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## **EDITORIAL STATEMENT**

In September of 2017, the Delta State College of Education, Mosogar, organized its Second National Conference on Teacher Education. The Theme of this conference was, The College of Education System in Nigeria: Past, Present and Future. During the Conference three renowned Professors of Education delivered one Keynote address and two lead papers respectively. In addition to these presentations, several other conferees presented paper on different aspects of College of Education System in Nigeria.

This Conference was motivated by the desire of the College to play its part in the quest by concern educators to continuously search for ways and means of improving the quality of teachers education as this is a fundamental requirement towards ensuring that Nigerian education is endowed with the quality teachers it needs to achieve its goals.

This edition of this journal is a product of the forgoing conference. It was deemed necessary to select and peer-review some of the presentations for the purpose of sharing with scholars, practitioners and the general public the several issues and perspectives on The College of Education System in Nigeria: Past, Present and Future. It is our hope that the contributions by the conferees as published in this journal would have provided useful insight and perspectives on this very important subject matter.

**Prof. Emmanuel Ojeme**

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Journal of New trends in Teachers Education (JONTTE) is Interdisciplinary and accepts both empirical and theoretical articles for publication.

Manuscripts for publication should meet the following guidelines:

- I. One paragraph abstract of not more than 200 words.
- ii. The American Psychology Association (APA) 6<sup>th</sup> edition format should be used throughout the manuscript.
- iii. The first page of each manuscript should contain the title of the article, author's name and affiliation, (including phone number, and email address).
- iv. The manuscripts should be typed double space with a 15 inch margin and 12pt font size.
- v. Manuscript should not exceed 12 pages in length, including tables, figures and references. The body of the manuscripts should not contain any information identifying the author(s).
- vi. The journal is published annually and from papers presented at the annual conference on Education organised by the Delta State College of Physical Education, Mosogar. The evaluation of manuscripts is by a blind review process. Authors are notified as to the position of their manuscripts as soon as all reviews are completed. All submission should be by e-mail or soft copy in Microsoft word. Send articles to the two e-mails address [ogudeesther@yahoo.com](mailto:ogudeesther@yahoo.com) and [copemconference@gmail.com](mailto:copemconference@gmail.com)

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# IMPACT OF HOME AND SCHOOL ENVIRONMENTS ON MATHEMATICS DEVELOPMENT IN COLLEGES OF EDUCATION IN NIGERIA

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## **Abstract**

*The paper focused on home and school environments and their impacts on Mathematics development in Colleges of Education in Nigeria. The factors that make the home and school as delinquent environments were x-rayed and their inhibiting impacts on Mathematics development in Colleges of Education in Nigeria. To curb these trends, the ingredients of healthy environment for Mathematics development and ways of preventing these delinquencies in Colleges of Education environments to enhance effective Mathematics development were critically examined. Recommendations from this paper amongst others were that for Mathematics to develop in Nigeria Colleges of Education, the environment must be conducive and rich enough with natural phenomena by the government and stakeholders of education.*

**Keywords:** Home, School, Environment, Mathematics and Development

## **Introduction**

Hornby (2002) defined “environment” as conditions, circumstances, things, people, events and the natural phenomenon (plants, animals, land, sea and air) that affect people's lives and their co-existence. It is the conditions that affect the behavior and development of the individual, the physical conditions that he/she exists in. The environment may be pleasant for working or learning for healthy effect on the child's behavior. An environment that is healthy promotes good productivity for learning to flourish in Colleges of Education. It is the complex of physical, chemical and biotic factors that acts upon an organism or an ecological community and ultimately determines its form and survival in Colleges of Education in Nigeria (Strokes, 1992).

Titilola and Igben in Essien (1998) conceived the environment as an embodiment of conditions or circumstances, which influence the rate and course of economic, social and political behavior.

They maintain that the environment should include the man-made socio-economic environment such as physical and social infrastructures. No productive activity occurs in an environment devoid of a politico-socio-economic framework. Self-sustaining environment is disturbed when human activities such as poverty, home (parental separation due to death, divorce, etc), slums and crowded tenements. All these make children display delinquent behavior such as truancy, stealing, absence from school, telling lies, etc which could result to poor Mathematics academic achievement (or performance) in Nigeria Colleges of Education.

Numerous studies have shown that the causes of students poor performance in Mathematics include; lack of enough qualified Mathematics teachers, lack of Mathematics textbooks written by Nigerians to reflect our cultural background, language difficulty, too much work load for Mathematics teachers, inadequate use of

natural and artificial instructional materials, apathy towards the subject by the general public, socio-economic factors and poor background preparation in Mathematics in the lower classes (Ugwu, 1996; Odili, 1996; Agbo, 1997 and Johnson and Rising, 1999). Ayogu (2000) revealed that lack of consistent qualified manpower (Mathematics teacher) result to poor performance of students' in Mathematics and public examination. Cheke (2004) opined that poor classroom management, poor environment, poor attitude to teaching and learning by Mathematics teachers and students result to poor Mathematics achievement. When our youths are not well exposed to Mathematical concepts, their interest will drop in Mathematics. Students' interest can be sustained in Mathematics when there is good standardized Mathematics classroom that has space, light, with ceiling fans to reduce that and free from noise (Odili, 1996). Government is rather not helping matters for not providing adequate Mathematics materials and infrastructures to enhance Mathematics development in Colleges of Education.

This paper discusses the impact of these activities on home, school and neighbourhood that make up the delinquent environment and their impacts on Mathematics development in Nigeria Colleges of Education. It will also highlight ways of preventing delinquency in school environment for mathematics development.

### **Conceptual Clarification**

The environment of man is the biosphere, which is interfaced between the atmosphere (the gaseous realm), the hydrosphere (the liquid water realm), the lithosphere and the solid mineral realm. According to Bradbury (1991) the biosphere is used in two ways. First, the biosphere is said to encompass all

the zones of the earth in which life is present. Second, the biosphere is used to described the sum total of the organisms on the planet. Both refer to the physical environment, which harbours species of organisms of animal and plant kingdom, which interact with it and themselves.

For optimal educational productivity, the environments of the Colleges of Education as a system within which living organisms interact with the physical elements. This system is called the ecosystem. The ecosystem achieves a self-sustaining balance. Environment is the sum total of all conditions that surround man at any point in time on the earth's surface. It means that all the environmental conditions necessary for effective learning to occur must be fulfilled for learners to exploit for effective mathematics development. Viewing the human environment from the academic point, Odiete (1993) describes it as natural phenomena created for learning exploration and analogues to financial capital assets. With this, any damage done to the learning/natural environment runs down capital of a country, which sooner or later reduces the value of intellectual development of the citizens.

For residential housing environment (the home environment) for instance, any damage or deviation from its ideal situation puts its health at stake. So, the resident can be psychologically affected when any little damage (or disturbance from its ideal condition) is done to its environment. This is why there is need for sustainable learning environment for sustainable Mathematics development. Sustainable learning environment is that environment that is free from disturbance from its natural ideal conditions. He grouped the environment into "air environment", "water environment",

“noise environment”, “biological environment”, “cultural environment”, and “socio-economic environment”. Another way environment is categorized broadly is physical which consists of land, air and water environments and non-physical environment consisting of cultural and socio-economic environments.

Delinquent home, Colleges of Education as school and neighbourhood, all constitute delinquent environment. Delinquent environment contribute about 62.5% causes of delinquency in children (Agbo, 1997). The effect is poor academic achievement. An environment whose behaviour violates legal norms or the norms of a particular societal learning institution with sufficient frequency or seriousness as to provide the firm basis for legal action against the behavior of the individual or group is delinquent environment (Andry, 1990). The behavior of the individual can be traced to the environment he/she belongs. This behavior has negative effect on the intellectual abilities of the child or student in the environment. In the word of Burl in Agbo (1997), the delinquent environment is one without ingredients to aid child's effective learning. It is childish naughtiness environment that destroy the child's intelligent quotient (I.Q).

### **Mathematics Development in Nigeria Colleges of Education**

What does it mean to say that an environment is developed to enhance adequate learning of Mathematics? Development according to Riggs (1984), connote: “progress”, “evolution”, “change”, “growth”, “transformation”, “industrialization”, “westernization” and “modernization”. Today, sustainable development has gained currency and seems to show how humanity's relationship with

nature in his environment has changed over time, from a perceived period of harmony with nature in traditional societies, to a period of discord and dominance, often linked with liberal economics or capitalism generally. The contention is the universalisation of any socio-economic theory, which socio-historical and cultural relativity's stands to condemn (Otakepor (2005) in Ugboduma, 2012). Krugman (1997) opined that development cannot be put in the jacket of dogma; but unfolding progressive of the inner potentialities of a given reality to the growth of the environment. It means to de-envelop the hidden or folded potentialities to light through integration of knowledge with neighbourhood.

The development of the Colleges of Education environment, community or society means the development of both its human and material aspects. The material aspects are secondary and subordinate, yet important, while the human is the primary issue in development scheme. To develop the Colleges of Education environment for proper learning to occur is primarily to develop the human beings (human persons). This means the moral and intellectual development of the members of the environment, community or society. The development of man refers to the changes which increase the capacity for self-fulfillment, self-satisfaction and self-servicing that enhances effective control of the natural environment, ability to understand one another, effective communication and co-operate existence with fellow human beings. This amounts to direct building of a more civilized culture to aid learning.

Every human being is at the centre of any development initiative. The initiative is inverted and may depend on some perverse

logical and Mathematical structure to succeed without human being. True development therefore is the development of the man – the unfolding and realization of his creative potential for intellectual growth (Otakpor, 2005). It is a process by which student's personality is enhanced to exploit his environment (College of Education), and it is that enhanced personality–creative of ideas, organized knowledge and disciplined which is the moving force behind the social, economic and technological transformation or advancement of any community or society. Students are the tap root, the fibrous roots, the stem and the branches of any development effort, while other infrastructural elements in the Colleges of Education environments are mere supportive.

Development in Nigeria has been based on the exploitation of resources provided by the environment. This has made the Nigerian government to overlook the ingredient of technology development, which is Mathematics. Rees (1991) opined that neglect of Mathematics values to citizenry is backwardness in technological advancement of a country. Ugwu (1996) described mathematics as the foundation for all technological progress of a country, hence, it is an important subject in education. We must build a strong foundation of mathematics in Nigeria citizens so that they can become great scientists and researchers in the country in future. In our increasingly technological economy, those who can understand and apply mathematics accurately have significantly enhanced opportunities to achieve success in continuing education and in life. Evidences abound to show that the key to open various opportunity doors for the citizen in an environment is deep understanding of mathematical concepts and applications.

Mathematics is the science of space, numbers and quantity (Hornby, 2002). It is the short hand of all languages (Nwampa in Odine, 1996). All citizens of Nigeria apply mathematics in their daily lives at homes and on road or at work. The step by step applications of this science of numbers and quantity can result to massive transfer of technology that boost individual development in construction, power supply, building of industries, and energy build up and so on. Mathematics education has been described as a vessel to achieve greater means essential for survival and continual co-existence, making the individual to know how to think effectively and enriching one's personal life positively (Dienes, 2002). Mathematics education provides a real fun, satisfaction and recreational opportunity that serve as aspiration for individual to develop his environment.

Mathematics came into existence through the ideas of arithmetic used by early men for describing herd of animals. It has four major branches including: Arithmetic, Algebra, Geometry and Trigonometry (Hornby, 2002). In the 17<sup>th</sup> and 18<sup>th</sup> centuries, geometry was arithmeticised into “Algebra” which is the whole study of Mathematics structures seen in every area of old branches of Mathematics. The other branches of Mathematics such as trigonometry, calculus, statistics and probability are in real unity. The ideas gathered from all the branches of Mathematics gave rise to the building block of industrial demands of the 19<sup>th</sup> century and technological development of the 20<sup>th</sup> century leading to modern Mathematics in use today to develop the environment. Today, many often see Mathematics as an emotionless, cold discipline. For an emotionless field, it is certainly quite an intense emotional reaction. It is what you like now that will shape what you may

become later. For Mathematics education to be functional, it must reflect systematic reconstruction of knowledge and experience, for the individual's continuous and willful, growth in social competencies. Mathematics educational framework at all levels of education must reflect mathematics goals and programmes for effective individual to achieve Mathematical proficiency by developing both conceptual understanding and procedural fluency.

The Nigerian economic policies and programmes should include the development of the noble subject (i.e Mathematics) to build the people for better living. Today, prominent among government policies and programmes, are self-sufficiency in food and raw materials production, self-employment without ingredient of Mathematics education, increase export promotion, rural development to reduce urban migration and the privatization of public enterprises (Essien, 1998). Itilola and Igben cited in Essien (1998) observed that these policies and programmes have undoubtedly affected Mathematics development in Nigeria. The natural environment has been destroyed due to increased pressure on exploration and deforestation. The resultant effect is destruction of Mathematics natural concept materials used in teaching Mathematics. The unsanitary condition in Nigeria urban areas is experiencing environmental deterioration on daily basis which affect Mathematics development. It is therefore clear that misuse or mismanagement of the God given natural environment leads to fall in Mathematics materials production that will enhance effective learning of Mathematics concepts. Technological productivity has fallen due to high drive for income generating programme or mean to the detriment of the people and society in general. For a country

to generate increased employment (that is, creative and technological) depends on Mathematics natural materials and investing in Mathematics education to translate to the economic growth of the country (Azuka, 2001).

### **Impact of Home and School as Delinquent Environment on Mathematics Development in Colleges of Education in Nigeria**

Delinquent home is the cause of delinquency in Colleges of Education today which could later destroy effective Mathematics learning in children. The children experiencing parental separation due to nature of occupation, divorce and studies will be hostile and harsh to learning. Defective home makes students to be too strict and too lenient. They are generally emotionally instable in learning at school due to poor and bitter upbringing and poverty at home. Family history of vice and crime told the child will make him show negative attitudes to school subject which later result to intellectual dullness and backwardness. Specific instincts such as sex, wandering, self-assertion, etc are increasing daily in the society due to delinquent hoes.

The characteristics or traits of delinquent environment as shown in students are: frustration, low self-esteem, negative over-reaction and impatience in doing things, anxiety over riches without working hard for it, temper-tantrums, task avoidance and poor academic performance (Adeleye and Aina, 1990). These will make them develop negative attitude toward Mathematics, which is the queen of science and gateway to technological advancement (Rees, 1991). Any student who has undergone such ill treatment is likely to develop solitary habits, be undemonstrative and fail to respond to any kind of societal treatment, show neither

sympathy nor affection and be prone to delinquency or act against the norms of the land.

Immediate environment of the students' of the Colleges of Education in Nigeria at birth is the home, which consist father, mother, brothers and sisters. She concluded that families split by death, desertion, divorce or prolonged absence, defective home discipline, mothers lacking in affection, and hostile fathers are the primary influences that make students commit crime. The student's response to learning will be negative and unproductive. She believes that socio-economic conditions such as family size, conflict between ideas and standards of sub-culture patterns are only secondary to the student's development.

In an environment where there are overcrowdedness, poverty, unemployment, low moral standards and truancy, delinquency rate is very high. Increase in delinquency leads to poor academic mathematics performance and societal unrest. Ayodele (1992) identifies economics necessity that subject many parents to live in poverty. Due to this poverty rate of parents, the child becomes cold, hungry and susceptible to infection of mathematics materials for effective concept learning. This makes the social surrounding to be more important than family relationships in some cases.

The Colleges of Education is the training field of the students after home. The school plays a vital role in the development of the student. It builds student's intelligence making him to know his right in the academic world and the development of the society. The Colleges of Education destroys maladjustment from students making them to behave accordingly for the growth and development of the immediate environment

to the society in general. Most anti-social behaviour exhibited by students today in the society is copied from the Colleges of Education environment. A delinquent College of Education environment is the environment that lack facilities, good mathematics text books, infrastructures and equipment for proper training of the student in Mathematics.

Udoinyang (1996) identified the nature of the classroom environment in Colleges of Education where the student is found as one problem affecting Mathematics education. According to him, the Colleges of Education environment must be conducive enough to enhance smooth learning process. On the other hand, if the Colleges of Education environment is not conducive for Mathematics teaching, the student instead of learning would develop other behaviour that would lead to frustration. Mathematics involves the activity in which the lecturer and students and materials interact in a given College of Education environment in an attempt to explicate nature ad natural phenomena in teaching. Mathematics instruction is traditionally associated with the provision of special material resources.

### **Ingredients of Healthy Environment for Mathematics Development in Colleges of Education in Nigeria**

Udoinyang (1996) outlined the features of a healthy classroom environment for Mathematics education at Colleges of Education levels in Nigerai on concepts of: *Cohesiveness*- This is the extent to which students in a classroom know, help and are friendly towards each other. They include: *Friction* – involves amount of tension and quarrelling among students, *Difficulty* of tasks execution – this involves the extent students find difficulty with the work of the class. The Mathematics teacher's

guidance would give confidence to students and reduce the difficulty to their work.

*Competitive*– healthy competition encourages students to achieve more than accepted and stimulative to learning.

*Satisfaction*– this is the extent of enjoyment of classroom work. Students should be able to appreciate and enjoy their work in the classroom.

*Involvement*- extents, to which students have attentive interests, participate in discussions, do additional work and enjoy the Mathematics class.

*Affiliation*– entrants encouraging students help them know each other easily and enjoy working together.

*Teacher support*- giving help to students where necessary, being friendly, trusting and showing interest in their activities.

*Task orientation*– encouraging students to complete planned activities and to stay on the subject matter;

*Order and organization*– emphasizes on students behaving in an orderly, quiet and polite manner and on the overall organization of classroom activities;

*Rule clarity*- emphasis on clear rules on students knowing the consequences for breaking rules and on the teacher dealing consistently with students who break the rule.

The implications of the above features for learning Mathematics include:

- (i) A conducive classroom Colleges of Education environment will facilitate student's mastery of the contents of Mathematics.
- (ii) Conducive laboratory or classroom environment will facilitate students understanding of the content and process of solving Mathematics problems.
- (iii) Conducive workshop or classroom will facilitate manipulative skills of the student.

- (iv) Students develop affective skill as interest, positive attitude to work, diligence, honesty, open mindedness and suspending judgements in the face of contradictory evidence to enhance Mathematics studying in a conducive classroom.

To realize effective Mathematics development in a healthy Colleges of Education environment, the following should be put in place:

- (a) Infrastructural facilities for effective Mathematics learning. Infrastructure is the basic framework of any organization. Mathematics infrastructural facilities are the physical resources, which include: workshop and laboratory and competent personnel that form the foundation for instruction and having the powers to promote effective teaching and learning.
- (b) Availability of instructional materials. Most Mathematics lecturers operate in a classroom where the materials that could facilitate learning are virtually non-existent. Oji in Airiavbere (1996) observed that most lecturers of Mathematics in the Colleges of Education employ the use of chalk and blackboard as the only teaching aids. Ofili in Airiavbere (1996) indicated that no useful work can be done without adequate and sufficient facilities, equipment and teaching aids.
- (c) Building and Libraries. Availability of physical structures and library facilities influence the teaching and learning of Mathematics. Textbooks are the most important determinant of success of mathematics programmes.

- (d) Equipment and supplies: There should be steady provision of Mathematics equipment and supplies to ease Mathematics concept teaching in schools.
- (e) Motivation level. When students are made to feel that their work is important and that their result will improve their lots in life, they are likely to work harder (Airiavbere, 1996). When students are praised or rewarded for a good performance in a Mathematics class work, they are likely to improve in subsequent assignments. Another usefulness of motivation is the important value of the lecturer's use of praise and tanks, reward and punishment, encouragement and guidance, the style the teacher uses his remarks, comments and affection will go a long length to make learners live “up to” high aspiration or “live-down” to frustrated non-achieving states.

### **Ways of Preventing Delinquent Environment to Enhance Mathematics Development in Colleges of Education in Nigeria**

Prevention of delinquency among Colleges of Education students for effective Mathematics development should be a joint effort of the Mathematics lecturers, parents, media, good Mathematics textbooks, establishment of creative activities (games) and social club (Mathematics club). Agbo (1997); and Essien (1998) have suggested the following as ways Mathematics lecturers and parents can help to reduce delinquent environment in Colleges of Education for Mathematics development. These include:

- (1) Accept the student as a person in his own right. Let him feel a sense of belonging by encouraging and motivating him to love mathematics.

The home and school should give the student affection and security that offer ways of escape from an emotionally intolerable situation. If the lecturer is very aggressive, cold and unfriendly in his Mathematics concept teaching, the student may be influenced by his behavior to discourage him from Mathematics learning. So, the Mathematics lecturer must conduct himself in a befitting way for pupils to emulate.

- (2) The ultimate aim of character reformation is internalized motivation and self-discipline. So, the school environment should brig stable systematic moral and social values for students to develop in Mathematics.
- (3) The Mathematics lecturer and parents should daily watch out for maladjustment in students. Early treatment may prevent maladjustment from taking place.
- (4) Try to get the child to direct his urge and social drives towards acceptable Mathematics channels. He can be involved in practical activities in Mathematics such as painting, drawing, metal work, plumbing, construction of shapes and figures, brick-laying etc. These activities give students the sense to think accurately thereby making frustration less pressing in Mathematics class. Aggressiveness will reduce to progression in study.
- (5) Encouraging the student to talk, understand and admit his anti-social tendencies by being fatherly to him in class. So not condemn him for experiencing such drives but show him love that it would be wrong to give way

to them. Show to him the need for self-confidence and self-esteem to others. Let him know that values, place and challenges of Mathematician in the society.

- (6) Have a frank and friendly talk with the child to know his weakness and areas of help in Mathematics. Let him know the danger of mixing with undesirable companions that are not willing to learn Mathematics and consequent result on his academics work. When emotional tension is mounted on his Mathematics drives, make him feel secure and accepted by encouragement.
- (7) Ensure that the dull students form personal attachment with the brilliant ones or higher level ones to sustain their interest in Mathematics. The brilliant student should serve as peer educational counselor called the Child Care Mathematics Officer (CCMO). This will make the student to be alive to Mathematics responsibilities and challenges posed to him. The doctrine of hard work must be preached to the Mathematics students stressing the danger of neglect.
- (8) Try not to be disappointed if your effort fails because continuous trying makes one to win confidence of others. Put more effort on daily basis towards the realization of Mathematics goals for better economy of the country.

Ridegeway (1996) suggested some vitals components of the Mathematics lecturer's work in relationship with environment toward Mathematics development. These include:

- (a) A firm grasp of the general principles, relating to successful teaching and learning of Mathematics;
- (b) The ability to organize and manage the teaching and learning environments knowing how to implement, facilitate the instructional plan, and integrate the various components of his Colleges of Education environment in order to bring about learning.
- (c) A lively appreciation of the educational implications of the relationships between school, home backgrounds of the students their living Colleges of Education environment and ability to interact effectively with students, parents and guardians.
- (d) The preparedness of Mathematics lecturer to remain a life-long learner. He should try to develop professionally in relation with the students' Colleges of Education environment.
- (e) The knowledge of the subject matter (good knowledge of what to lecturer). The skills, attitude, values, appreciation of the students, guiding, innovating (developing curriculum and interpretation), finding new ways of doing his work better in accordance with the Colleges of Education environment and not dependable. Teaching to the students' abilities, experimenting (researching into various methods of handling the students' problems, experiments on new mathematics theories and materials before teaching the students); acting as agent of change, providing creative thinking, modal and evaluating.

## Recommendations

This paper therefore recommends that;

- (a) For Mathematics to develop in Nigeria Colleges of Education, the environment must be conducive and rich in natural phenomena by the government and stakeholders of education.
- (b) Delinquency will be prevented in students when there is healthy environment for Mathematics education by ministries of education.
- © To realize effective Mathematics development, government should put in place infrastructural facilities, adequate personnel; instructional materials, noise free building environment and equip libraries, good Mathematics equipment should be supplied and motivation level should be high.
- (d) The Mathematics lecturer should make students love Mathematics.
- (e) Professionally qualified Mathematics lecturers should be employed by the government to bring home Mathematics concepts to students' aspirations Colleges of Education.
- (f) Common understanding language should be used by the Mathematics lecturers to inculcate interest on the students during teaching.

## Conclusion

The paper concludes that when all the recommendations, ways of preventing delinquent Colleges of Education environment for Mathematics development and other suggestions in this work are implemented; Mathematics will develop and students will be in love with it for future development and enrichment.

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