

Innovation in Geographic Education in the 21st Century

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Abstract

The disquisition of the earth and of man is so wide that there is much diversity of opinion of what should or should not be included within geography. Some have suggested that "geography commences when geographers begin documenting geography" thereby giving it a catholic scope and difficult to grasp. This explains why the initial enrollment in geography in Nigeria ended with poor grades such that students showed apathy in the subject terming it an "impossible subject." More so the variations in terms of focus, methodology, philosophical orientation and content of training programme need teachers who are better educated, innovative, creative and GIS acquiescent. For this reason, it is necessary to raise the pedagogy and learning of the subject in the 21st century. Therefore, geography education is examined as an elixir for active teaching and learning of geography. The purpose is to ginger innovation in the geography teacher, ignite curiosity and stimulate more awareness in the study of geography in order to inspire the next generation of geography students. The overall strategy used to integrate the different components of the study is the descriptive research design. Innovation is blended with geographic education, resources and tools in their various categories with relevant investigative question are assembled and harmonized in a tabular format to enhance teaching and learning of geography. The viewpoints, concepts, skills, resources, tools and methods of classroom teaching are painted to serve as quick reference guide for the teacher to apply in any chosen topic. This make learning more concrete and interesting as learners see and practically engage in activities relating to what they have or are being taught. Stakeholders in geography education should mix more innovative and creative methods as well as geographic resources and tools for day-to-day classroom teaching and learning.

Background to the Study

Geography studies the earth in all of its variety such as earth's land, water, plants and animal life. It is both descriptive and exploratory. When it catalogs the characteristics of places it is descriptive; when it deals with the significance of these characteristics and their relationships to each other, it becomes analytical. Its preoccupation is the physical environment and human societies that inhabit our planet. According to Ojo (1981) it is acclaimed to be the mother of sciences. The purpose of the subject has changed overtime from encyclopedic description of nature to inventory and classification; to discovering spatial relationships and understanding man's experience in space and finally, as Leigh (1971) observed, to postpone death and reduce suffering.

Geography as an academic discipline in Nigeria started in University of Ibadan in 1948. University of Ibadan was founded as a college of the University of London (Salau, 1986). Those who registered to do the subject ended up with poor grades thus referred to it as “impossible subject” probably because it was foreign, with a vast body of factual information as well as the way it was taught. This created a setback in the study of geography nevertheless a lot was done by geographers to salvage the situation. The major criticism of the subject is wide scope and improper focus (Faniran and Okuruntinfa 1981) because it involves a vast body of factual information, much more than one can master. In fact, it has been accused of combining the results and methods of a host of other subjects. It seems to require information of a large range of subsidiary studies than almost any other science or arts (Wooldridge and East, 1961). It is troubling to note that succeeding as a trained geographer with the short span of life of biblical three score and ten years, one may die like Browning grammarian long before reaching the end of one's endless academic path and certainly before reaching Geography (Eni, 2006). There is still much diversity of opinion about what should or should not be included within the field of geography. Some scholars maintain that geography commences when geographers begin writing it. This buttresses the catholic scope issue thereby leaving a huge challenge of teaching and learning the subject.

Besides its catholic scope, teaching and learning geography has been changing in the past decades from the old sterile ideographic and analogue to a more functional, creative, innovative and problem-solving approach. This has informed the trend in terms of focus, methodology, philosophical orientation and content of the training programme. Though the new developments are more interesting but are difficult to teach. Thus, leaving another problem of active and efficient use of up-to-date methods and tools in data analysis. Kpolovie (2002b) reported that virtually all researchers collect large volume of data and still analyses them manually or at best send them to computer centers for analysis to be done by others. This is like a poor student who cannot always reason why a thing happens but willingly accept that a thing is right or correct because the teacher said so. This does not auger well for the student to gain. The student can gain more than they can learn per time when curiosity is ignited and innovation brought to bear on the processes. According to McHugh (1953) retarded children do not seem to lack the power to remember nearly as much as they lack the power to reason. Taking students through geographic education with a lot of innovation will not only lay a good foundation for future researchers but boost learning among retarded children. Geography

today and tomorrow will depend on what teachers and students make of it (Ojo, 1981). The content of modern-day geography today is therefore tremendous and require skills, creativity and innovation to drive home geographic lessons. Geography is dynamic; therefore, the geography teacher must be dynamic and innovative, adjusting to the new trend to remain effective and relevant. The purpose of the study is to ginger innovation in the geography teacher, ignite curiosity and stimulate more interest in the study of geography and inspire the next generation of planetary stewards.

Evolution and Perception of Geography

The history of geographic study dates back to ancient scholars who speculated about the nature of the earth upon which they lived. Much of what ancient people believed about lands beyond their immediate environment was based upon legendary tales passed down from generation to generation. The first important contribution to knowledge about the nature of the earth were made by learned men of ancient Mediterranean world especially ancient Greeks and Romans (Pearson, 1968). Where the Greeks were concerned with theories of geography, the Romans were more interested in facts. They produced encyclopedic descriptions of the known world to help with planning of military campaigns, administration of provinces and development of trade. Much of what was learned were preserved by the Arabs during the Middle Ages (5th-15th century BC) where scholars were mainly churchmen who devoted their energies to theological topics. But for the Arabs, much of what had been learned in earlier times would have been lost entirely. During the renaissance (15th and 16th century), the desire for exploration and geographical theory led to the voyages of discovery where great landmasses of the earth became known. From the 17th to 19th century, European nations expanded their overseas territories and sent colonization and exploration parties to Americas, Africa and Far East to continue the filling in of details in the world map. By 1800, interest shifted from the gathering of facts towards the formulation of principles which could lead to the understanding of conditions that cause similarities and variations in landscapes to exist over the earth. This has been the trend of inquiry. The challenge here is the diversity of opinion about what should or should not be included within the field of geography. In view of this and the broad scope of the subject, professional geographers tend to have specialized interests which result in the different branches of geography. Physical and human geography are the major branches of geography. Despite the diverse areas of specialization, the geographer will always concern himself with physical earth and human beings, directly or indirectly relating his study to the answers of three questions: "where," "how," and "why" questions (Pearson, 1968).

"Where" question involve the specific location of population groups, of economic activities, and of natural features, and the distribution pattern they form when plotted on maps. It also concerns the interrelationships between places. "How" question examines how people live in a particular area or place. The occupations of people in various parts of the world, the products which are the results of these occupations and settlement patterns. "Why" question involves both the study of physical environment as a set of conditions which limit human activity in an area and an understanding of the people themselves. The culture of a people -- their way of life that is an outgrowth of their desires, their abilities, and the knowledge that has

been handed down by previous generations-- determines the extent to which the natural environment will be utilized by them. Be this as it may, Geography evolved out of three major activities viz: exploration, charting and speculation about mapping phenomena of weather, tides and volcanism.

The fundamental change in the way humans explained the universe and nature, influenced the evolution and perception of physical geography and geomorphology. Although Europeans, Arabs, Chinese and ancient Greeks contribution to landform studies have been documented by Davies (1969) and Tinkler (1985), the works of Polybius, Posidonius, Erathosthenes, Thales, Anaximander and Aristotle had great effect on geomorphology and mathematical geography (James, 1972). Geomorphology actually took shape in the 18th century as a result of exploration and introduction of concepts like catastrophism, uniformitarianism, cycles of erosion, self-regulating equilibrium, landforms and base level concepts (Pidwirny 2006). According to catastrophism, differences in fossil forms encountered in successive stratigraphic levels are the product of repeated cataclysmic occurrences and repeated new creations. That is landscape had an innate permanent change only by catastrophic events. This is associated with Baron Georges Cuvier (1769-1832). Uniformitarianism holds that earth surfaces have been shaped over long time through the operation of processes that are largely in operation today. This concept is associated with James Hutton in 1785, often recognized as father of Geomorphology. Following the same trend of thought Play Fair in 1802 illustrated the Huttonian theory of the earth while Lyell in 1830 and Darwin in 1859 keyed in with the principals of Geology and origin of species respectively.

The groundwork to W. M. Davies's cycle of erosion was laid by Gillbert and Powell who detailed the effects of streams and outlined the first geomorphic classification of streams. Gilbert introduced the concept of self-regulating equilibrium landforms such as graded streams in 1914 while John Wesley Powell's descriptive classification of streams and concept of base level elaborated on the progressive erosion of mountain ranges. Before 1900 much of the world had not been explored, however all fields of physical geography were actively collecting base data which later gave direction to the development of physical geography.

Conservation

Concerns for the environment began to develop in the 1850s as a result of human development in natural areas in United States and Europe, prominent was "man and nature" by George Perkin Marsh which is a significant contribution to conservation. Post 1950 saw two concepts or paradigm that determined the nature of physical geography. These are quantitative revolution and human/land relationships. Quantitative revolution became central focus of research in physical geography where researchers began investigating processes rather than mere description of the environment

Man/Land Relationships

Due to the apparent influence of human activity on environment, focus was shifted to themes like environmental degradation, resource use, natural hazards, impact assessment, urbanization and Land use change. Be this as it may, Geography today, like Ojo (1981) rightly observed, is concerned with relevance to the issues of the moment and problem orientation.

Innovations in classroom instruction

Classroom instructions can be handled with a wide range of teaching strategies and resources that will actively engage learners and promote their curiosity and understanding of the world. Innovation is key to successful lesson delivery. It behoves the teacher therefore to be innovative enough to know at what point to alternate from one teaching strategy to another depending on the pedagogy, andragogy and heutagogy of the audience. Innovations can be brought to bear on the three categories of resources itemized below to drive home classroom instructions:

- a. Natural resources such as the field or any geographical space on or above the earth are referred to as Geospace.
 - i. Natural resources such as region of outer space near the earth surface provide real world experience.
- b. Human made resources such as models, instructional materials or improvised materials. Example:
 - i. Google maps which are real game changers for teachers, example web mapping or online mapping, platform like satellite imagery, aerial photos, street mapping etc. These use the internet to view, analyze, or share visual representation of geospatial data in map form.
 - ii. Ordinance surveys which are accurate geospatial data and printed maps to understand the world.
 - iii. Google lit trips which are award winning supplementary reading resources that enable teachers and students use google earth to explain real world locations.
 - iv. Map your memories which are art project created by Harvard graduate, Becky Cooper, to enable learners fill in outlines or maps of a place with information that is meaning to them.
- c. Human resources such as educated, skilled, innovative and creative teachers.

A combination of these resources with innovation and creativity can produce best learning outcomes when harnessed by skilled personnel. For example, after a lesson the teacher can expose students to the immediate environment and trigger their thinking faculty by asking them to fill in details in a proforma as shown below:

1. Identify location of the area
2. Sketch map of the area
3. Attempt a background of the area's physical, cultural, socio-economic activities of the people
4. State striking significance of the area
5. State the problems of the area
6. State the prospects of development
7. State settlement pattern and factors responsible for such settlement patterns

Geographic Education

Geography provides an ideal framework for relating with other fields of knowledge. In a broad sense it is education for life and for living. Learning through geography help us to be more

socially and environmentally sensitive, informed and responsible citizens and employees. Geography informs us about:

1. The places and community we live and work;
2. Our natural environment and the pressure it face;
3. The interconnectedness of the world and our communities within;
4. How and why the world is changing globally and locally;
5. How our individual and societal actions contribute to changes in the environment;
6. The choices that exist in managing our world for the future; and
7. The importance of location in business and decision making.

Grasping these details couple with significant development in the subject has been a big challenge for the teachers to accomplish their task. These new developments are more interesting but harder to teach so they require teachers that are not just better educated but amendable to innovations to drive home geographic lessons. Examples of these developments include:

- i. Geographical generalizations;
- ii. Model building and spatial analysis;
- iii. Spatial geometry and measurement in geographical thinking and;
- iv. The organization and analysis of geographical data.

For these to be firmly established in our schools there is need to blend innovation with geographic education.

Geographic education refers to those geography perspectives, concepts and skills that are found in standalone geography courses and those diffused throughout and across other subject areas (Ogar, 2017). It lays emphasis on field work, (NCGE 2016). It is a complex concept that can be understood by explaining its relationship to the discipline of geography, detailing its aim, explaining its place in both formal and non-formal education and considering what are its essential components (Gerber, n.d.). It requires students to participate in reading maps, asking geographic questions or displaying data. Geographic education is a necessary part of a complete education in view of the fact that geospatial technologies including remote sensing and mapping tools have become critical to our economic success and governance in areas such as natural resources management, international commerce, transportation, risk management and national defense and security.

Geographic education is education about our world. A well-rounded geographic education provides young people with fundamental understanding of how the human and natural worlds work at local, regional and global scales. It is the intersection between the academic domains of Geography and Education in which a typology of research in geography education is developed and used to characterized its research (Bernardz, 2010). It is the way people learn about the different approaches to geography, develop skills to conduct geographical investigations, embrace the values associated with these approaches and practices.

Tools in Geographic Education

Geographic tools enhance teaching and learning of geography, learning becomes more concrete when a learner sees and practically engages in activities relating to what he has been taught. The table below displays the various ways geographic tools can be used to achieve learning. Table showing tools and investigative questions often asked about the major themes in geography.

Table 1: Tools and Investigative Questions often asked about the major themes in Geography

S/N	Tools	Query/Question	Task	Description
1	Maps	Where? what?	Show location, Significance of Location.	Use to show location, and its significance and lots of information. Use projection to try and display rounded object (earth) on a flat surface.
2	Globe	What? where?	Show size, area, shape, distances, direction, Location.	A model of earth which serve purposes like map but do not distort the surface thatthey portray except to scale it down.
3	Atlas	What? where?	Show place, region, charts.	Book of maps containing more information about places included in the map. One atlas covers many maps. There are also in multimedia formats.
4	Aerial photo	What?	Show location, monitor changes in landscape.	Photographs from space borne vehicles to provide information on ground features used to create maps. It aids better understanding of an area, Widely used for archaeological prospection and discovery of top soil characteristics.
5	Satellite imagery	What? where?	Show region, place location.	Taken from space. Captures large area of the earth via space borne photography. Operated by governments and business around the world. Satellites are made by humans to gather information about the earth e.g Landsats, Geostationary operational environmental satellites (GOES).
6	Information graphics	What?	Show pattern, Trend.	Infographics are visual symbols of data that presents information quickly and clearly. It can be as simple as bar graph or complex as using a minute symbol to represent land cover change.
7	GIS	How? where? what? why?	Data capture, manipulation, management, query and analysis, display and visualization of geoinformation.	GIS is more than a map. Conceptualized framework to provide ability to capture and analyze spatial and geographic data. Help geographers see all kind of information and how it relates to location. It combines information from several sources such as data bases, maps and satellite images in order to solve problems.
8	Field work	What? where? How?	Face to face contact with geographical phenomena.	Fieldwork is learning from the real world outside the classroom. Involves direct personal observation in a particular location. Interviewing people, taking pictures making sketches and collecting samples.
9	GPS (Global Positioning system)	What? where?	Show exact location	A network of satellites and receiving devices used to determined location of something on earth. It equally provides vdocity and time synchronization. It helps you get to where you are going, from point A to B.

Source: Modified from Ogar and Obi (2022).

Conclusion

In view of the nature of geography and its catholic scope, the pedagogic concerns of the discipline have been highlighted. Effort has also been made to blend innovation with geographic education in order to endear students and teachers to geography in the light of challenges of its beginning. Handling classroom instructions with a wide range of teaching strategies and resources will actively engage learners and promote their curiosity and understanding of the world. In the course of lesson delivery, it behooves the teacher to be innovative enough to know at what point to alternate from one teaching strategy and resources to another taking cognizance of the pedagogy, andragogy and heutagogy of the audience. The future of geography obviously lies with geographers and what they make of it as Ojo (1981) rightly indicated. This amplifies what Wooldridge and East (1951) stated that “geography begins only when geographers start writing it. Therefore, it is important for the legal structure and policy makers to enable the subject within the future framework of the school curriculum and to foster a persuasive rationale within the whole curriculum.

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