

PROBLEMS MILITATING AGAINST THE EFFECTIVENESS OF TECHNOLOGICAL COURSES IN NIGERIA

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ABSTRACT

This paper reports the problems always encountered in the effectiveness of Technological courses. The concentration of this paper is on the Mechanical, Production, Metalwork and Technical Drawing courses and subjects. Some of the factors identified include the students' attitude, parent's attitude, the teachers' methods of teaching, non-provision of parttime lecturers or persons, shortage of science and technological based teachers and personnel, lack of machines and equipment; and non-continuity of technological education in Nigeria, Ghana and other British colony in West Africa coast. This paper concludes that technological courses and subjects require extra efforts to attain desire technological development.

Introduction

Technology is the study, mastery and utilization of manufacturing and industrial task in industry. It is also the application of scientific knowledge for practical purposes, the employment of tools, machines, materials, and processes to do work, produce goods, perform services, or carry out the useful activities. It also refers to all ways man uses his inventions and discoveries to satisfy his need and desires (Adejuyigbe, 1993, 1999, Morris, 1992, Sherwood and Maynard, 1977)

Production Engineering is the planning and control of the mechanical means of changing the shape, condition relationship of materials within industry towards a greater effectiveness and value (Adejuyigbe, 1994). The Institution of Production Engineering, London (1982) defined Production Engineers as "One who is competent by reason of education, training and experience in technology and management of determine factors involved in the manufacturing of commodities and to direct the production processes to achieve the most efficient coordination of effort, with due consideration to quantity, quality and cost".

Mechanical Engineering is the adjective of mechanics, skilled workman, especially one who repairs or adjusts machinery and tools: a motor produced by machines; power/transport/engineering (Adejuyigbe, 1994). Mechanical Engineering is also the production and

application of Mechanical power, design, construction, and testing of engines. The examples of products vary from all kinds of machines, engines for automobiles, trains, airplanes and ship, automation mechanical appliances.

Chemists define metals as "those elements which, when in solution in pure state, carry a positive charge and seek the negative pole in an electrical cell: (Schmitt, 1987, Adejuyigbe, 1996 and 1997). Metal can be divided into ferrous (metallic) and non-ferrous (non-metallic), the plastics. In the past two decades, technology education has witness some development of new tools and techniques that have resulted in the improvement in the quality of life and teaching of the technological subjects in the developed countries (for example, the use of computer to teach drawing; like Corel draw, Auto CAD Draw etc. No more using of ruler and pencils and drawing boards.

Statement of the Problem and Discussion

The continuous poor performance and low turn up or the students abstinence either from the technological subjects in the secondary schools (Technical Drawing, Metal Work, Wood Work, Electronics, Building Construction, Home Management, Clothing and Textile, Fine Art, etc) or technological courses in higher institutions (Fluid Mechanics, Mechanics of Machine, Machine Tool, Manufacturing Engineering,

Technical/Engineering Drawings, Control Systems, Heat and Mass Transfer, Refrigeration and Air conditioning, Internal Combustion Engines, Tools Design, etc) has been a great concern to many well-meaning Nigerians. This Paper therefore, looks at some of the problems associated with Technological Education in Nigeria before narrowing it down to mechanical, production and metalwork.

2.1 Students' Attitude towards the Study of Technological Subjects

Technological subjects require extra effort to study, since the basic concepts involve the study of mathematics, physics and chemistry, therefore, students always show a negative attitude towards the study of these subjects. Gone are those days when it was only the acquisition of Western Education that make people famous and rich. Many students are no more serious and a lot of them are not interested to work hard like before. Many authors such as Maroribanks (1976), Bahoreni (1962), George will (1996) etc has shown that the attitude that a student has towards a subject affects his performance. Markle (1982) explained that a student who has a positive attitude towards his study will always be alert in class, will ask question, often complete his assignment on time and always do outside reading. On the other hand a student who has a negative attitude will do the other reverse of the

above and these will affect the teaching and the success of the student in the subject. Students are no more interested in creating more time to study technological subjects. Instead video games, films etc, are now the other of the day. If a student is interested to excel he must abandon some of this non-profit oriented focus, which is already eating the fabrics of education in Nigeria. Therefore, the students need to develop the right attitude towards the technological subjects to make the subject teachable by the teachers. They should be interested in practical and laboratory work and given enough time to drawings, metal cutting in the workshop which are the most important aspect of mechanical, production and metalwork.

2.2 Teachers' Attitude towards Technological Subjects

Teachers' Attitude towards technological subjects may be come a problem in students' understanding of the subjects. Some of the technological subjects are practically oriented subjects, most especially in mechanical, production and metalwork. So when the teachers are neither interested nor involved, these pose problem of ineffective method of teaching. Some of the lapses areas are enumerated below:

- (i) Some of the teachers may not attend classes regularly
- (ii) No Enough practical/laboratory exposure, so it is very difficult to carry out practical exercises.
- (iii) Some teachers are not groomed in the practical and laboratory aspects of their courses/subjects, so it will be very difficulty for them to impact what they do not know to students most especially in the areas of following - machining welding, metal fabrication and founding engineering.
- (iv) Some teachers limit their teaching to fewer areas they know very well and areas that interest them most, hence fast to cover the syllabus, which eventually affect the performance of the students.
- (v) Non-exposure of teachers to the modern day technological machines and equipment. Like Computer-Aided Engineering (CAE) or Computer Numerical Control (CNC) machines.
- (vi) Training and re-training of teachers of technological subjects, which is no more the priority of both the Government and the teachers themselves. If you trained yourself, to acquire more knowledge, you can be downgraded when crossing from one cadre to the other, or make sure you are stagnant for years until your mates you

graduated together meet you on the scale you are before going for the training. For example an NCE (National Certificate of Education) holder who bagged a Degree will have to wait for promotion until his degree counterpart get to the level he is. No more respect for age and experience.

(vii) No enough trained technological teachers, on the field (manpower requirement). It is now that people are now considering remaining in the teaching profession. Formerly it was a fight between the industries and different parastatal and the teaching profession, which was less paid then. The teachers must be interested in the practical and the laboratory work before he can be a success in the technological subjects in mechanical, productions and metalwork. The above enumerated areas affected the effectiveness, and methods of teachers and their teaching, most especially in the technological subjects.

2.3 Teachers Method of Teaching

The methodology adopted by teacher can be a source of problem. It is however suggested that:

- (i) Wrong use of methodology, or approach of the teachers can make the subject uninviting and uninteresting to the student.
- (ii) The teacher should start from known to unknown.
- (iii) Step by step approach will be a welcome idea.
- (iv) The use of traditional or teacher oriented method in teaching should be discouraged.
- (v) Teachers should individualize instructions.
- (vi) He should use some appropriate techniques in the teaching like audio visual aids, models for drawing, and more examples for mathematical based courses.
- (vii) He should be able to integrate practical with theory. If not he can never be successful as a teacher in technological field.

It is therefore recommended that teachers should move closely to their students, open minded, and not too difficult to approach, so that, the teaching of the technological subjects will be effective.

2.4 Parents' Attitude Towards Their Children's Technological Subject

Parents' attitude towards their children's study of technological subjects can pose

a problem to the existence of the subject. Some of the attitude can be summarize thus:

- (i) Non-interest of parents in the technological subjects such as' Metalwork, Technical Drawing, Electronics, Building Construction, Home Economics, Fine Art at Secondary School level. Some parents can still tolerate Physics, Chemistry and Mathematics, Hence the subject always witness low candidature.
- (ii) Some parents misplace their priority on the subject to be taken by their children at both Junior Secondary School and Senior Secondary School.
- (iii) Some parents never see the need to check regularly the performance of their children, or even know the subject they are opting for. This is the reason why some students choose subjects arbitrarily that cannot take them in having a good combination for a particular course in the Higher Institution.
- (iv) Non-encouragement from the parents to their children in taking technological subjects.
- (v) Even, some parents encourage their children to join bad gangs and failed to control their movement. Since, some parents themselves belong to such gangs. Some researchers had confirmed that parents influence their children's academic performance (George Will, 1988, 1996). The above mentioned parental influence and attitude will definitely affect the effective methods of teaching technological subjects.

2.5 Non-Provision of Part-Time Teachers or Lecturer or Resource Persons

The provision of a knowledgeable Part-Time Teachers or Lecturers or Resource Persons on the technological subjects which can enhance the effectiveness of teaching the subject is not a common phenomenon in the Secondary Schools. And it is interesting to note that; students may be interested to learn from somebody who is not their regular teacher. The use of retired and experienced teachers in these areas can affect the subject positively. Their year of experience will improve the standard of teaching the subject. Non-provision of such Part-Time or Resource Persons is seriously affecting the methods of teaching of the technological subjects.

2.6 Shortage of Technological Teachers

The shortage of Technological Teachers and the incessant transfer of such teacher from one school to the other, contribute to the students not understanding the technological subjects.

➤ The teacher/students ratio is not commensurate to each other. Nowadays, teacher encounter large classes; for example in those good olden days, it was between 20-25 students in a class. We are now witnessing 50-80 students in a class.

➤ There is no student/teacher close relationship, therefore, students can no more be monitored like in those olden days. That is the reason why some of them become 419 and cult members even in the Secondary Schools.

2.7 Lack of Machineries and Equipment

From experience, the machines like: Centre Lathe, Drilling (Table, Pillar, Sensitive, Radial), Shaping, Milling Machines and Power Hacksaws were lacking in the workshop of many Secondary Schools. Even, some Polytechnics or Universities offering Technological courses like Mechanical, Production Engineering and Metal Work cannot boast of having some, or even enough of the following machines which will go round the students they are training in their workshops.

➤ The epileptic nature of power supply also hinders effective practical exercises in technical subject.

➤ It is disheartening to note that in Nigeria some JSS (Junior Secondary School) equipment and machines installed, some 10-20 years ago are rotting and rusting away without put into use. Some were installed without working; some are not even installed at all.

2.8. Non-Continuity of Technological Education in Nigeria and Ghana

These countries being endowed with material and human resources whom other countries in West Africa are looking at for the solution to their problem, which can make them qualify to be placed on the category of an industrial giant (Adejuyigbe and Adegoke, 1996). Since the introduction of Western Education in Nigeria and Ghana around the year 1840, technological education has always been treated as relatively insignificant aspect of the Country's educational system

(Adejuyigbe, 1996, Fagbemi, 1988). The literary education and University degree in Art subjects become symbol of prestige in Nigeria, but in contrast to technology, agriculture and other practical courses (Bello et.al. 1982).

In Nigeria today, the growth of the University, Polytechnics, College of Education, Research Institute and Industries is not commensurate with the rate of the production of the appropriate and seasoned technological personnel needed to man various aspects of our developments.

It is in the Nigeria and Ghana educational systems that we see the terminal certificates awarded to our technological students, which is a major cause of un-seriousness on both the teachers and the students. For example, the most affected areas are:

➤ No continuity from Apprenticeship stream to Vocational School (Nigeria and Ghana)

➤ No continuity from Technical School to Polytechnic or University (Nigeria and Ghana)

➤ No continuity from Vocational Institute to Technical Institution (Nigeria and Ghana)

All the above mentioned categories are just carrying dead-end certificates which they cannot use to continue their studies in Nigeria and Ghana. Those who by stroke of luck travelled abroad, do so to get rid of the terminal certificates awarded in Nigerian or Ghana Technological Institutions. Many efforts has been made in the past to eradicate this problem (Adejuyigbe, 1996) but they are all in papers and moreover the education administrators in Nigeria and Ghana are not interested and always killed the idea of technological education breaking through this problem. Something has to be done to alleviate the suffering of these set of people tagged low or middle level manpower, which can never move forward.

2.9 Failure of the Government or our Curriculum Developer or Policy Makers to Entrench Technical Subjects into Compulsory Ones

The non-inclusion of the technical subject (metalwork Technical Drawing, Home Economics etc) into the main stream o subjects that is compulsory for the students has caused:

➤ Some of the students and even teachers not to be interested in the subject

➤ The low turn out of the student taking the paper each year

➤ How morale and nonchalant attitude

of both the teacher the students and policy makers towards the technical subjects.

➤ Only given recognition to the subject during their propaganda called top services.

From the foregoing it is therefore, suggested the following way out of these predicaments:

➤ Immediate introduction of the technical subjects into the core curriculum of the main stream of courses to be taken at School Certificate level is urgently necessary.

➤ It is necessary that any student going for Mechanical/Metallurgical and Agricultural Engineering in Higher Institution must be able to have credit in Metalwork or Auto mechanics and Technical Drawing. Those going to read Civil Engineering and Building Technology must be able to have credit in Building Technology and Technical Drawing.

It is worth nothing the experience gained if these students are exposed to these subjects in their Secondary Schools level. It will go a long way in helping to shape the hope of such students in Higher Institutions.

3.0 Conclusion

In conclusion in the adoption of the effective methods of teaching difficult concepts in technology, one must bear in mind that, all subjects in technology require extra efforts to attain desire good results, because nearly all subjects involve practical, most especially in Mechanical, Production and Metal work. It is therefore, necessary that area identified as problematic in this write up can be looked into, so that Nigeria and Ghana and other West African Countries will break even technologically and more students will be attracted to the technological subjects and courses.

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