would usually be regarded as very unlikely while the convergers would link stimuli with usually familiar responses. Within the context of this definition, highly divergent (creativity) person has very strong potential and skills for effective association of their experiences with those aspect of their environment, which ordinary person do not relates. Rogers (1959) a Psychotherapist and advocate of Non Directive Therapy, gives his own definition of creativity as follows:

...that creativity process is that it is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other hand (p. 139).

In accepting Rogers' definition, one must distinguish between creative behaviour that leads to good end and that which leads to bad end. According to Guilford (1952), a creative personality, in terms of factor theory, manifests in creative behaviour which includes activities such as inventing, designing, combining, composing and planning. Individuals who exhibit these types of behaviour to appreciable degrees are recognized as creative.

In cognitive view point, creativity manifests as modes of thinking, cognitive style or problem-solving skill. Woolfolk and Nicolich (1980) consider that the most important characteristic is the creative attitude, by which they mean broadly purpose values and a number of personality traits that go to dispose an individual to think in an independent, flexible and imaginative way. In other words brainstorming as an act of creativity involves thinking in a flexible and divergent mode. On the contrary, Hudson (1966) views creativity strictly in terms of convergent thinking and divergent thinking, and adds that within each of these two modes of thinking, are some level, of emotional openness which allow for creative thinking; some resulting in inventions and creativeness. Jackson (1974) goes further to broaden the processes which may be involved in any particular mental ability to include not only convergent thinking and divergent thinking, but also memorization, cognition and evaluation. Effective combination of these abilities, it is thoughts will result in productive thinking. Productive thinking implies that a creative act will result in some observable products such as works of art, painting, invention, new or novel ideas and social personal or interpersonal problems. Though, brainstorming as an act of creative or productive thinking that results in novel problem-solving that involves or follow a defined process, as Torrance (1970) shows:

...certainly we cannot say that one is fully functioning mentally if the abilities involved in creative thinking remained undeveloped or paralysed, these are the abilities involved in becoming aware of problems, thinking of possible solutions and testing them. If their functioning is impaired, one's capacity for coping with life's problems is indeed marginal.

Brainstorming as an act of creativity is a motivational factor and is in congruence with those of Humanistic theorists such as Rogers (1959) and Maslow (1968), the dominant proposition is that every man has a natural tendency to achieve his potentials. This refers to the directional trend which is evident in all organisms and human life; the ways to develop, mature, expand or advocate; the tendency to express and activate all capacities of the organism or the self (Rogers, 1959). Another stand of this proposition is that it is only when a man is fed, clothed, safe from harm and loved by others that he can be free to originate, innovate and create. In other words, although every man is born with some creative potential and has a natural tendency to be creative, useful creative acts may thrive under conducive, social and environmental conditions. Understanding that brainstorming as an act of creativity is passive factors that cannot be reasonably isolated from general intelligence, what form should the current 9-3-3-4 curriculum take to foster the types of education that will cultivate in the learner, creativity as a significant aspect of general intelligence. This study will enable the students to be specialized in their own field instead of depending on government for jobs. Relying on white collar jobs by the students will be reduced if applied his or her own potentials in solving unemployment cases. It will enable the parents to assist their own wards in encouraging and supporting them when engaged in useful jobs. The Government also will consider this in planning and designing their curriculum for students in schools and the National Policy on Education will also benefit as well. The following null hypotheses were formulated for the research.

1. There is no significant difference between male and female students on brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools
2. There is no significant difference between Christian and Muslim students on brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools
3. There is no significant difference between Private and Public schools students on brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools

METHOD

The survey design was adopted for this research and it allows the researchers to elicit information from representative samples of the population. The target population for this work is made up of students in secondary schools in Nigeria. The study adopted a multi-stage sampling technique in the selection of the sampled respondents. In the first stage, Nigeria was divided into six geo-political zones:

South-East - Anambra, Enugu, Ebonyi, Imo and Abia.

South-South - Edo, Delta, Rivers, Bayelsa, Cross-River and Akwa-Ibom.

South-West - Lagos, Ogun, Oyo, Osun, Ondo and Ekiti.

North-Central - Kwara, Kogi, Plateau, Nasarawa, Benue, Niger and FCT.

North-East - Taraba, Adamawa, Borno, Yobe, Bauchi and Gombe.

North-West - Sokoto, Zamfara, Kebbi, Kaduna, Katsina, Kano and Jigawa.

Second stage – the researchers picked one state in each geo-political zone, South-East – Enugu, South-South – Edo, South-West – Osun, North-Central – Kwara, North-East – Taraba, and North-West – Kaduna. One secondary school was therefore chosen from each state and 30 copies of questionnaire were administered to each school in each zone making 180 samples. To investigate on Brainstorming as an act of creativity on vocational and technical education curriculum in Nigerian secondary schools, a structured questionnaire entitled: Questionnaire on Brainstorming as an act of creativity on vocational and technical education curriculum in Nigerian secondary schools “QBCVTECN” was designed. The questionnaire was that of Likert Scale with the allotment point of the response as Strongly Agree – 4, Agree – 3, Disagree – 2 and Strongly Disagree – 1. The personal data containing the age, sex, school, religion and level of the students were considered in the study. The questionnaire contains 15 series on brainstorming which were administered to 180 students.

Oladele (2000) views reliability as the consistency of a test to measure what it is meant to measure. The researchers adopt test-re-test method to test the consistency of the instrument. Twenty five copies of the questionnaire were administered to 25 students in Oyo State who were not part of the study and the same questionnaire were administered to the same students after a period of six weeks, having scored and correlated the two scores using Pearson’s Correlation Co-efficient with Alpha level of 0.05, the result realized is 0.79 which was considered to be useful for the study. Also, four Lecturers in the Department of Business Education vetted and confirmed the instrument as having content validity. The researchers administered 180 copies of the questionnaire among 180 students in the selected six schools from each zone constituting Nigeria. The data collected for this study were analyzed in two sections using frequency and simple percentage to analyze demographic data provided by the respondents, then for the second part of the analysis t-test statistics was adopted.

RESULTS AND DISCUSSION

Table 1 shows that the critical value is 1.772 while the calculated t-value is 3.120. The calculated t-value was greater than the critical value of 1.772, therefore, the hypothesis that there is no significant difference between male and female students on brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools is rejected. Table 2 shows that the critical value is 1.772 while the t-value is 2.901, since the t-value was greater than the critical value of 1.772 the hypothesis that there is no significant difference between Christian and Muslim students on brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools is therefore rejected. Table 3 shows that the critical value is 1.772 while the t-value is 1.8052 since the t-value was greater than the critical value of 1.772 the hypothesis that there is no significant difference between Private and Public schools students on brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools is therefore rejected. It has been realized that it takes a little imagination to recognize that the future of a civilization depends on the quality of creative imagination of a nation that

follows it, and that nation collapse when they fail to use intelligence and imaginative methods for solving problems (Parnes, 1970). It is in this context of national survival that the issue of creativity should be seen in Nigeria. It is in obvious awareness of the role of creativity in the curriculum that the developer of the National Education Policy (Federal Republic of Nigeria, 2004) had to insert in the policy document objectives such as building “a united, strong and self-reliant nation”, and of including “faith in man’s ability to make rational decisions”. Again, in setting of Decree No.16, Federal Republic of Nigeria (1988) set out minimum academic standard for the nation, the Decree spells out the objectives of technical education to include those of providing technical knowledge and vocational skills necessary for agriculture, industry, commerce and economic development and provision of relevant training to impart the necessary skills leading to the production of craftsmen, technicians, technologists and engineers and other skilled personnel who would be enterprising an self-relevant.

It is interesting to note that, in each of the three cited cases, the government promises to emphasise creative attributes such as decision making skills, enterprise and self-reliance. The cited section of Decree No.16 also gives implicit recognition to the type of vocational education curriculum that would give birth to a creative nation, a nation capable of solving its economic and technological problems and raising a self reliant citizenry. Having gone through the aims and objectives of the Junior Secondary School Pre-vocational curriculum by (Federal Ministry of Education, 2004) for instance, it is only introductory technology that has inculcation of creativity as one of its objectives, but how such objective is to be met is not clear in the curriculum. While the inculcation of creativity can be said to be implied in the objectives of Business Studies, the other Pre-vocational programmes, Agriculture and Home Economics are completely silent on it.

The major concern of these curricula is the presentation of reproductive ideas and facts to the learners. This mode of training is not likely to produce the type of young school leavers who can grow up to be self-reliant in the absence of paid employment. From all indications; the national vocational education curricula for Nigerian Secondary Schools by the Federal Ministry of Education (1985) and the NCE (Business and Technical Education by the National Commission for Colleges of Education were intended to correct the mistakes inherent in the former uncoordinated curricula developed by various State Ministries of Education and Teachers’ Colleges.

The strength of the whole-sale adoption of objectives curriculum model in these curricula has merit in terms of achieving specific learning objectives. This strength in allowing sufficient scope for creativity or creative problem-solving remains suspect. The point is that objective based curricula such as those in operation now place so much emphasis on course specification and specific learning outcomes and in the process, become too prescriptive to create conditions germane to creative behaviour expected of a vocational-technical education student. Furthermore, objective curriculum model usually raises serious problems not only to curriculum developers, but also, to the teachers and learners; when it comes to its application to areas of study which emphasizes personalized response to the learning experience, chiefly because it often makes a prior commitment to specification of

required learning outcomes. Obviously, objective curriculum model appears somewhat inimical to pervasive-learning experience which is critical to creativity. A vocational education curriculum meant to foster creativity in the learner should not have rote memorization of facts and meeting of prescribed learning objectives as its major focus. It has to be designed in a manner that will allow for finding out the type of persons the students are developing into, the type of thinking they are doing, how resourceful they are and how reasonable they are becoming. In order for these to be achieved, such a curriculum also needs to be based on a learning process that will enable the students to observe closely and explain thoughtfully those things they see and do, that will enable the students to believe that ideas and opinions to have some value or worth, and share their ideas and opinions with others. It needs also to be based on the principles that can allow the students to bring together their experiences in order to draw conclusions.

Table 1: Means, Standard Deviation and t-value of male and female students on brainstorming in secondary schools

Group	No. of Cases	Mean	SD	Degree of freedom	t-value	Critical value
Male	70	35.3142	7.062	162	3.120	1.772
Female	110	45.2341	7.745			

Source: Survey, 2013

Table 2: Means, Standard Deviation and t-value of Christian and Muslim students on brainstorming in secondary schools

Group	No. of Cases	Mean	SD	Degree of freedom	t-value	Critical value
Christian	80	35.3142	7.324	162	2.901	1.772
Muslim	100	45.2341	7.752			

Source: Survey, 2013

Table 3: Means, Standard Deviation and t-value of Private and Public students on brainstorming in secondary schools

Group	No. of Cases	Mean	SD	Degree of freedom	t-value	Critical value
Private	125	35.3142	7.245	162	1.8052	1.772
Public	55	45.2341	7.002			

Source: Survey, 2013

CONCLUSION AND RECOMMENDATIONS

This study is an attempt to awaken or reinforce the Nigerian educators and researchers in the concept of creativity. The focus is to examine relevant and notable strategies of brainstorming as an act of creativity with a view to assessing their implications for vocational education curriculum in Nigeria. The finding indicates that there is no significant difference between private and public schools students on brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools. It also posits that gender differences have no relationship on students for brainstorming as an act of creativity in vocational and technical education curriculum in Nigerian secondary schools.

Therefore, policies that will encourage creative thinking among students should be strengthening through workable measures of implementation of such policies. Also, creative efforts from students which is a direct result of brainstorming should be adequately rewarded as this will encourage more creative ideas among them.

REFERENCES

- Federal Ministry of Education** (1985a). *National Curriculum for Senior Secondary Schools. Business Studies*. Lagos: Federal Ministry of Education.
- Federal Ministry of Education** (1985b). *National Curriculum for Junior Secondary Pre-Vocational*. Ibadan: Heinemann Educational Books.
- Federal Ministry of Education** (1985c). *National Curriculum for Senior Secondary Schools Vol.8 Building Technology*. Lagos: Federal Ministry of Education.
- Federal Ministry of Education** (1985d). *National Curriculum for Senior Secondary Schools Home Economics*. Lagos: Federal Ministry of Education.
- Federal Representatives Nigeria** (1985 Revised 2004). Education (National Minimum) Standards and establishment of institutions. *Official Gazette, Decree No.16, Sections 7 and 9*.
- Freire** (1972). *Pedagogy of the Oppressed*. Harmondsworth, Middlesex: Penguin.
- Gulford, J. P.** (1950). *Creativity*. In the Open University (1975) *Person and Learning*. London. Longmans. Pp193-112.
- Gulford, J. P.** (1952). Factors that aid and hinder Creativity. In Siberman, M. L. and Others (1972) *The Psychology of Open teaching and learning*: Boston.
- Hudson, L.** (1966). *Contrary Imagination*. Harmondsworth, Middlesex: Pelican.
- Jackson S.** (1974). *A Teacher's Guide to tests and testing* (3rd ed.) Longmans.
- Maslow, A. H.** (1968). *Towards a psychology of beings*. New York: Liton Educationa Publishers
- Mednic, S. A.** (1962). The associative basis of creativity. *Psychological Review*, 229-232
- Ogilve, E.** (1975). Creativity and Curriculum Structure. In J. M. Whitehead (Ed.): *Personality and Learning* Hodder and Stoughton/Open University Press. Pp.384-393.
- Oladele, J. O.** (2000). *Guidance and Counseling A Functional Approach* (3rd Ed) Lagos: Johns-LAD Publishers' Ltd.
- Olakojo, O. A. and Adebayo, M. A.** (2012). *Nigeria Democracy in Crisis*. Abeokuta: Remo Prints and Publications.
- Parnes, S. J.** (1970). *Education and Creativity*. In P.E. Veman (Ed.) *Creativity*. Harmondsworth, Middlesex: Penguin Pp. 341-354.
- Razik, T. A.** (1970). Psychometric Measurement of Creativity. In P.E. Veman (Ed.) *Creativity*; Harmondsworth, Middlesex: Penguin, pp. 155-166
- Rogers, C.** (1959). *Towards a Theory of Creativity*. In P. E. Veman (Ed.) (1970) *Creativity*. Harmondsworth, Middlesex, Penguin, pp. 137-151
- Torrance, E. P.** (1962). *Guiding creative talents*. Englewood: Prentice-Hall.
- Woolfork, A. and Nicolich, K.** (1990). *Educational psychology for teachers*. Englewood: Prentice Hall.