

VOCATIONAL AND ENTREPRENEURSHIP EDUCATION AS CATALYSTS FOR TECHNOLOGICAL TRANSFORMATION: FOCUS ON AGRICULTURAL EDUCATION AND TRAINING

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Abstract

Functional education is the greatest investment to emancipate all from poverty. Colonial education concentrated mainly on cognitive domain of learning involving the 4Rs of Reading, writing, arithmetic and Religion and little focus on affective and total neglect of the psychomotor domain. It was the type of education that produced clerks, office workers, administrative officers and teachers. The education for growth in diverse fields of technology, agriculture, medicine etc were not given due recognition at all. Vocational education emphasizes the doing aspect of curricula by making the school programmes practically oriented. Africans depended heavily on agriculture for foreign earnings before the era of oil boom and solid minerals. The diverse cultures of Africans are tied to agriculture and this has now been adulterated with loss of interest of the youths. Modern youths prefer to throng cities for non existing jobs rather than engage in professions they call dirty and not remunerable enough. To them, agriculture is tedious and energy sapping. Youths will develop interest in the subject by teaching it, learning it, practicing it, and, appreciating the benefits. This paper addresses vocational, agricultural and entrepreneurship education, training programmes in agriculture, technological transformation strategies as ways in moving countries, including Nigeria forward etc.

Keywords: Vocational Education, Entrepreneurship Education, Catalysts, Transformation Agenda, Complementary, Agricultural Education, Cognitive, Affective, Psychomotor Skills

Introduction

Meaning of Vocational, Agricultural and Entrepreneurship Education

Vocational education, vocational technical education and technical vocational education are terms that are used interchangeably to mean the same concept of "education and training for those who need it, want it, and can profit by it". In this paper, we will use any of the terms to make justifications on some issues in relation to technological and transformation agenda on the African continent. Vocational education is, and continues to be known by many names as industrial education, technical education, manual education and more recently career education (Grubb and Lazerson, 1975). The 1997 UNESCO International Standard Classification of Education defines technical and vocational education and training (TVET) as

vocational education and training to "acquire the practical skills, know-how and understanding necessary for employment in a particular occupation, trade or group of occupations or trades." (UNESCO and UNDP, 1995).

"What I hear, I forget; what I see, I remember; what I do, I understand" is a Chinese proverb. "Mihil intellectu quod non fuit prius in sensu" which literally means "there is nothing in knowledge which has not first passed through the senses" (Comenius, 1972). These aptly describe the concept of vocational education in our formal and informal settings. An extract from the declaration of the participants in the UNESCO meeting of TVET experts on Learning for Work, Citizenship and Sustainability as quoted by Bonn (2004), indicated that "since education is considered the key to effective development strategies, technical and vocational education and training (TVET) must be the master key that can alleviate poverty, promote peace, conserve the environment, improve the quality of life for all and help achieve sustainable development"

According to Irimie & Ionică (2009), entrepreneurship is defined as "a passive and an active component, meaning that it comprises both the propensity to induce change oneself and the ability to welcome, support and adapt to innovation brought about by external factors. Entrepreneurship involves taking responsibility for one's actions, positive or negative, developing a strategic vision, setting objectives and meeting them and being motivated to succeed. Consequently, there is a real need for education and training in order to acquire and develop these entrepreneurship competences". Entrepreneurship education seeks to provide students with the knowledge, skills and motivation to encourage entrepreneurial success in a variety of settings. http://en.wikipedia.org/wiki/Entrepreneurship_education

In the words of Hamlin (1962), career and technical education began by seeking to train present and prospective workers in multiple industries. When the U. S. Office of Education listed the major abilities needed to reach the aforementioned objective, they included management, marketing, and leadership as necessary to vocational education. The Seven Cardinal Principles of Secondary Education established in 1918 by the U.S described the contributions of vocational education to the development of the country (Phipps & Osborne 1988). They articulated the importance of individual occupational programmes, youth organizations, and activities for developing leadership. Instruction was only briefly mentioned as a method of leadership development, and is an area of career and technical education where concerted effort is warranted. In addition to the knowing and doing (practice) of the skills, there is the need for proper exposure of the students and youths to adequate knowledge, management and marketing of the skills for economic survival. These may be given in-school or out-of-school situations for enduring positive impacts to be felt in the society.

The World Bank had cited severally that high training costs, poor quality of training, the mismatch between training and labour market needs and the high rate of unemployment among TVET graduates has justified a policy shift from school based technical and vocational education and training. A World Bank policy paper indicated that

every person shall have the opportunity to have his or her experiences and skills gained through work, through society or through formal and non-formal training assessed, recognised and certified. Programmes to compensate for skill deficits by individuals through increased access to education and training should be made available as part of the recognition of prior learning programmes. Assessment should identify skill gaps, be transparent, and provide a guide to the learner and training provider. The framework should also include a credible system of certification of skills that are portable and recognised across enterprises, sectors, industries and educational institutions, whether public or private"

Extract from the 2000 ILO International Labour Conference on Human Resources Development and Training (African Union, 2007).

The primary objective of all technical and vocational education and training programmes is the acquisition of relevant knowledge, practical skills and attitudes for gainful employment in a particular trade or occupational area. The need to link training to employment (either self or paid employment) is at the base of all the best practices and strategies observed world-wide. In recent years, in view of the rapid technological advances taking place in the labour market, flexibility, adaptability, and life-long learning have become the second major objective. The third objective, which is particularly important for Africa, is to use TVET as a vehicle for economic empowerment and social mobility and for the promotion of good governance and regional integration (African Union, 2007).

Agriculture is fundamental to life. By teaching it, learning it and practicing it, we relate with the discipline in totality. Agricultural education programmes in different countries differ in curriculum, course content, and the duration and methods of imparting theoretical and practical skills. This means that the emphasis which a country places on vocational agriculture in schools will be determined by the extent to which her economy depends on agriculture. Before the advent of the oil boom in Nigeria in the early 70s, agriculture was the greatest contributor to the economic development of Nigeria. But with the advent of the "oil-boom", agriculture- growing of crops and rearing of livestock for man's uses was relegated to the background by the government and the general populace in search of the golden fleece - the oil money.

The economic recession of 80s and 90s propelled Federal Government of Nigeria to launch various programmes and policies aimed at boosting the image of agriculture. In realization of the role that the youths of this nation can play towards the achievement of our national goal and aspiration of self sufficiency and self reliance in food production, the government through the National Policy on Education (Federal Republic of Nigeria, 1989) made agriculture as one of the core subjects as clearly indicated in section 15 sub-section 6 and section 18 sub-section 6 of the document. Of most concern is the present lukewarm attitude of students towards agriculture in schools which ultimately affect their future careers in life (Alademerin, 1996).

In the rural areas of Nigeria, pre-school and early childhood education through traditional means have been particularly appealing for intervention by which, parents on one hand and the teachers on the other have encouraged their wards' life participating in domestic subsistence agriculture. The teaching of agriculture at the primary and secondary school levels of our educational system is a mixture of trained professional teachers and others who through their interest or added responsibility find themselves in the classrooms and on the farms.

The invaluable roles of agricultural education in nation building cannot be overemphasized. "Behind every farmer in the field, there is a whole line of merchants and scientists that support that farmer," said Fred Roth, a Professor of plant pathology at Cal Poly Pomona. "But we are aging out, and there isn't a group of people coming up to take our places." University administrators peg the problem to agriculture's outdated "cows and plows" public image. Urbanization of many of California's historic farming plains has slashed the ranks of high school graduates exposed to horticulture or husbandry. Many colleges have changed their names to broaden their appeal, de-emphasizing agriculture and taking on terms such as "environmental sciences" or "natural resources." In June, Iowa State University officials broke with nearly 50 years of tradition and added "life sciences" to their agriculture school's name - a move designed to attract more students after enrollment dipped from 2,807 in 2001 to 2,448 in 2005. Even the flagship organization of youth in agriculture, the Future Farmers of America, dropped the word "farmers" in 1988, preferring instead to be known as the National FFA Organization. Other universities have hired marketing firms to boost their profiles (Carter & Spotanski, 1989).

YFC can improve teaching and learning of agriculture and also arouse youths' interest in the school subject through various activities - engagement in the productive ventures in agriculture, trips and excursions to agricultural establishments, farmers shows etc. Through active participation in YFC activities, youths can acquire vocational skills in vegetable crops production, poultry production, arable crops production, crops processing, fish production etc. The task at hand is to prepare youth with the kinds of skills and personal qualities that career and technical education professionals believe is important, but that seemingly is only offered to the few students who are active in our youth organizations.

Carter and Spotanski (1989), found that students who received formal leadership training scored higher than students who had not received leadership training on nine of the top ten personal qualities that employers seek. The authors posit that formal curricular instruction of leadership is ostensibly the missing piece of a strong career and technical education program. A comprehensive model as indicated below for a functional vocational and technical education curriculum seems to be an important key element that is missing from many career and technical education programs in Africa. Such a model would supplement existing leadership opportunities and complete the arsenal of leadership knowledge that formal and non-formal career and technical education youth need to compete and succeed.

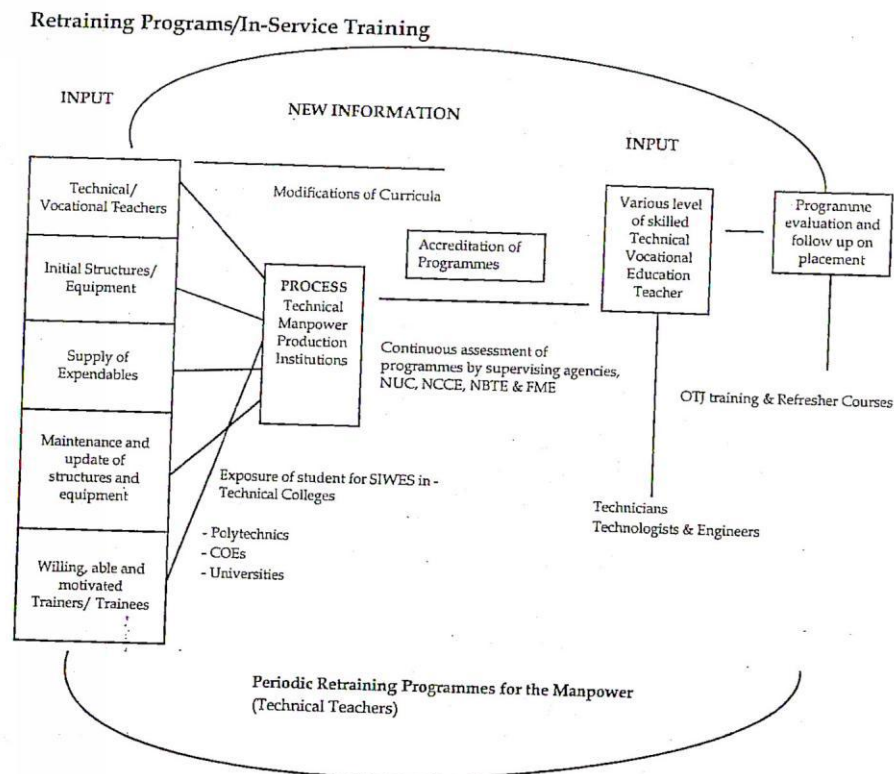


Fig.1. A Modified and adapted version of the schematic presentation of technical manpower production system through IPO. Alademerin, E. A. (2002). Original Source; Olaitan, S. O. (1992) *The Crisis of funding vocational technical teacher education in Nigeria. Monograph.* University of Nigeria, Nsukka

KEYS

- NUC- National Universities Commission.
 NBTE- National Board for Technical Education.
 NCCE- National Commission for Colleges of Education
 COE- College of Education
 IPO- Input Process Output
 FME- Federal Ministry of Education
 OTJ- On the Job Training
 SIWES- Students Industrial Work Experience scheme

Historical Background and Development of Vocational Education in Africa
 Vocational training of the old took the form of subsistence farming, animal husbandry, fishing, hunting, weaving, blacksmithing, and trading etc through indigenous or traditional form of education under the tutelage of an experienced professional. Fafunwa (1980) indicated that recreational activities were also encouraged in the form of swimming, dancing, drumming, wrestling, singing etc. At the end of each training demarcated by age level or years of exposure, the child was given a practical test relevant to his experience and level of development and in terms of job to be done. This was a continuous assessment which eventually culminated in a passing out ceremony or initiation into adulthood.

Before technical-vocational schools were established, the formative training of working class youth occurred outside the public school system. After completing a number of years of primary schooling, where it was available, working class children sought apprenticeship training in artisanal and industrial trades under the tutelage of a master craftsman or worker (Dunlop & Denman, (1912), Scott (1914) and Unwin (1904). On the continental level, formal vocational education were largely initiatives that came from international agencies particularly ILO and UNESCO and much later by private US organizations like Carnegie Corporation, Ford foundation etc.

Instructions in vocational agriculture for farming included meaningful classroom experiences, supervised farming programmes of the students, school sponsored youth organizations like Young Farmers Club, Fortune Farmers, Frontline Farmers etc. These institutions provide innumerable opportunities for youths and even older adult farmers to study and discuss the problems related to farming programmes and farm living. Other advantages include

- learning of successful tips in farming and skills development.
- opportunity to earn a living while still at school.
- developing interest in farming related areas.
- positive effect on other youths in the community
- continuous and sustained interest in agriculture later in life.

Making students more employable or more successful is an important objective of the instructional programme of school agriculture. In addition too, the youth organizations are considered as integral parts of the total instructional programme and are intra-curricular. It is through this approach of dynamic agricultural extension education services in our secondary schools that the present situation of agriculture in the country can be readressed.

The increasing importance that African governments now attach to TVET is reflected in the various Poverty Reduction Strategy Papers that governments have developed in collaboration with The World Bank. One of the most important features of TVET is its orientation towards the world of work and the emphasis of the curriculum on the acquisition of employable skills. TVET delivery systems are, therefore, well placed to train the skilled and entrepreneurial workforce that Africa needs to create wealth and emerge out of poverty (African Union, 2007).

TVET in Africa is delivered by both government and private providers, which include for-profit institutions and non-profit, NGO and Church-based institutions. School-based government training institutions are generally fewer in number than those in the private sector. In Ghana, government TVET institutions include 23 technical institutes under the Ministry of Education with a total enrolment of about 19,000 students and 38 National Vocational Training Institutes run by the Ministry of Manpower Development and Employment. There are an estimated 500 private establishments of diverse quality that enrol over 100,000 students. The Catholic Church is the single largest private provider of TVET in Ghana. Recently in 2006, the Church launched a comprehensive policy for technical and vocational training in its 58 institutions that currently enrol about 10,000 students (African Union, 2007).

The African Union (AU) has a vision of an integrated, peaceful, prosperous Africa, driven by its own people to take its rightful place in the global community and the knowledge economy. This vision is predicated on the development of the continent's human resources. In its Plan of Action for the Second Decade of Education (2006 – 2015), the AU recognises the importance of TVET as a means of empowering individuals to take control of their lives and recommends, therefore, the integration of vocational training into the general education system. The AU also recognises the fact that vast numbers of young people are outside the formal school system and consequently recommends the integration of nonformal learning methodologies and literacy programmes into national TVET programmes (African Union, 2007).

It is within this framework that the African Union Commission is spearheading the development of a new strategy to revitalize TVET in Africa. The objectives of the strategy are to

- revitalize, modernize and harmonize TVET in Africa in order to transform it into a mainstream activity for African youth development, youth employment and human capacity building in Africa;
- position TVET programmes and TVET institutions in Africa as vehicles for regional cooperation and integration as well as socio-economic development as it relates to improvements in infrastructure, technological progress, energy, trade, tourism, agriculture and good governance;
- mobilize all stakeholders in a concerted effort to create synergies and share responsibilities for the renewal and harmonization of TVET policies, programmes and strategies in Africa.

Relevance of Vocational Education and Complementary Roles of Agricultural Education to the Growth and Development of Nations

The earliest forms of vocational education and training were mainly in the agricultural disciplines – animal husbandry; crop production, processing and marketing; fishing etc meant to cater for the immediate needs of the society. The modern day vocational education has diversified areas including non agricultural trades. The Federal Government of Nigeria fully aware of the innumerable roles of vocational technical education in nation building, through the Nigerian Educational Research and Development Council (NERDC), a parastatal of Federal Ministry of Education has introduced 34 vocational subjects at the Senior Secondary school level in the country. According to the publication titled "The new Senior Secondary School curriculum structure at a glance", some the subjects tagged as trade subjects include fisheries,

tourism, upholstery, animal husbandry, garment making, carpentry and joinery, book keeping, photography, marketing, salesmanship etc among others (Nigerian Educational Research and Development Council, 2008).

The vocational agricultural education which is formal takes place in the school environment where specific trainings are given through instructors to improve skills, attitudes and occupational proficiencies in the chosen area of the discipline. The learning environment is under much scrutiny in agricultural education and training (AET) as in many other sectors. Apart from being dominated by Western concepts of learning and Western Science, AET still suffers from rigid patterns and structure, some of which were laid down in the pre-independence era. It is, therefore, believed that AET would benefit greatly from introducing more participatory pedagogical approaches. Recent alternative learning approaches are characterized by readiness to

- recognize indigenous knowledge systems;
- include local value in the development of curricula;
- link academia and the people more closely;
- allow sufficient time for deeper learning;
- follow an open-ended learning process that can be adapted and improved as experience demands;
- encourage holistic interdisciplinary approaches (Wallace & Esse, 1997).

As a follow up to this initiative and to sustain grassroots manpower development in AET, currently many alternative strategies are being tried in innovative educational delivery forms throughout the AET sector. The more promising forms include

- in-service and continuous training for extensionists;
- transfer of higher education from North to South;
- networking and regional workshops;
- learning from and working with NGOs;
- sandwich or split-site training and linkages;
- distance learning;
- part-time course include elements of distance learning;
- linking educational institutions with rural communities;
- reformed library and information technology services (Wallace & Esse, 1997).

Many educators are still unaware of their basic rights and responsibilities. As a matter of fact, many teachers get themselves involved in so many legal webs in the course of discharging their duties and the rudiments of the subject may be rubbish when overzealous agricultural science teachers turn the school farm to the punishment ground. In summary, these create a negative image of the subject. A research conducted in 1991 on the image and status of agriculture in schools in Ogun state South-Western Nigeria by one of the authors found out from analysed data the following: That

- agriculture to the respondents is an energy sapping, very tedious school subject,
- agriculture involves drudgery in which one puts in much and gets little or nothing in return;

- the respondent strongly believed that agriculture is synonymous with farming;
- agriculture wastes much of the student's time on the school time table including their leisure hours; and
- agriculture is not easily divorced from the school punishment because of defective curriculum delivery.

Poor teaching methods of agriculture were also found to influence the respondents' perception of agricultural education in the secondary schools. This goes to show that for agriculture to enjoy a good image, the teaching methods must be well improved upon to appeal to all senses of the students, especially that of sight. This has not really helped matters as students on regular basis develop negative image of the subject and in some instances hatred for the teacher who in most cases doubles as the labour master as well. When such punishments are concluded, erring students hardly get convinced that the purpose of the punishment was reformatory. They hold a strong view of their being used 'as labourers for productive purposes' on the farm just for the teachers to make more money (Alademerin, 1991).

Every human society devotes a considerable amount of time and energy to transmitting its cultural heritage which are of considerable value to its young generation. Nigeria is typically an agrarian nation considering the fact that generations from our fore fathers eke out a living by tilling the soil, tending plants and rearing animals. This goes to support the inclusion of agriculture as a core subject in the UBE scheme. Section 15 sub-section (b) and Section 19 sub section (b) of the National Policy on Education (1989) asserts the importance of inclusion of agriculture in the school curriculum. The teaching of agriculture in the UBE scheme must influence progressive change in all cultural contexts which can only be best achieved through the effective curriculum delivery by the professional teachers. The school, as a social institution for education has a capacity and needs to facilitate, promote and possibly guide certain forms of value required for the overall success of the UBE scheme for our national development.

In realisation of the roles that agriculture can play in making a country to be self reliant and truly independent, the Government through the National Policy on Education regarding the 6-3-3-4 system of education made agriculture as one of the core subjects with much emphasis on practicals. The educational policy provides a programme of mass participation and orientation towards maximum food production for the country. According to the Los Angeles Times, "Agriculture schools in California and throughout the nation are hoping fresh slogans will cultivate interest among high school graduates who don't know wheat from Wheaties. The same universities that a generation ago churned out legions of agriculture professionals today largely struggle to woo students. And many students who are studying agriculture are clamoring for cheese class and wine-making seminars, shunning traditional fields such as soil science and crop production. Even the Midwestern states have felt the pinch". The paper went on to inform that many schools are wrestling with declining enrollment, as a large portion of the agricultural workforce is nearing retirement.

The students should be encouraged on agriculture from schooling years as this attribute when fully developed in the school, will help the youths later in life. An agrarian society involves the active participation of all in the various sectors of the economy that has roots in agriculture. The

orientation of such a society through their own efforts will lead to gradual empowerment of both individuals and the society which is central to the basic concept of agricultural revolution. This is in line with Article 6 of The Purpose of Education for All in 1990 which states "learning does not take place in isolation. Societies, therefore, must ensure that all learners receive the nutrition, health care, and general physical and emotional support they need in order to participate actively in and benefit from their education".

The school, as a social institution for education has a capacity and needs to facilitate, promote and possibly guide certain forms of value required for the overall success of the educational sector for our national development.

Effective curriculum delivery in agriculture is measured in terms of

- acquisition of knowledge taught in the classroom;
- demonstrations of clearly defined learning outcomes.

Outside the classroom situation, such include

- creative thinking and mastery regarding farm activities.
- entrepreneurial skills and managerial abilities of on and off farm activities.
- risk taking activities.
- display of professional values and ethics.
- farm and rural minded.
- ability to transmit and impart knowledge to others (Alademerin, 2011).

This can be best achieved by creating awareness and interest in agriculture and its broad fields early enough in the life of the youths through active participation in Young Farmers Club (YFC) activities from their schooling years. All these are geared towards arousing students interest in agriculture so that they can take up vocations in the productive areas of agriculture on graduation rather than throng cities in search of non-existent white collar jobs. This is a kind of orientation that is geared towards maximum food production for the country. The YFC is seen as a rallying point for the success in including the right attitudes towards agriculture among the youths through participatory approaches. It is pertinent to note that when utilized appropriately the YFC can improve the teaching and learning of agriculture in our school system by creating and arousing youths interest which could ultimately lead to vocational skills acquisition and development in them. It is an established fact that agriculture helps to relate the educational system of a particular country to its needs, and these will further enable only practical men and women who are either employable by themselves or by others to be produced for the much needed overall development of the society.

Recommendations on the Way Forward

TVET cuts across educational levels (primary, secondary and even tertiary) and all other sectors (formal or school-based, non-formal or enterprise-based, and informal or traditional apprenticeship). It is, therefore, important to take into account the nature and qualities of youths and adults in a community to determine the strategies to adopt for a functional vocational education development programme. The qualities required for the effective transformation of the communities are management, marketing and leadership. DesMarais,

Yang & Farzanehkia, (2000) indicated certain elements which were necessary in the development of youth leadership. They listed the critical elements as

- youth/adult partnerships
- granting young people decision making power and responsibility for consequences.
- a broad context for learning and service.
- recognition of young people's experience, knowledge and skills.
- There is now a better awareness among policy makers in many African countries about the critical roles that TVET can play in national development. The model where 34 vocational subjects are introduced at the SSS level in Nigeria is a laudable idea that other African countries should emulate. More efforts should be put in place for participatory pedagogical approaches to make teaching and learning interesting.
- The primary objective of all technical and vocational education and training programmes is the acquisition of relevant knowledge, practical skills and attitudes for gainful employment in a particular trade or occupational area. This can only be achieved when then minimum manpower is provided. Efforts should be put in place to train the required manpower in all these subject areas. The model of universities of education as practiced in Nigeria where some special cadres of colleges of education were elevated to universities of education may be inevitable in the training of the required manpower as teachers in the secondary schools.
- The various national governments should consider the establishment of functional training institutes and the need to link training to employment (either self or paid employment). This is with the aim of making graduates relevant in life-long learning and grassroots technological development. The entrepreneurial training should be pursued with vigour as well in the realization of the economic gains in such enterprises in the world of work. In Nigeria, there are institutes or centres of entrepreneurship and vocational studies in virtually all tertiary institutions where vocational training are being given to students for the duration of their courses. This is with aim of equipping the students with at least a vocational skill so as to be job creators rather than job seekers upon graduation.
- In-service and continuous training for vocational education teachers and field workers, particularly the extensionists in health, agriculture and other related areas. This will go a long way in linking educational institutions with rural communities to speed up development processes.
- Reformed library and information technology services to assist in refresher courses for professionals in diverse areas of vocational education.
- Youth should be encouraged to form youth organizations and participate in leadership roles without gender biases in planning, implementing, and evaluating activities regardless of any background in our various communities as these organizations are catalysts for self development and discipline.
- Government must ensure that regular awareness programmes on youth development and gender equality are given to parents, school personnel, and policymakers through the mass media and other sources. This is with the expectation that they have vital roles to play in counseling their children at homes on future occupational careers and roles in the society.

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