

Availability, Adequacy and Utilisation of Resources for Teaching Agricultural Science at Secondary Schools In Osogbo, Nigeria

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Abstract

This study assessed availability, adequacy and utilization of facilities used in teaching Agricultural Science at senior secondary schools in Osogbo, Osun State. It study adopted the descriptive research design. Using random sampling technique, 10 secondary schools and 20 teachers (two per school) participated in the study. Instruments used were: Inventory of Available Facilities for Teaching Agricultural Science ($r=0.77$), Questionnaire on Adequacy of Facilities for Teaching Agricultural Science ($r=0.96$) and Questionnaire on Utilization of Agricultural Facilities ($r=0.95$). Data were analyzed using descriptive statistics of simple percentage, mean, standard deviation and frequency counts. Results showed that Agricultural Science teaching facilities were not available. However cutlass, hoe, axe, spade, watering can, wheelbarrow, spade and rake were the only available teaching facilities while others were not (mean score = 1.54). Also, Agricultural Science facilities are not adequate (not adequate = 55%), utilization of teaching facilities were rarely utilized (mean score = 1.62). Based on the results of the findings, it was recommended that government and stakeholders should endeavour to procure the necessary teaching facilities for Agricultural Science in order to enhance the acquisition of necessary skills by students

Key words – Teaching facilities, adequacy, availability, utilisation, evaluation

Introduction

Agricultural Science is the branch of science which deals with growing of crops and rearing of domestic animals for the benefit of man and raw materials for the industries Ndem, (2013). He further explained that Agricultural Science deals with the production of crops and rearing of farm animals by man for the purpose of providing food, raw materials and shelter. It also involves the science of processing, preservation, storage, marketing and distribution of the agricultural products. Ngoddy (2000) explained that Agricultural Science is the foundation of all sciences as far as sustenance of live is concerned. It provides food, raw materials, shelter, rural development, employment, foreign exchange to the nation and income to the farmers and his family. Izuchukwu (2011) points out that agriculture has been the backbone of the Nigerian economy, providing employment and source of livelihood for the increasing population.

According to Egbule (2004), the objectives of Agricultural Science education at secondary level

include to stimulate students interest in agriculture; develop basic agricultural skills in students; enable students acquire basic knowledge of agriculture; enable students to integrate knowledge with skills in agriculture; expose students to opportunities in the field of agriculture; prepare students to opportunities in the field of agriculture and to prepare students for further studies. The objectives of Agricultural Science is not only to produce professional and skilled manpower but, also to educate the rural community with the aim of ensuring complete transformation of agricultural production from the subsistence level to mechanized agriculture.

The National Policy on Education (2004) included agriculture as a pre-vocational subject at the primary and junior school and as a vocational subject in the senior secondary Also, Agricultural Science acquired the status of a vocational subject and is one of the subjects offered in junior and senior secondary school, as a pre-vocational elective and vocational elective respectively (Federal Republic of Nigeria, 2013). The curriculum content of the senior school

level was structured to focus on three major areas: production (food production), projection (agronomy and forestry) and economics (agricultural economics and farm management. It is one of the elective subjects students can choose at senior secondary levels and this is to enable interested students to acquire practical agricultural skills that would make them self-reliant.

In Nigeria, agriculture is a major sector of the economy, providing employment for about 70% of the population. The sector is being transformed by commercialization at the small, medium and large scale enterprise level. In 1990, 82 million hectares out of Nigerian's total land area of about 91 million hectares were found to be arable. 42 percent of the cultivable area was farmed; much of this land was farmed under the bush fallow system whereby lands are left idle for a period of time to allow natural regeneration of soil fertility. 18 million hectares were classified as permanent pasture, but had the potential to support crops. It contributed about 32% to GDP in 2001 and the country's agricultural products fall into two main groups which are food crops produced for home consumption and exports. The youth which is the life-wire of every society are encouraged into farming through Young Farmers Club (YFC) and sometimes have their farms or gardens. They receive information and in some cases assist them in analyzing innovations towards agricultural development.

In a bid to search ways out of the problems of Agricultural Science, Balogun (1982) submitted that no effective science education programme can exist without equipment for teaching. This is because facilities enable the learner to develop problem-solving skills and scientific attitudes. Agricultural Science cannot be properly taught without adequate facilities and equipment, such as storage facilities, tractors, machine tools, and modern laboratory, experimental farm and other teaching facilities and all these are lacking in most of the schools.

The teachers have no excuses for students' inadequate learning. Effective teaching brings about

effective learning and it refers to the degree to which goals are achieved through teaching i.e. attainment of goals of Agricultural Science as stated above. The teacher as the facilitator of knowledge should provide the necessary and appropriate study habit that will enable the students to learn in order to enhance their academic achievement in Agricultural Science (Denga, 2002).

According to Mbanuju (1998), teachers of Agricultural Science make the subject boring. They use the farm as punishment ground for offending students, and this make students feel that the school farm is mainly for punishment. This goes a long way to kill interest of the students especially for practical work. As a result of this, students feel very proud to be associated with such subject like Chemistry, Physics, Biology, Mathematics and Additional Mathematics even when they do not have aptitude for such subjects. This makes them disregard subject like Agriculture Science which they feel is for the never-do-wells. This impression of the youths about agriculture makes it difficult for the teachers to make any meaningful impact on the students both in the classroom and school farm during practical lessons. From the above, it can be deduced that most of the previous researches have given more attention to challenges confronting effective teaching and learning of Agricultural Science failing to assess the adequacy, availability, utilisation of the facilities made available and inadequate provision of facilities has been identified to be one of the reasons why students do not perform well in Agricultural Science.

The teacher is the major facilitator in the implementation of any curriculum. The success and failure of any school curriculum depends on the teacher as the curriculum implanter. For effective teaching and learning to take place in the school, certain factors need to be put in place such as qualified and experienced teachers, adequate teaching materials, adoption of the appropriate teaching methods, co-operation of the students and the school administration.

Agricultural curriculum is a laudable

educational programme that can only be successfully implemented with the availability of adequate and quality school facilities therefore, teaching facilities which serve as the tools of a workman in the hand of a teacher must be adequately provided. It is of utmost importance that the availability of school facilities will duly contribute to the successful implementation of the curriculum. These facilities must not only be provided, they must also be in good condition to enhance learning and this implies sound maintenance culture. There are strong indications that the school facilities needed for effective execution of the curriculum are inadequate, and in some places, they are totally absent. For example, in some communities, the school buildings are dilapidated, some de-roofed for years, and others in a state of total neglect.

Concrete objects, according to Umoh-mac and Nkume (2006), are the teaching facilities the teacher uses in his teaching and these are facilities that enhance real and meaningful teaching and learning. Instructional materials can serve as a communication media that transmit information from the teacher to the learner with the intent of facilitating learning. Olaitan (2002) defined teaching facilities as all the practical and skill development resources that would facilitate the process of teaching and learning. The use of teaching facilities is recommended at any stage of the child's development and level of education.

Educational facilities which consists of all types of buildings used for academic and non-academic purpose, equipment, classroom facilities, furniture, instructional materials, audio-visual aids, toilet, ICT, library, laboratory materials and others play a pivotal role to the smooth running of teaching and learning process.

Availability of educational facilities refers to the provision made to the schools for effective teaching and learning. Provision of educational facilities should be among the very first preparation necessary for opening a new school. For instance, Uzoechina (2014) reported that the Ministry of

Education among several other responsibilities usually carry out a resource visit to any new public or private school to ascertain the extent of availability of educational teaching facilities for its programmes. Consequently, proprietors of both public and private schools ought to ensure that provisions are made for these facilities as availability of such facilities as lecture halls, equipments like tractors, school farm, chemicals and fertilizer, experimental farm, personnel, storage facilities, pens among others are pre-requisite for approval of any secondary school in Nigeria. The non-availability of these facilities to teach the students are likely to lead to poor learning outcomes in Agricultural Science and also affects the lecturers output thereby frustrating their efforts.

Mapaderum (2002) opined that adequacy is a satisfactory condition of resources in an organization. He added that adequacy of facilities, equipment and supplies in schools promote effective teaching and learning activities in the school while their inadequacy affects the academic performance negatively. Hornby (2006) asserts that adequacy is a condition in which something is enough or good enough in quantity for a particular purpose or need. Adequate availability of equipment and facilities and their proper utilization have been positively correlated to good performance in examinations while poor performance has been blamed on inadequacies, (Maduewesi, 2010). The National Policy of Education set out criteria for determining the adequacy of facilities. For instance, a standard chemistry laboratory is meant to serve only 50 students at a time and would be considered inadequate when utilized by more than that number of students.

Utilization is the proportion of the available time (expressed usually as a percentage) that a piece of teaching facilities or instructional materials is being used. It is the ratio of when teaching facility is used (working) divided by the time it is available. According to Uwaifo (2009) utilization of instructional materials involves making teaching and learning of subjects more practical and

effective. Olagboye (2004) viewed utilisation of educational facilities as the extent of usage of school buildings, laboratories, library, school farms, flower garden, school garden, agricultural produce, agricultural machineries, and so on. Uguru and Abdullahi (2007) agrees that the goal of functional education is to prepare its beneficiaries with all it takes to adjust well in the society, contribute meaningfully to the development of the society, as well as live a fulfilled life.

Hornby (2004) explained utilization as to make use of available services at the individual's disposal. These resources include the facilities, equipment and experienced personnel. Olagunju and Abiona (2008) opined that the process of managing and organizing resources is resource utilization. They added that in a school, the available resources should be utilized in such a way that it enables the students to acquire desirable learning competencies. Utilization of resources in teaching brings about fruitful learning since it stimulates student's senses and motivates them and also gives correct representation to the abstract ideas, thereby making their meanings clearer.

There are basically two reasons educational facilities are important in effective teaching process. Firstly, use of dilapidated school buildings and grounds that are unsafe or unsuitable for modern functional education purposes will lead to the production of mediocre products. Such schools cannot attain excellence in teaching and learning. Secondly, modernization of school facilities is a prerequisite in this era of modern technology and science. Facilities and equipment constitute a strategic factor in organizational functioning and determine to a very large extent the smooth functioning of any social organization or system including education (Owoeye and Yara, 2010).

Similarly, availability, adequacy and utilisation of instructional resources promote effective teaching and learning activities in schools while their inadequacy and unavailability may affect the academic performance of the learner negatively.

The success of any system is a function of the available resources to run the system. Teaching facilities and equipment help to stimulate the interest of the students and in a situation where these facilities and equipment are optimally utilized, they generate greater students' interest in the learning system and also enhance retention of ideas. One of the issues of great controversy among students in secondary school today is the issue of the poor state of equipment and facilities. Umunadi (2011) argues that the problem is either that of inadequate equipment required for teaching the students that is responsible for the quality of graduate the secondary school produces or that it is the manner of utilisation of the available equipment and facilities in the schools.

A cursory look at the states seems to show that the schools are struggling with limited resources and dilapidated or outdated instructional facilities. Furthermore, it appears that Nigerians in the last few years are dissatisfied with the outputs of these schools of learning. The classrooms seem overcrowded with little or no relevant and adequate learning facilities. Even the school personnel appear to be in short supply. In view of this, Oyeniyi (2010) maintained that by inference, instructional resources have been positively linked with educational efficiency, students' academic performance and their capabilities when they leave school. This unwholesome situation of education in Nigeria has subsequently brought a growing concern about the quality and quantity of trained teachers and facilities in our schools.

Strategies for Improving teaching and learning of Agricultural Science includes adequate use of teaching facilities which are school farm, storage, experimental farm, seedlings, pens for animals, farm store room, green house, chemicals like insecticide, herbicide, pesticide, farm implements like tractors, competent teachers, dynamic methods of teaching, availability of teaching materials. School farms are geared towards helping students to acquire necessary farming skills

and ensuring that classroom theories are backed up by facts and practices. To provide students with opportunity of acquiring knowledge, skills and needed competencies in agriculture, the school farms should be provided and well utilised. Also, adequate funding of school farms is essential. Development of vocational skills in Agricultural Science require a lot of funds for repairing and replacing of faulty equipment, employing more qualified staff, buying of fertilizers etc. The community which the school is located could be approached to donate enough land for schools' agricultural programmes. Government schools and colleges may also acquire land through the 'land use decree'. There are lots of departments on the school farm and they are poultry farm, crop production farm, pens for keeping pigs and goats, experimental farms for each students, and a store room where farm produce, fertilizers, chemicals can be kept.

A demonstration farm is a farm which is used primarily to demonstrate various agricultural techniques by students, with any economic gains being an added bonus. Demonstration farms are often owned and operated by educational institution or government ministries. Many demonstration farms not only have crops, but may also have various types of livestock. Various techniques for feeding and bedding are tested on these farms. Demonstration farms run by schools are not only used for research, but are also used for teaching purposes. School farm surveying and layout, survey principles and practices are essential for successful farm operations in order to curtail the encroachment on school land by land hungry neighbours, school farm are properly surveyed. Farm surveying deals with making measurement by means of figure table or layouts. It involves measuring vertical and horizontal distance between objects, determining artificial features present on the farm, and using such information as planning purpose.

Storage facility is particularly important in agriculture because agricultural production is seasonal while demands for agricultural

commodities are more evenly spread throughout the year. Agricultural chemicals are chemical agents such as fungicides and insecticides that are used to control crop-harming organisms (e.g., fungi, nematodes, mites, insects, and rodents) or viruses (hereinafter collectively referred to as diseases and pests and used to promote or inhibit the physiology of agricultural and other products, such as plant growth regulators and germination inhibitors (Hereinafter referred to as "agricultural and other products)).

The use of competent teachers for effective teaching of agriculture must result to improved learning for students. It is a common defect in our educational set-up that most of Agricultural Science teachers are not competent in the subject concern. Meanwhile, the subject teacher concern in one way or the other must have qualities onfarm experience, general technical education character and personality.

Kochnen, T. (1994) stated that most schools are faced with lack of tools, equipment and other capital items. Lack of seeds, feeds, fertilizer and other operating suppliers, inadequate training for teachers to use the farm for instructional purposes. In addition, lack of staff personnel to run the farm was seen as the most serious problem facing the school farm. Closely followed by lack of updated equipment and machinery are inadequate state of the teaching facilities. Other problems include lack of agricultural inputs, lack of production of agricultural goods for internal consumption Francisco, C.T.L. and Radhakrishna, R.B. (2003). Fuatai, L. (2000) stated that problems associated with school farm are; lack of adequate teaching facilities, lack of adequate teachers, lack of equipment, small amount of land and attitudinal problem of students, the host community and the unserious attitude on the part of the administrators.

Statement of the Problem

Agricultural Science is included in senior secondary schools in Nigeria so as to enhance the acquisition of vocational skills, development of the

right skills and values, food security in the country. In order to achieve the objectives of Agricultural Science, adequate facilities must be provided for the theory and practical of Agricultural Science in secondary schools. However, report from schools revealed that Agricultural Science is not properly taught. The researcher suspect might be due to problem of availability, adequacy and utilization of resources. Studies have been conducted on the effects of utilization of instructional facilities in the teaching and learning of Agricultural Science in secondary schools within Nigeria with little emphasis on a holistic assessment of the facilities. This study, therefore, assessed availability, adequacy and utilization of facilities used in teaching Agricultural Science in Osogbo, Osun State.

Research questions

1. What is the level of availability of teaching facilities in schools at Osogbo, Osun State?
2. What is the level of adequacy of teaching facilities at Osogbo, Osun State?
3. To what extent are the facilities used in teaching of Agricultural Science at schools in Osogbo, Osun State?

Scope of the Study: The study was carried out to assess availability, adequacy and utilisation of facilities used in teaching of Agricultural Science in senior secondary schools in Osogbo, Osun State. It covered 10 senior secondary schools in Osogbo.

Significance of the Study

The study investigated the facilities used in teaching Agricultural Science at some selected

secondary schools in Osogbo, Osun State. Findings from the study would reveal the extent to which facilities used in teaching of Agricultural Science are available, adequate and how it is utilised. The outcome of this study would be beneficial to the government in planning and decision making as it will reveal to the government the instructional materials needed for effective teaching and learning of Agricultural Science subjects. Government might use the outcome of this study to design an effective training, workshop and seminars teachers in order to improve their improvisation skill.

Methodology

The study adopted the descriptive research design of the ex-post factor type due to the non manipulation of the variables in the study. The population of the study comprised all senior secondary school teachers of Agricultural Science at Osogbo, Osun State. Random sampling technique was used to select ten secondary schools in Osogbo, Osun State. From the ten schools, a total of 20 Agricultural Science teachers teaching S. S. one were totally enumerated. Instruments used were: Inventory of Available Facilities for Teaching Agricultural Science ($r=0.77$), Questionnaire on Adequacy of Facilities for Teaching Agricultural Science ($r=0.96$) and Questionnaire on Utilization of Agricultural Facilities ($r=0.95$). The instruments were administered to the sampled secondary schools and collection was made on the spot after their completion. Data collected were analysed using descriptive statistics of simple percentage, mean, standard deviation and frequency counts.

Table 1: Test of norm showing the level of Availability of Agricultural Science teaching facilities in senior secondary schools at Osogbo, Osun State

Level of availability	Frequency	Percentage
Not available	14	70.0
Available	6	30.0

From table 4.3, it can be deduced that Agricultural Science teaching facilities in senior secondary schools in Osogbo were not very available. However, Cutlass, Hoe, Rake, Axe, Spade, Watering can and Wheelbarrow were the only available teaching

facilities while others were not.

Research question two: What is the level of adequacy of Agricultural Science teaching facilities in senior secondary schools at Osogbo, Osun State?

Table 2: Test of norm showing the level of adequacy of Agricultural Science teaching facilities in senior secondary schools at Osogbo, Osun State

Level of adequacy	Frequency	Percentage
Not adequate	11	55.0
Adequate	9	45.0

From table 4.5, it can be deduced that the level of adequacy of teaching facilities for Agricultural Science in senior secondary schools in Osogbo, Osun State were not adequate.

Research question three: Do Agricultural Science Teachers utilize the Agricultural Science teaching facilities?

Table 3: Test of norm showing Utilization of Agricultural Science teaching facilities in senior secondary schools at Osogbo, Osun State

Level of utilization	Frequency	Percentage
Rarely	14	70.0
Sometimes	6	30.0

From table 4.7, it can be deduced that use of Agricultural Science teaching facilities for in senior secondary schools at Osogbo, Osun State were rarely utilized.

Discussion of Findings

The first research question was asked to find out available teaching facilities for Agricultural Science in senior secondary schools in Osogbo, Osun State. It can be deduced that teaching facilities for Agricultural Science in senior secondary schools were not highly available. Result shows that Agricultural Science teaching facilities that were available include cutlass, hoe, axe, spade, watering can, wheelbarrow, spade and rake while other facilities are either not available or very low in number. The finding was in agreement with Bawa and Saidu (2002) who stated that schools have not been provided with the recommended teaching facilities. He asserts that inadequate provision of required facilities and equipment constitutes a setback to effective teaching and learning in our educational institutions, He further stated that for effective teaching of Agricultural Science in schools, the needed materials have to be provided. According to Oni (1992), facilities constitute a strategic factor in organizational functioning. However, simple farm tools like cutlass, hoe, rake, axe, spade, watering can and wheelbarrow were the only available

instructional materials while other mechanical facilities that can enhance teaching and learning of the subject were not available. Availability of instructional materials in secondary schools enhances the teaching and learning of the subject and also broadens the practical aspect of Agricultural Science.

The results showed that teaching facilities for Agricultural Science in senior secondary schools were not adequate. This finding agrees with Afolabi (2002) who reported that the classrooms in most of the schools were inadequate in terms of adequate teaching facilities, decency, space, ventilation and insulation from heat, absence of school farm, the incinerators and urinal were not conveniently placed, and the school plant was poorly maintained. Umeoduagu, (2000) asserts that resources should be provided in quality and quantity for effective teaching in schools. Mapaderum (2002) emphasized that the availability and adequacy of learning facilities and equipment promote effective teaching and learning activities in schools while their inadequacy affects the academic performance negatively.

Findings showed that 70% of the teaching facilities were rarely utilized while 30% of the teaching facilities were sometimes utilized. It can be deduced from the findings that use of teaching facilities for Agricultural Science in senior secondary school in

Osogbo, Osun State were rarely utilized. These results are in consonance with the findings of Agbatogun (2006) that teaching effectiveness of teachers is relatively low and have a negative impact on students' achievement. According to Offorma (1990) one of the reasons why many available materials are not utilized by the teachers in schools and colleges is that they lack the necessary skills to operate them. However the findings of this study agree with that of Offorma (1990) since only 30% of the respondents agreed to sometimes use of teaching facilities for teaching Agricultural Science. There is need for constant utilization of available teaching facilities to improve the understanding of Agricultural Science at the secondary level.

Conclusions

From the findings of this study, it has revealed that some of the teaching facilities required for Agricultural Science at senior secondary schools in Osogbo, Osun State were not available and adequate, hence they are not utilised. It can be concluded from this study that without availability, adequacy and utilization of resources the teaching of agricultural science cannot meet the specified objectives in the curriculum.

Based on the findings, the following recommendations were made.

The instructional materials that are not available should be provided, especially the school farm. It is in the school farm that practical knowledge of agriculture is imparted. This is necessary to make agriculture interesting hence improve the performance of students. In a situation where there is no adequate provision of facilities for teaching, Agricultural Science teachers should endeavour to improvise and not teach the subject in abstract. To achieve this, Government and stakeholders should ensure that Agricultural Science teachers attend workshops and seminars to develop their improvisation skills. Every school must have adequate farm lands and experimental farms which will be used by students for practical. Government should ensure that there is proper inspection and monitoring of the instructional facilities used for teaching and learning of Agricultural Science in secondary schools to ensure that they are put to use.

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