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GEOGRAPHY LABORATORY AND OBSERVATION CENTRE: THE MISSING VITAL INFRASTRUCTURE FOR EFFECTIVE TEACHING OF GEOGRAPHY IN SCHOOL

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ABSTRACT

The paper assessed the vital facilities and infrastructure available for effective teaching and learning of geography in senior secondary schools in Ekiti State using a survey research design. From a study population of 183 public and 132 private senior secondary schools in the state, a proportionate simple random sample of 43 senior secondary schools made up of 25 public and 18 private schools was taken for study. Field observation, oral and questionnaire interviews were used to collect pertinent information used in the study. The data generated was analyzed using simple percentage and frequency distribution tables.

Result of the analysis revealed that the basic equipments and infrastructure for the effective teachings of geography in schools were grossly inadequate both in terms of variety, quantity and quality. The paper identified the factors responsible for this gross lack of vitals teaching and learning aids and infrastructure. The need for the provision of such infrastructural facilities and equipments vital to the effective teaching of geography in schools was highlighted.

INTRODUCTION

In recent years, the number of candidates passing geography at credit level in WAEC, GCE, and similar ordinary level examinations has dwindled. Consequently, the number of candidates qualified and eventually given admission to read geography at tertiary institutions in Nigeria is worrisome. Geographers and organizations concerned have lamented over the woeful performances of geography candidates at WAEC and G.C.E examinations. (Udoh : 1982, 1983; Adetunberu: 2003; WAEC: 2007). If this situation is not addressed and reversed, it may spell doom for the subject in no distant future.

Researches in the areas of content and methodology as well as workshops and seminars on the teaching of geography in the post – primary institutions have revealed that shortage of well qualified and experienced geography teachers, poor teaching methodology, lack of well organized fieldwork, paucity or complete lack of teaching aids and suitable textbooks, among others, are factors responsible for this present predicament (Adetunberu: 2003). WAEC chief examiners' reports identified poor preparation for the examination, poor coverage of the syllabus, unavailability of appropriate equipment for practical surveys in the school setting, among others as the causes of students' poor performance (WAEC:2007, pp.72 - 78).

Whereas the place of geography laboratory and weather observatory center in the teaching and learning process have been highlighted (Ayoade, 1977; Mikanjuola, 2005), such infrastructural facilities have not been effectively used in recent times in the teaching of geography in schools. Preliminary field investigation by this study revealed that no geography laboratory existed in the schools sampled. The few geography gardens seen in the schools visited were in various stages of decay.

STUDY AIM AND OBJECTIVES

This study aims at assessing the facilities available for effective teaching and learning of geography in Secondary Schools in Ekiti State. Specifically the study objectives are:

To measure the quantity and quality of teaching facilities and equipment available for teaching/learning geography in the study area

To identify factors responsible for the present state of the available facilities for teaching and learning geography in secondary schools in the study area.

To highlight reasons why the provision of adequate geography teaching materials and infrastructure in schools is necessary

To suggest ways how such teaching/learning materials and infrastructure could be provided.

RESEARCH QUESTIONS

The following research questions are meant to guide the study:

1. What infrastructure and equipment are available for the teaching of geography in secondary schools in Ekiti State?
2. What factors are responsible for the present lack of adequate infrastructure and equipment in schools in the study area?
3. Why is it necessary to have these facilities in schools?
4. How can these missing vital infrastructure and equipment be adequately provided in schools?

METHODOLOGY

A survey research design was adopted for the study. The study population comprised of all the 183 public and 132 private secondary schools in Ekiti State. Of this number, a proportionate stratified random sample of 18 private and 28 public secondary schools were selected for study. In each school, the geography head teacher and the principal were picked for interview.

Oral interview, field observation, and questionnaires were used to collect pertinent information from the principals and geography head teachers in the secondary schools sampled for the study. Simple descriptive statistical analysis was used to summarize the data collected in the form of frequency distribution and percentage tables. Result of the data summary was used to answer the research questions posed for the study.

RESULTS AND DISCUSSION

Research Question one: What infrastructure and equipment are available for the teaching and learning of geography in secondary schools in Ekiti state?

Table 1 shows that all the schools sampled lacked vital geography teaching and learning facilities in varying proportions. All the schools (100%) in the state, for example, lacked geography laboratory, geography library, sunshine recorder and thermographs. Indeed no school had a separate room solely devoted for the teaching of geography. 62 to 93% of the schools lacked such simple but vital facilities for teaching and learning geography as wind vane, Stevenson's screen, geography garden, maximum and minimum thermometer, anemometer, barometer, etc. [see table 1 for details]

Table 1: Basic Facilities Available for Geography Teaching in Schools in Ekiti State.

Items	Sample size	No. of Schools not processing it	% of total No. of schools
Geography Library	43	43	100
Geography Laboratory	43	43	100
Geography Garden	43	33	76.7
Wet & Dry Bulb Thermo.	43	34	79.1
Max & Min Thermo	43	32	74.4
Stevenson Screen	43	30	69.8
Wind – Vane	43	27	62.8
Rainguage	43	37	86.1
Barometer	43	40	93
Sunshine Recorder	43	43	100
Topographical Maps	43	17	39.5
Wall Maps	43	21	48.8
Globe	43	16	37.2
Thermograph	43	43	100
Anemometer	43	39	90.7

Source of data: Field work, April 2012.

Although over 50% of the schools were in the possession of the globe, wall maps and topographical maps, field observation revealed that they were not only very few in number, the available ones were not only obsolete but, in most cases, tattered. 10 schools had between 1and 10 of such topographical maps of one or two types while 6 schools had 11 to 35. The remaining 27 schools had none. 15 of the 22 schools with wall maps had between 1 and 5 while the remaining 7 had less than 10 maps each.

The study revealed that most of the instruments, particularly wet and dry bulb thermometer; maximum and minimum thermometer, were not functional and were often kept in Principal's offices as decorative ornaments. Wall maps, the globe and thermometers were victims of such tendency. Over 75% of the so called 'geography gardens' in the schools visited were not only small in size, they were wrongly located and overgrown with weeds. Their presence could only be identified by aged empty Stevenson's screens and wind vanes.

None of the schools visited had a geography room specifically designed for the storage of equipments and teaching of geography like it is usually the case for the other sciences such as physics, biology, agricultural science and chemistry.

Research question 2: What are the factors responsible for the present lack of adequate infrastructure for the teaching of geography in schools? Answer to research question 2 was based on the data gathered through oral interview and close field observation by the researchers. The factors revealed by the study include the following:

Geography has succeeded in being classified as a social science subject. It has not however received equal attention like other science subjects in the allocation of resources between disciplines by the school owners – public and private. All the 43 geography head teachers claimed that while the sciences and technical subjects are currently receiving many equipment from government – both Federal and State – geography, like the other social sciences, is left un-catered for.

Geography teachers in secondary schools are insufficiently trained and thus ill – equipped to handle most geography equipments as revealed by the survey. Most geography teachers (69.8%) graduated without seeing or handling such equipments as auto-gauge, sunshine recorder, thermograph, etc; during their training. They claimed that the colleges where they were trained lacked well equipped geography laboratories and observatory centers.

Thus most geography teachers in the study area were not interested in using such facilities and equipments in teaching geography assuming such were available. This factor could be responsible for the utter neglect of existing 'geography gardens' in some of the old schools studied.

Field investigation by the authors revealed that majority (69.8%) of the geography head teachers interviewed confessed that they had not seen or handled such instruments as sunshine recorder, thermograph, barometer and auto-guage. Field investigation which also revealed that some tertiary institutions responsible for the training of teachers for secondary schools, especially Colleges of Education, lacked or were inadequately equipped with some of such equipment confirmed this baffling revelation. Such teachers thus lacked adequate training in the use of some of the instruments for the teaching and learning of geography.

In spite of the National Commission for Colleges of Education's (NCCE) insistence on the provision of such vital facilities during accreditation exercises, only a few could probably boast of having a well equipped and functional geography laboratory and up-to-date observatory center for the training of NCE teachers in the country. Since teachers in secondary schools were by their training ill-equipped to use these equipments, they simply make occasional passive reference to such equipments in the teaching/learning process.

Thus teachers responsible for the teaching of geography failed to pursue with any vigor the possibilities of establishing and equipping geography laboratories and observatory centers in schools with the authorities concerned. Likewise the geography teachers failed to revamp old and semi–abandoned 'geography gardens' in schools. Such apathy by Government and its agents,

school authorities and geography teachers in particular is a major factor responsible for the present lack of adequate infrastructure for the teaching of geography in schools.

Most geography teachers (74.4%) in the study area claimed not to be skillful in making models. Such geography teachers would not make any attempt to improvise when funds are not available to purchase materials for teaching geography. The few (25.6%) that claimed to be skillful in making models claimed that funds to purchase some of the raw materials needed for their production were not often given.

About 63% of the school principals sampled, particularly non – geographers, was ignorant of what it takes to teach geography effective in schools. 72% of the geography head teachers sampled revealed that such principals usually turned down or cut drastically any request and estimate proposed by them (geography head teachers) for establishing and equipping geography laboratories and observatory centers in schools.

Table II shows the relative decline in the average infrastructural facilities available for the teaching of geography from infrastructural quotient of 9.1 in 1980 and earlier to 2.8 for schools established since 2001. Although older schools were relatively better equipped with 9.1 infrastructural quotient most of the equipments in such old schools were either obsolete or out of order. All the geography head teachers sampled claimed that inadequate funding militates against their replacement either through direct purchase

Table II: Age of secondary schools and infrastructural quotient.

Year Established	No of Schools [N]	Infrastructural Load (IL)	Infrastructural Quotient (IQ)
1980 and earlier	8	73	9.1
1981 – 1985	5	22	4.4
1986 – 1990	1	4	4.0
1991 – 1995	3	16	5.3

1996 – 2000	21	71	3.4
2001 and above	4	11	2.8

Total = 42; Non-response = 1; Infrastructural Quotient = IL/N

Research question 3: Why is it necessary to have well equipped geography laboratory and observatory center for the effective teaching of geography in schools?

The need for the provision of well equipped geography laboratory and garden in each secondary school is precipitated on the following grounds. Geography, like any other scientific discipline, has certain basic tools and infrastructures which enable it further its objectives and achieve its aims. These tools include maps of all types, pictures, films and photographs, globes, charts, models of various geographic features and processes. They also include various weather recording equipments such as thermometer, rain guage, etc. Like the other sciences, geography teaching needs an ideal environment, a geography room or laboratory, where the tools and equipments that are crucial to effective teaching are safely kept. Such equipment – some very fragile or delicate - are safer, easy to reach and much more convenient to handle when they – equipments – are kept in geography laboratory. Geography Laboratories in the secondary schools would minimize, if not totally remove possible damages that may occur when such equipment are moved from one classroom or teacher's office to another.

Geography is not an armchair subject. It was through practical work – exploration, field observation, plotting maps of new lands discovered, etc. - that the subject came into being. Consequently, geography needs more of practical approach in the teaching and learning process. A well equipped geography laboratory and weather observatory would provide the arena for geography practical work. This would ensure real and active students' involvement in the teaching and learning process. Basic skills and concepts in geography such as drawing of

sketches, and diagrams, map making, map reading and analysis, modeling of geographic features; the concept of distance and scales, for example, can be effectively acquired through students' active participation in such activities in the right environment that geography laboratory and garden or meteorological station would provide.

Students are also exposed to handling geography equipment in the geography laboratory and garden. They are trained in the ability not only to observe and use the equipment in collecting, recording local weather data reliably and on a continuous basis but also to maintain such equipments. Emphasis should be placed by geography teachers on regularity and punctuality of geography students in observatories and geography laboratories and maintain proper record keeping. If imbibed, such punctuality and regularity at work in the geography laboratory culture would make the students develop as a responsible citizen in the society.

The newly proposed 40% continuous assessment of WAEC candidates should be based largely on practical work done by students in the geography laboratory and weather observatories or geographical gardens during their course of study. In this way standardized questions and procedures for continuous assessment of all candidates irrespective of their spatial location can be evolved. Materials used by the students, records kept, sketches, maps and models made for the continuous assessment can be recalled by examination bodies for vetting if need be.

Institutions responsible for the training of geography teachers should as a matter of urgency establish and fully equip geography laboratories and observatory centers in their institutions. This would facilitate the exposure and training of would be geography teachers the basic skills in handling and maintaining such infrastructure and equipments. This is necessary if the products of such institutions are expected to go out, establish, maintain and use such facilities in the teaching process in secondary schools. Teachers should be resourceful and together with the students improvise some of the essential equipment and models that schools are unable to purchase.

Government and agencies responsible for education in the country should as a matter of urgency establish a Resource Development Center in each state where instructional equipment could be

produced and made available to schools at reduced costs instead of the present reliance on importation of these goods.

Geographers should lobby the various authorities concerned and government to list geography among the science subjects now benefitting from the present acquisition and allocation of teaching equipments in the 6-3-3-4 program implementation drive. This can be done through the Nigerian Geographical Association (NGA).

CONCLUSION

This paper confirms the fact that the basic equipments for the effective teaching of geography in schools are grossly inadequate both in terms of variety, quantity and quality. Factors responsible for this gross lack have been analyzed and the need for the provision of these equipment and infrastructural facilities vital to the effective teaching and learning of geography in schools highlighted.

It is the strong opinion of this paper that establishment and maintenance of well equipped laboratory and observatory center in each secondary school would enhance effective teaching and better performance. Standardized practical work done by students in the geography garden and laboratory should be assessed and made a significant part of the continuous assessment. This would make way for easy vetting of such continuous assessment exercises by the examination bodies. The much desired high educational standard in the country could be achieved if such continuous class assessments are based largely on practical work done by students in well equipped geography laboratories and weather observatories.

The existence of such well equipped infrastructural facilities is vital to successful and effective introduction of local geography now being advocated for by WAEC. With the existence of such infrastructure and equipment, students can easily translate their theoretical knowledge into concrete and practical experience. Through such practical approach geographical information becomes more meaningful and relevant to the students' day-to-day experiences and the total effect upon learning could be everlasting.

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