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FIELD-BASED APPROACH TO THE TEACHING OF GEOGRAPHY FOR SUSTAINABLE NATURAL AND ENVIRONMENTAL RESOURCES DEVELOPMENT.

Dakur, Dickson S. *Ph.D.* & Liman Zebedee Irmiya
dakurdickson@gmail.com, limanzebedeei@gmail.com
Department of Science and Technology Education, Faculty of Education, University of Jos, Jos, Nigeria

ABSTRACT

At all levels of learning, geography education aimed at meeting the current demand of the twenty first century societal needs of sustainable natural and environmental resource use, thus, attaining the sustainable development goals. This necessitate a methodological revolution in geography education which include the application of a variety of active problem- based, field experience and inquiry method which places high premium on students' active participation in the learning process. This pedagogical revolution is believed to possess the efficacy to engender in students, high-order thinking skills such as application of knowledge, and analysis and evaluation of phenomena. Enquiry fieldwork approach constitutes part of this revolution and thus forms the fulcrum of this paper. The paper discusses the concept, types and classes of natural and environmental resources, concept and strategies of sustainable development, enquiry field-based method of teaching geography. Model enquiry field- based instructional plan for teaching land resources is also presented to guide interested geography teachers towards appropriating the methodological revolution in Geography education.

INTRODUCTION

Geography is conceived and defined differently by scholars of different periods of its history, whose definitions may be summarized as science of the planet earth in relation to other planetary system, including the description and interpretation of its variable character, the natural and human processes that produce its past and present character, as well as interrelationship that exist between and within its organic and inorganic components. Hence, for ease of study geography is compartmentalized into four complementary traditions: earth science tradition (physical geography) made up of geomorphology, climatology, oceanography, and biogeography; man-environment tradition (human geography) consisting of man and environment relationship, population geography, cultural geography, and political geography; locational tradition(human and physical geography) which include economic geography, geography of natural resources, settlement geography, urban geography; and area-study tradition(human and physical geography) which is the study of the character of different geographical regions and their interrelationships. Several methods are applied in the teaching and study of geography that are either inclusive or exclusive to each of the four traditions. Like any other discipline, geography education at all levels is aimed at meeting the current demand of the twenty first century societal needs of sustainable natural and environmental resource use. This requires the use of active problem based approach to its teaching which engender high-order thinking skills such as application of knowledge, and analysis and evaluation of phenomena (Dakur, 2018). Active participation methods accompanied by teaching materials promote active learning and collaboration between the students (Gica & Catalina, 2013). Gica and Catalina stressed that active methods allows the realization of multiple social interaction and development of the cognitive, social, communicational, and interpersonal intelligence competencies of students. Other advantages according the authors, includes improvement of the quality of education, optimal transfer of knowledge, confrontation of ideas, comparison of the ways of learning, stimulation of critical thinking, honing individuals' capacity for taking responsibilities. The methodological revolution in geography education therefore, is the application of a variety of active problem- based, field experience and inquiry method which places high premium on students' active participation in the learning process. Enquiry fieldwork approach constitutes part of this revolution and thus forms focus of the paper. This motivated by a strong belief among geographers,

for instance, Mohammed (2014), Ababio and Dumba (2014) in the suitability of enquiry based fieldwork for teaching geography to solve people- environment problems. This implies that to acquire the requisite geographical knowledge and skills which could be applied for sustainable management of natural and environmental resources, geography should be taught using active methods such as enquiry fieldwork approach.

Not all natural and environmental resources are renewable, in fact, many are finite and exhaustible in nature, and hence the need for sustainable use, particularly so that even the renewable resources stand the possibility of being depleted in quality and quantity due to overuse. When a natural and environmental resource is identified and harnessed for human use either for local consumption or as a contributor to national economic assets, is said to be developed. Sustainable development as defined by Bruntland Report (Daniels, T. & Daniels, K, 2003) is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs. This definition connotes that sustainable development does not discount future generation and require wise and conservative use of resources. This paper discusses concept, types and classes of natural and environmental resources, concept and strategies of sustainable development, enquiry field-based method teaching geography, and enquiry field-based instructional plan for teaching land resources.

Concept of Resources

Resource as the name implies is a material or non-material thing that is of value and useful. In the word of Dayanandan (2011), a resource is something of value in the sense of being consumable directly, explaining that if a thing is unknown and no use of it have been found, is not a resource. Similarly, Santra (2013) sees resources as all means of satisfying human need at given time and place Dayanandan, posits that resources are dynamic because: first, changes in information, technology, and relative scarcity may make a valuable resource out of something that previously had no value. Second, things that are produced under human guidance in process that combine resources, capital, technology, and/or labour are not themselves called resources. From an economic perspective, Dayanandan states that what is not scarce is not a resource because it is only when a thing is scarce that it has price value otherwise it is free because it is unlimited relative to demand. However, if resource is anything that is useful, not all useful things are scarce and have price value. For instance, atmospheric Oxygen and carbon dioxide as components air, freely exist in abundance but very useful for human existence, can never be discounted as resources.

Resources have several attributes such as quantity, quality, temporality and spatiality. Thus, some resources are more in quantity everywhere than others, for instance, water and air are available in quantity than gold and tin. In terms of quality, polluted water in an urbanized industrial area becomes less valuable for human consumption and thus of low demand and price value in this context in contrast to clean water. Similarly, the quality of air is impaired to some degree (Dayanandan, 2011). This is most likely in urbanized industrial areas where environmental externalities are common. Spatially, resources vary in quantity and quality from place to place. Leaning on the explanation of Dayanandan (2011), for instance, in certain small, enclosed places, air is very scarce and is highly valued in contrast to open environment. From the temporal perspective the author states that air quality may change as time pass even in the open environment. More so, the forest reserve of Nigeria and many parts of the world for instance, have reduced greatly in quantity and quality due to overexploitation over time, so also the biodiversity of the world.

Classes of Natural and Environmental Resources

It quite daunting to precisely classify natural and environmental resources, as the concept has wide range of meanings and application and covers multiplicity of things, more so that one resource can belong more than one class of resources. Hence, different mode of classification and nomenclature are adapted by different geography and environmental scientists. The classification mode adapted by two scholars, Santra, (2013) and Dayanandan (2011) for instance, give an insight

into difficulty in a consensus classification. Santra classifies natural and environmental resources into four as follows:

(a) Continuous resources- these continue to be available with possible exception of solar energy which continuous supply could be affected by atmospheric pollution. Examples of continuous resources include solar energy, wind, gravity, tidal energy, geothermal energy.
(b) Renewable resources- are capable of regeneration and could be indefinitely available, provided their capacity to regenerate not damaged by natural catastrophe or human activities. Examples of these resources are: clean water, flora, fauna, soil and clean air
(c) Non-renewable resources- are available only in finite quantities, or the rate of renewal is so slow that are only available in fixed quantities.
(d) Extrinsic resources-these are fickle resources, prone to degradation, yet can be continuous if well-managed. Example of these include human skills, institutions, and management abilities and so on. While

Dayanandan classified natural and environmental resources into four but different nomenclature as thus:

(a) Biotic resources- these encompass all living organisms including plants plant, animal and human life.
(b) Abiotic resources-these include the non-living resources such as oil, metal ore and diamond reserves
(c) Stock resources- these are resources that cannot be increased in supply within a meaningful time frame.
(d) Flow resources- these are resources whose supply can be increased within a meaningful time frame

The author consider biotic resources as renewable, while the abiotic as non-renewable.

Concept of Sustainable Development

The multi-dimensionality of sustainable development makes it definition challenging, as its meaning and interpretation varies based on context. However this paper adapts the definition of by Bruntland report. Thus, sustainable development is the development that meets the need of the present without compromising the ability of future generation to meet their own needs. This connotes that sustainable development is the process in which peoples are able to identify and harness their natural and environmental resources to meet their present needs in such a careful and wise manner that the future generation will also enjoy the use of same resources without degeneration in quantity and quality. Dayanandan (2011) evaluates the concept from an economic perspective and thus conceives it as an economic system in which well-being per capita increases over time on a sustainable basis (sustainable per capita increases in well-being), or sustained growth paths of utility and consumption over a long periods (growth paths of utility and consumption). This implies, according to Dayanandan, that sustainable development require intergenerational rules of behaviour in which each generation bequeath to the next generation a capital endowment no less than the one it has now (intergenerational equity). Dayanandan however noted a dilemma between welfare consideration of optimal economic paths and sustainable development. Thus, economically optimal paths may not be sustainable in the long run. Hence the need for achieving a balance between optimality and sustainability by holding capital stocks constant from generation to generation. This balance may be very hard to achieve for a number of reasons: poverty, lack or inadequate education, attitudes, egocentric nature of humans, lack or poor environmental policy framework of some developed and developing nations, just to mention but a few. These have implication for over exploitation and consumption of resources with little or no consideration for the future generation. Unless these factors and many others not mention here are addressed, sustainable development would be difficult to achieve.

The challenge of sustainable development is compounded by the fact that development and sustainability present a palpable variance with each other. Development is measured by economic growth indicated by gross National product (GNP) which in itself does not represent the totality of

development. For instance, GNP does not take into account the externalities of the process of economic growth such as increased inequalities, reduced empowerment, and adverse environmental impact with consequential health and existential risk of the flora and fauna. This situation gives birth several arguments on the efficiency of GNP and proposition of different alternatives to it which are beyond the scope of this paper. Sustainable development is therefore defined from different perspectives aimed at achieving different goals (Dayanandan, 2011).

Strategies for Sustainable Natural and Environmental Resource Development

The Rio de Janeiro 1992 conference on environment and development identified and stressed a strong link between environmental problems and economic development. Hence, in any case, adapting a strategy for sustainable development hardly discount focus on or at least a tangential discussion on the environment. More so, the sustainable development strategy that would be adapted for a given resource may to lesser or greater extent vary from another one. A comprehensive discussion of sustainable natural and environmental resources strategies lies beyond the scope of this paper. Discussion of strategies for sustainable water resource, forest resource and soil resource development is attempted.

The popular saying, 'Water is life' is inarguably true because it is necessary for drinking, cooking bathing, irrigation, food processing and other uses as swimming, and habitat for aquatic animals. Therefore, the imperative for a sustainable water resource development is sacrosanct. Disparate nations and communities have noted this imperative and responded by developing their own strategies for sustainable water development which are reflections of peculiarities of their social, environmental, technological and economic conditions. The strategies outlined by Locker (2002), Hunt (2004) and Santra (2013) are rather normative. These include sea and ground water desalination, decreasing amount of water use, recycling of water, storing water by pumping into aquifer, storing water above the ground in tanks, ponds and other storage areas, irrigating agricultural lands through underground pipe instead of spraying, covering channels of water from sunlight, educating citizen about the importance of water sustainability, weather modification, draught management, and brush control and so on. Daniels .T and Daniels. K (2003) advocates planning for sustainable water quality with several components which include: clean water act, development of pollutant water elimination system, construction of water treatment plan, water quality monitoring and enforcement, cleaning up impaired waterways, watershed management, and water management partnership.

Over exploitation and consumption of forest and its products resulting from population explosion and its concomitant socioeconomic and political demands, together with the direct and tangential nexus to natural and environmental resources depletion, apparently opposes sustainable development. Hence, the need for sustainable forest resource development strategies if a balance must be maintained. This is necessary as the use of forest spreads across all spheres of human life the entire flora and fauna communities. To leverage on the explanations of Mukherjee (2002) and Santra (2005), strategies for sustainable forest resource development include: afforestation, agroforestry and alternative energy source. Other strategies include educating the citizens, membership of international agreement to protect the environment, and creating legal and institutional framework for protecting the forest such as forestry regulation and policy, for instance, forest harvesting licence fee and different forest tax regimes.

Soil being a complex composition of mineral matter, organic compound, water and gasses (air), is an essential resource for life. Roles of the soil (Narayanan, 2007) include: environmental interaction, source of food and materials, provision of habitat and platform for growth. Despite these important roles of the soil, its sustainability is hampered by several factors which as noted by Santra (2013) includes:

1. Covering of productive land with water, silt, concrete, asphalt ,or buildings,
2. Cultivation of land without proper soil management,
3. Irrigation of cropland without sufficient drainage,
4. Removal of water from underground reservoirs,
5. Removal of trees from large areas,

6. Depletion of grass by livestock (overgrazing), and
7. Killing of various forms of wild plants and animals through destruction of habitat.

This phenomena calls for soil sustainable development practices, which is a complex issue as noted by the author, representing one of the most challenging environmental problems. Santra however, sates that emphasis should be placed on sustainable, rather than exploitative land use practices, requiring holistic and multidisciplinary approach, involving collaborative and coordinated efforts of ecologist, agronomist, soil scientist, hydrologists, engineers, sociologist and economists. Not only so, the author further posits that government and non-governmental organizations, aid agencies and farmers should be involved, and in addition to identifies three broad strategies for sustaining soil in cultivated land as thus: agronomic measures, soil management, and mechanical methods. The agronomic measures includes mulching, crop management (high density planting, multiple copping, cover cropping, crop rotation, strip cropping). The soil management strategy is conservation tillage (contour tillage, ridging and ridge tying, minimum tillage and zero till). The mechanical methods includes terracing, waterways, and structuring. These are however not exhaustive as other strategies could be added. For instance sharing of knowledge, reforestation afforestation, salinity management, mineralization, maintenance of PH, liming, careful use of fertilizer, prevention of overgrazing, shelter and windbreak of trees and shrubs also constitute useful sustainable soil development strategies.

Field-Work Approach to the Teaching of Geography

Field work that is focused on people-environment issues is advocated as suitable pedagogical approach for the teaching of Geography by many scholars. For instance, Dakur (2018) alluded to Bowles, Foskett, Naish, Hawley, Damar, Varm, Ababio and Dumba, who expounded the relevance of field work in the teaching and learning of geography. Thus, Bowles stresses the importance of Geography of outdoor activities and experience, Geography of real things and Geography of scientific truth respectively, to be given to children of any age. In reference to Her Majesty's Inspectorate (HM), Bowles recommends that learners should be given adequate opportunities to carry out practical investigation to explore and express ideas in their own language and to reflect upon other people's attitudes and values. Bowles stressed that inquiry should form an important part of students' work in Geography and should be linked to their interest, experience and abilities, and should lead to investigation that are based on field work.

Damar and Varma (Dakur, 2018) stressed the importance of field trip and observation in the study of Geography, believing that field trip to places of geographical interest, has the advantages of gaining practical experience, sustenance of learners' interest in the subject, making learning permanent, promoting application of knowledge, promoting imaginative work, formation of general concept and facilitation of comprehension. These are in addition to enhancement of critical observation as an important scientific skill in Geography and other sciences. Varma particularly observed that field trip is important because it enables the learners to form ideas from the object they observe in the field. Thus, after observation and formation of ideas, the learners, by permutation and combination of ideas and by constructive thoughts, form conception of things and events.

Naish as alluded in Dakur (2018) espouses the need for the application of enquiry based field work method in Geography teaching; stressing its application in tackling people-environment curriculum of modern Geography, and helps learners cope with the rapid pace of conceptual and intellectual change in the subject. The enquiry method, Naish posits, is significant and interesting in this context for three reasons. First, because it is about the world the students are presently living and in the future. Secondly, geographical studies are about questions of genuine significance for the environment and for the quality of human life. Thirdly, because virtually all questions about the use of space are political in some sense and students are involved in the enhancement of such values. The writer asserts therefore that students study people-environment questions, issues and problems through direct investigation of first hand and secondary data which they do through active and involving investigation. The author further states thus: active enquiry approach is one of the most appropriate methods for the study of Geography, because such an approach can be employed

not only to help develop a range of significant skills and abilities, but also to open up the area of value education, where Geography has a significant contribution to offer. It important to note that active enquiry approach in the context of geography teaching and learning can't effectively take place in the classroom because observation, measurement, and accurate description characterizes the science of geography.

Dakur (2018) explains the opinion of Hawley who states thus, since Geography is a science subject, particularly physical Geography, the scientific method of systematic enquiry should be adapted for its teaching and learning. By this Hawley meant experiment and investigation, which proceed thus: planning experimental work, obtaining evidence, analyzing evidence and drawing conclusion and considering the strength of evidence. This, however will require the control and change of variables which is not an easy task in Geography except with some practical activities or through computer stimulation. Hawely therefore concludes that in Geography education, we can only occasionally experiment in the laboratory. According to the author, learning through geographical enquiry tends to take an inductive route to explanation, bringing order to a variety of facts to reach a generalization. This rather presents a variant of pure scientific approach in which investigators more frequently adapt a deductive route that reaches explanation through repeated testing using different factors to narrow down the cause. The deductive and inductive routes of explanation is schematically represented by Hawely as seen in Figure 1.

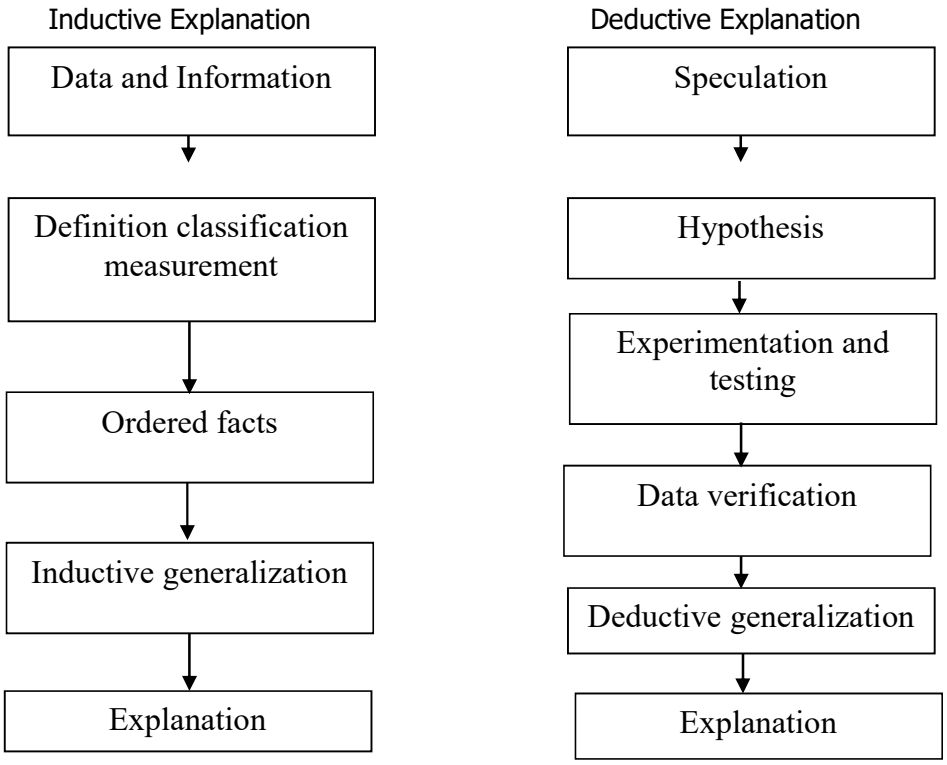

Figure 1: Inductive and Deductive Routes of Explanation
Source: Harvey, 1973

Foskett advocates field work as the appropriate approach to the study of Geography. In reference to Smith, Foskett considered the aim of field work in the context of both geographical education of wider outdoor and environmental education and concluded thus: Field based outdoor activity, whether residential or not, is a critically important approach in Geography education. The author specifically identifies the value of fieldwork in terms of three broad categories of experiences: outdoor studies, outdoor pursuits, and personal and social development. Outdoor studies relates to the intellectual (cognitive) development of the learner which includes: specific skills of field sketching, generic skills of data collection and recording, problem-solving, feeling, attitude, value and development of personal perception of place. Outdoor pursuit, according to the author, results to the development of physical and practical skills and enhanced awareness of safety issues from experience outside the classroom. Smith's third category of personal and social development as stated by Foskett, stresses the development of self - awareness and awareness of the needs and skills in the context of working cooperatively in a new environment. The current requirement for effective teaching however places less emphasis on the use of a single method of instruction. Rather it underscores a crafty combination of a variety of approaches which are a function of the nature of the content of learning and the level of development of the learners. So, no one method can be rigidly considered as most appropriate approach for the teaching and learning of Geography.

Ababio and Dumba as reported in Dakur (2018) posits that field work helps students to acquire the skills of observation, description, measurement, sketching, recording, interpretation and report writing. This is in addition to providing learners an opportunity to develop data gathering skills and presenting ideas in graphical and statistical forms. In another consideration, Luo (2005) embrace problem-based field work approach which places high value on students' development of problem-solving capacity. Luo belief that problem-solving method develop the learner into an active, free, self-learner and problem-solver. Corroborating the advocacy of fieldwork approach, Frew (1993) asserts that fieldwork is the ideal way in which the knowledge of geography can be put into practice and further allows for full enterprise, initiative and development of skills. According to Frew, the procedure for conducting fieldwork teaching include: choosing of topic, statement of aims,

designation of fieldwork area, determination plan to achieve the aims, investigation in the field and collection of data, analyzing and processing of data, and drawing of conclusion

What can be synthesized from the preceding discussion is that fieldwork and enquiry methods are closely related such that hardly can there be field- work without the inclusion of some form of enquiry exercises. This phenomena of combining field work with enquiry-based method is widely adapted in the teaching of Geography as discerned from the literature. More so, advocates of these methods believed that they promote understanding in Geography. Sustainable development of natural and environmental resources requires active participatory approach to the teaching of Geography, which is imbued the field studies.

The procedure suggested by Hawley and Frew implies that to conduct an effective fieldwork approach to the teaching of Geography requires proper planning. In the context of class teaching and learning, the best guide is instructional plan. Whatever methods are adapted for the teaching of Geography like any other subjects of the school curriculum, the teacher is most likely to fail in pursuing predetermined aims without instructional planning. The instructional plan presented in the succeeding paragraphs may be a useful guide for fieldwork approach to the teaching of geography.

Model Instructional Plan for Fieldwork Approach to Geography Teaching

School: University of Jos, Faculty of Environmental Sciences, Department of Geography and Planning
Class: 200 level B.Sc. Geography Students
Course: GEO 221 Introduction to Physical Geography
Topic: Soil Type Characteristics
Content:
(a) Soil type
(b) Soil type characteristics
(c) Relationship between soil types and infiltration
(d) Relationship between soil types and erosion
(e) Relationship between soil type and land use
(f) Relationship between soil type and drainage system
(g) Relationship between soil type and relief/slope of the surfaces
(h) Relation between soil type and vegetation

Learning outcome: By the end of the lecture, students will be able to:
(a) Differentiate various soil types of sandy, loamy and clay
(b) State 3 primary soil types of sandy, clay and loamy soils
(c) Describe the characteristics of sandy clay and loamy soils
(d) Explain the relationship between:
  i. Soil type and infiltration rate
  ii. Soil type and drainage system
  iii. Soil type and slope
  iv. Soil type and vegetation
  v. Soil type and land use
(e) Measure accurately infiltration rate of soil types
(f) Identify accurately the soil types on the field and draw the sketch maps.
(g) Accurately carry out field experiment on the characteristics of soil types using soil testing kit.
(h) State the relative suitability of soil types for Agriculture, Construction and other purposes.
(i) Factors influencing the formation of the soil types.
(j) Measure the slope of the land on the field.

Objectives: To teach and guide student to acquire knowledge and understanding of:

(k) various class and type of soils
(l) characteristics of different type of soils
(m) the relationship between:
  i. Soil type and infiltration rate
  ii. Soil type and drainage system
  iii. Soil type and slope
  iv. Soil type and vegetation
  v. Soil type and land use
(n) Measuring infiltration rate of soil types
(o) How to identify accurately soil types on the field and draw the sketch maps.
(p) How to accurately carry out field experiment on the characteristics of soil types using soil testing kit.
(q) The suitability of different soil types for Agricultural practices, Construction and other purposes.
(r) Factors influencing the formation of the soil types.
(s) How to measure the slope of the land on the field.

Duration: The lecture on this content would be conveniently accomplished within a period of 3 hours.

Instructional Materials: (i) A graduated cylindrical tin – about 3-4cm radius to measure infiltration rate (ii) ranging poles, abney level, altimeter or field sketching aneroid, pristmatic compass – equipment for measuring topographical parameters. (iii) Soil testing kit containing distilled water, 10% hydrochloric acid, 30% hydrogen peroxide, B.D.H. Universal soil indicator, sulphate and colour chart. (iv) Based map (v) Soil profoma – a field sheet that sets down the items to be considered and the order in which the activities will be done. (v) Munsel colour chart. (vi) Test tube and polythene bags. (vii) Measuring tape.

Learning Experience/Activities: The activities in this lecture will include: questions, explanation, discussion, experiment, measurement, observation, sketching of maps, demonstration, reflection and group activities.

Introduction: The background experience of the students will be beefed up through the following questions: (1) What colour is the soil in your backyard? (2) Is the colour the same elsewhere? (3) Do you think soils differ only in colour? (4) What other characteristics can you differentiate soils? The answer to these questions will serve as the starting point and momentum that will set the ground for this lecture.

Development of the lesson: Step One: (a) 3 types of primary soils are stated and written on the board. (i) Sandy soil (ii) Clay soil (iii) Loam soil.

(b) Characteristics of the primary soil are discussed: (1) Physically, sandy soil has large particles, has no structure, is easy to cultivate, lower water holding capacity. Chemically, sandy soil consists chiefly of silicon dioxide (SO_2) called quartz, poor in plant nutrients and poor in mineral holding capacity. (2) Physically clay soil has very small particles, forms aggregate or lumps, has small pores, high water holding capacity, is hard to cultivate, are cooler soils and swell when wet and cake when dry. Chemically clay soils consist of many elements or minerals, are rich in plant nutrients and good mineral holding capacity. (3) Loamy soil is both physically and chemically balanced. It has moderate particles, pores, mineral holding capacity and moderate temperature. So it is the best soil for agriculture.

Step Two: The students are taken to the field where the base map is abstracted (Naraguta South West). The following activities are carried out. (1) Different soil types identification and location. (2) Samples taken from the soil type.

(3) Lecturer's demonstration of experiment on soil infiltration rate. (4) Lecturer's demonstration on how to measure surface slope. (5) Lecturer's performance of experiment on soil characteristics using soil testing kits.

Step Three: The class is divided into five groups according to the division of the base map, and each group is asked to do the following:

(1) Measure the slope of their area of study.
(2) Identify the soil type in the area of study.
(3) Identify the land uses.
(4) Measure the infiltration rate using the instruments given to them.
(5) Use soil test kit to measure soil characteristics such as pH, organic matter, and mineral content as demonstrated by the lecturer.
(6) Observe and record the land use types and vegetation coverage and type in their area of studies.
(7) Draw the sketch maps showing the soil type distribution of their area of study.
(8) Describe the relationship between soil type and slope, soil type and vegetation, soil type and land use and soil type, drainage and soil type and erosion.

Step Four: At the end of the field activities, the students are asked to go back to the class and the following activities follow:

(1) Each group's brief presentation.
(2) Brief discussion – students ask questions and the teacher responds.

Evaluation: The following written questions are used to evaluate students' learning.

(1) State the basic characteristics of (a) Sandy soil (b) Clay soil and (c) loamy soil.
(2) Explain the relationship you have observed in the field that exists between (a) Soil type and drainage, (b) Soil type and slope and soil type and land use.
(3) What soil type do you think is most suitable for the following human activities: (a) Cultivation of yam, (b) Cultivation of acca, (c) Cultivation of maize, (d) Cultivation of guinea corn?
(4) What is the importance of soil to economic development of a country?

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