

THE RELEVANCE OF HISTORY IN THE GENERAL STUDIES PROGRAM OF UNIVERSITY OF SCIENCE AND TECHNOLOGY

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ABSTRACT

This paper examines the relevance of the discipline of the history to the study of science and Technology in Nigeria. It interrogates how historical memories have shaped the discipline of science with respect to innovation, creativity and technological advancement for the progress of human society. Studying the historical biographies of scientists and the contributions of Africans to the understanding of science in the General studies program has helped to initiate and to develop critical thinking and inquiry on the possibility of improving untapped areas for technological advancement. The teaching of important memorable scientific achievement of the past has helped to shape the understanding of the present challenges. The paper concludes that the historical knowledge of science and technology of human society in Nigeria is a necessity to achieving positive development for human existence.

Keywords: history teaching, university, general studies.

ABSTRAK

Makalah ini meneliti relevansi disiplin sejarah untuk mempelajari ilmu dan teknologi di Nigeria. Di dalamnya dianalisis bagaimana kenangan sejarah telah membentuk disiplin ilmu sehubungan dengan inovasi, kreativitas dan kemajuan teknologi untuk kemajuan masyarakat manusia. Mempelajari riwayat biografi para ilmuwan dan kontribusi orang Afrika untuk memahami sains dalam program studi umum telah membantu untuk memulai dan mengembangkan pemikiran kritis dan penyelidikan tentang kemungkinan meningkatkan daerah yang belum dimanfaatkan untuk kemajuan teknologi. Ajaran penting pencapaian ilmiah yang mengesankan dari masa lalu telah membantu membentuk pemahaman tentang tantangan saat ini. Makalah ini menyimpulkan bahwa pengetahuan historis sains dan teknologi masyarakat manusia di Nigeria adalah suatu keharusan untuk mencapai perkembangan positif bagi eksistensi manusia.

Kata kunci: pengajaran sejarah, universitas, studi umum.

INTRODUCTION

The discipline of history is an important component of the general studies program of Nigerian universities as well as other specialized universities of science and technology. For the purpose of this study, this study shall investigate and analyze the contributions of the discipline of history to national development in Nigeria. It will examine the interaction between history and science, the relevance of history to the university of science and technology and highlight the specific objectives in which the specialized historical courses taught in the universities of science and technology is aimed at achieving among undergraduate students in four universities of science and technology within the six geopolitical zones in Nigeria; namely: Ladoke Akintola University of Technology, Federal University of Technology, Minna, Federal University of Technology, Owerri as well as the Rivers State University of Science and Technology, Rivers State. The contributions of these various universities to historical pedagogy will show the value and relevance of the discipline of history to the progress of the society and national development in Nigeria.

Defining the term history is necessary for a guide to understand how history has helped to shape the knowledge and our understanding of science in the world. History is the memory of human group experience. If it is forgotten or ignored, we cease in that measure to be human. Without history, we have no knowledge of who are or how we came to be victims of collective amnesia groping in the dark for our identity. It is the events recorded in history that have generated all the emotions, the values, the ideals, that make life meaningful that have given men something to live for. Historical event has created all the basic human groupings – countries, religions, classes and all loyalties that attach to these Daniels (1972).

The prefix of the aforementioned definition of history suggests that the study of scientific achievement of the scientist of different human societies is an important memory of human group expe-

rience that should not be forgotten or ignored. Without the knowledge of the past scientific achievement of the human history, little may be achieved in the development of new frontiers and discovery in science. It is the knowledge generated through the study of the history of science that has generated all the ideals of scientific breakthrough in the field of medicine, computer science, engineering, pharmacy, and telecommunication. All these have assisted in making life meaningful and a wonderful place to live.

Every day, scientists make history. That history must be documented and taught to people so that man may learn how he has got on from age to age, what problems have confronted him, how such problems have been solved from place to place over the ages. To deny students of the knowledge of the history of science is to deny the scientist of the knowledge about his/her discipline.

With the invention of writing, people have left records of their understanding of the world and of the events in their lives and how they felt about them. In learning the historical biographies of scientists by previous generations, we learned about the lives they live and how they confronted the challenges of their society in the treatment of diseases, production of medical drugs, hydro power, electricity and transportation, the navigation technology and printing press. The knowledge of the scientific achievements of the past have no doubts helped to solve some of the problems we face. Learning the historical development of science is aimed at establishing a systematic study of the past and to use the knowledge students acquire to explain human contemporary affairs.

THE INTERACTION BETWEEN HISTORY AND SCIENCE

The discipline of history and science are complimentary to one another. They share a common ground with the pursuit of knowledge discovery, bringing into being new knowledge about the world in which we live, solving problems using sys-

tematic methods and rigorous checks and presentation of evidence for the clear understanding of the society and environment in which we live.

In addition, through the scientific discipline of archaeology and ethnobotany, historians rely on their studies bring about factual evidence of material artifacts used by men in several years of its existence. This point explains the utility of archaeology to historians to have a clear picture of the time and probable date of the existence of artifacts used by men in the ancient period of human history. Ethnobotany is also another branch of science related to the study of the relationship between plants and people. It encompasses the knowledge rooted in traditional folklores, benefits and uses of plants in specific societies and cultures over a period of time and how cultural societies have classified and preserved plant vegetation (Balick and Cox, 1996).

Ethno-botany has proved useful in the reconstruction and writing of history. It is through the study of plants we find out more information that there are connections between people who claim such connections. For example, the root crop yam is believed to have entered Africa from Asia through the Republic of Malagasy and from there spread to many parts of Africa. The manioc (cassava) was originally a native plant to Santa America from where it diffused to most parts of Africa. Cocoa is relatively a new plant that entered Africa through the Island of Fernando P O (Bioko) from South America Osuntokun (2002). Hence, the knowledge of the interrelationship between plants and people have assisted historians to provide vital historical connections of people through different species of plants found in the environment Osuntokun (2002).

Similarly, archaeology is also another important branch of science which assists historians to recover the knowledge, ideas and the technology used by human activity in the past. Through the use of carbon 14 dating oxide, there is the recovery of vital data reliable for the analysis of the material culture for the historians.

These material cultures may include artifacts, architecture and tool implement Osuntokun (2002). Essentially, archeology is useful to analyze the physical remains of the past in pursuit of a broad and comprehensive understanding of human culture. It has contributed to the understanding of both the ancient and the recent past. Prehistoric archaeology focuses on past culture that did not have written the language and therefore relies primarily on excavation or data recovery to reveal cultural evidence. These artifacts recovered through the excavation of ancient sites are objects made or used by people that are analyzed to obtain information about people who made and used them (Osuntokun, 2002).

Furthermore, serology, the study of blood is also an important area in science that enhanced the study of history. Serology has assisted historians to determine the interrelatedness of people. The study of blood types assists historians to authenticate the truth or the origin of a particular group of people through their blood samples. Through the use of serology, information relating to the migration and movement of people from one region to another could easily be confirmed. It provides an adequate explanation of the interrelatedness of people in different societies (Osuntokun, 2002).

Paleontology is also another branch of science in the field of historical geology which deals with the ecologies of the past, evolution, place, and humans in the world. Paleontology incorporates the knowledge of geology, biology, ecology, anthropology, and archeology to understand the processes that have led to the origination and eventual destination of the different organisms since life arose Shrock (2005).

Another important point worth mentioning is that both history and science share similar methodology in carrying out their research. The scientist uses a hypothesis to test an idea and conduct experiments to disprove or prove that an idea is valid and it becomes a scientific theory. While the historian uses the hy-

pothesis developed and try to find evidence that supports the hypothesis. If enough evidence is found to support the hypothesis, the hypothesis is accepted as a theory. The major difference in historical and scientific research is the conduct of experiments in the latter and not in the former (Osuntokun, 2002).

THE RELEVANCE OF HISTORY TO SCIENCE IN THE UNIVERSITY OF SCIENCE AND TECHNOLOGY

History is basically concerned with the account of whatever is deemed sufficiently significant and memorable in the human past as to be worthy of being put on record. Studying the history of science at the University of Science and Technology is aimed at acquainting students to the knowledge of the history of science through the biography of some great scientists in the world, the growth, and development of science and technology in Africa. Studies in African history and history of science.

The courses in the history of science are aimed at stimulating the historian to have an interest in science and in the scientists and interest in scientific history. History has much to offer students who are striving to learn about their world and develop a sense of themselves in it. The biography of scientists, the development of science and Technology in Africa, the history of science and African history are courses taught in the university of Science and Technology in Nigeria. These historical courses have no doubt enriched. The significance of science and technology in our history should need no advertisement.

Without science and technology, our contemporary civilization would not exist as we know it. Under these circumstances, alert students will naturally wonder about when, how, and why science and technology came to occupy this position. Nevertheless, our history courses give them few clues. The textbook's coverage of the history of science and technology is poor. In this respect, our history classrooms are not concerned with students' present interests and needs. In brief,

there is a disparity between the role of science and technology in our lives and its role in our history courses Shim (1996).

The history of science in a given age belonged, not only to its own tradition with its own methods, values, and accumulated knowledge but also to its own historical period, in which other movements have made their own impact upon it. Moreover, science has become one of the important determinants of the strength of any major historical movements during the twentieth century. Insofar as science holds a central place in our culture, we omit one of the essential driving forces and normative constraints in our culture if we treat science as extraneous and having no history Shim (1996).

The report of the National Center for History in the Schools (1993) pointed out that, the purposes of historical study must reflect the three ultimate purposes of education in a free society: "to prepare the individual for a career of work, to sustain life; for active citizenship, to safeguard liberty and justice; and for the private pursuit of happiness". The historians on the project argue that historical study contributes, to all three, but in preparing the individual for citizenship and for personal fulfillment its offerings are unique, and together with those of literature and philosophy, are indispensable. They further note that historical memory is the key to self-identity, to seeing one's place in the stream of time, in the story of humankind. Thus, unfurnished with historical knowledge, we remain ignorant of the possibilities for personal liberation that history opens to us. National Center for History in the Schools (1993).

Bourdillon (1994), a British historian, also emphasizes the importance of history and its centrality to citizenship and personal life. According to Bourdillon, history teaching aims to engender an understanding and respect for the individual, other people, and different cultures; it also aims to develop students' ability to examine critically a wide range of social issues. Students should be empowered by this education and thus should be able to take

their place in society as autonomous individuals able to make moral decisions about their lives.

Servos (1993) notes that science has as long and as meaningful a part of the Western tradition as, for example, religion or art. According to his analysis, science and technology dramatically transformed our society during the late nineteenth and twentieth centuries, but the nature of science and the way in which it accomplished these results seemed so mechanical and so obvious as to be historically uninteresting. In Servos' view, this partly explains the omission of the history of science and technology from history textbooks. Additionally, Servos points out that during the past 30 years, all of the simple and seemingly self-evident verities have been called into question by historians and philosophers of science and by historians of technology. Under these circumstances, the teaching of the history of science and technology should occupy an important place in history classrooms.

Related to this point, Jacob Appleby, (1994), a leading historian of science, argues that "teaching history of science will help to examine its biases as well as its truths, its arrogance as well as its elegance, would enrich the public as well as scientists and humanists because both participate in similar systems of knowledge construction and both are utterly dependent upon the vitality of civil society for the rigor, originality, and competitiveness of their theories and practices. Similarly, where democratic ideals and practices have faltered in either the community of the arts or that of the sciences, their critics rightly sound the alarm and proclaim the need for renewal within the republic of learning". In fact, science was seen as a logic machine that worked according to its own laws. It was objective and impersonal; it stood above and beyond the realm of human action. Science was also believed to be progressive in ways that other human enterprises were not because it transcended the foibles and stupidities of individual actors. Now, however, we realize that science no longer tells us absolute

truth (Appleby, 1994).

Furthermore, it is generally acknowledged that the history of science and technology opens up another range of awareness by demonstrating that peripheral societies must be examined with equal seriousness if we are not to overlook real originality. Through the study of the history of science and technology, students would ask if it is possible that science is not fundamentally Caucasian and Judeo-Christian after all. Cases from the past would make accessible gradual reorientation of value that helps students learn what to look for, how to see past our prejudices and preconceptions (Shim, 1993).

This history could be defined as multicultural and synthetic history. Knowledge of history is the precondition of political intelligence and of intellectual autonomy. In studying history we are talking about consciousness as it evolves in time. As Laville & Rosenzweig (1982) maintain, we should prefer "a history which represents an approach to knowledge and a method by which to question, to interpret, and to know the social facts of the past and present". However, in reality, teaching history as a collection of facts and concepts as truths provides little opportunity for questioning or valuing.

OBJECTIVES OF TEACHING HISTORY IN THE UNIVERSITY OF SCIENCE AND TECHNOLOGY IN NIGERIA.

History as I earlier mentioned is concerned with the collective memory of what happened in the past. It serves as a means to understand the welter of scientific achievement recorded in human history through the ages. In order to appreciate the scientific development of the present, the study of the scientific history of the past is a must to achieving a meaningful desired goal to achieving progress in the scientific enterprise. The teaching of history in the University Science and technology is an important component of the university curriculum. The objective of teaching history of science in a university of

technology is to enable students to understand the interdependence between science and society. It would enable students to be aware of the global dimension of science as a universal activity with consequences for our lives and subject to social, economic, political, cultural and environmental factors and will prepare students to understand how science and technology are interdependent on one another in the development of knowledge and technological applications.

The courses taught in the history of science help to prepare students to be much aware of the scientific achievements of the past centuries by the ancient Greeks, The Romans, The Arabs as well as the industrial revolution that occurred in Britain in the seventeenth century. It will also prepare students to understand the historical circumstances and necessity that led to the invention of various scientific discoveries recorded in the past. This will enable and stimulate further inquiry and research by students to develop new technologies and other innovations that may be beneficial to human society. The objectives of teaching history in a universi-

ty of science and technology are enormous. The following are some the valid objectives that made the teaching of history relevant in a university of science and Technology. This objective enables students to understand the interdependence between science and society. Students should be aware of the global dimension of science, as a universal activity with consequences for our lives and subject to social, economic, political, environmental, cultural and ethical factors Shim (1996). (1) develop inquiring minds and curiosity about science and the natural world; (2) acquire knowledge, conceptual understanding and skills to solve problems and make informed decisions in scientific and other contexts; (3) develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions; (4) communicate scientific ideas, arguments, and practical experiences accurately in a variety of ways; (5) think analytically, critically and creatively to solve problems, judge arguments and make decisions in scientific and other contexts; (6) appreciate the benefits and limitations of science and its ap-

Table 1. History of Science and History courses Taught in some selected universities of Science and Technology in Nigeria

No	Geo-political zones	University	Course code	Course Title	Unit
1	Southwest	Ladoke Akintola University of Technology (LAUTECH)	GNS 104	Science and Technology in Africa through the Ages	2
			GNS 110	History of Settlements	2
			GNS 207	Science in History: Bio-Historical Approach	2
2	South south	Rivers State university of Science and Technology (RSUST)	GST	African History	2
			GST	History and Philosophy of Science	2
3	South East	Federal university of Technology Owerri (FUTO)	GST 10	Introduction to Humanities	1
			GST 108	Science, Technology, and Society	2
4	North central	Federal University of Technology Minna (FUTMINNA)	CPT 111	History and Philosophy of Science	2
			GST 103	Nigerian People and Culture	2

plication in technological developments; (7) understand the international nature of science and the interdependence of science, technology, and society, including the benefits, limitations and implications imposed by social, economic, political, environmental, cultural and ethical factors; (8) demonstrate attitudes and develop values of honesty and respect for themselves, others, and their shared environment.

The table above shows the summary of some of the History of Science and History related courses taught at some selected universities of Science and Technology namely Ladoke Akintola University of Technology, Ogbomoso, Rivers State University of Science and Technology, Federal University of Technology Owerri, and the Federal University of Technology, Minna. The establishment of these universities in Nigeria was indeed created to promote the knowledge of Science and Technology education in Nigeria after independence from Britain. The primary objective of the creation of these universities by both the state and the federal government in Nigeria is to produce highly skilled manpower for the development of the nation in scientific and technological fields to enhance economic growth, productivity, and development. The teaching of history courses, in these universities, has been very useful to complement these efforts to improve the society at large.

As the above table reveals, the spread of these courses in the history of science and Technology across technologically based universities in four out of the six geopolitical zones in Nigeria attest to the indispensability of the knowledge of history in attaining technological advancement. Without the knowledge of history of science and technology, our contemporary civilization would not exist as we know it. Under these circumstances, students will naturally wonder about when, how and why science and technology came to occupy this position. Nevertheless, our history course gives them clues. The value attached to the teaching of his-

tory in the universities of Technology is to prepare students for a career of work, to sustain life; for active citizenship, to safeguard liberty and justice; and for the pursuit of happiness Shim (1996).

HISTORY AND NATIONAL DEVELOPMENT

History has been recognized all over the world as a source of enlightenment and development. As a collective memory of the past of a nation, history attempts to bring to the fore the salient and significant part of events that occurred in the past, which could be utilized in building a prosperous national future. This is why every human society, no matter the level of advancement, has placed optimum priority to the bequeathing of a "useable past" from generation to generation. For instance, in ancient cultures, every kingdom had its own history laureate whose task it was to remember the past. Modernity has also been influenced greatly by the enhanced production of history. This is assisting nations (who have placed the needed emphasis on historical studies) in their tasks of nation building, promoting national consciousness, the flowering of moral leadership and ensuring overall national development (Oyeranmi, 2007).

From the above brief allusion, one can submit that history is an essential instrument for any nation that is desirous of breakthroughs in all human endeavors. Consequently, it has become a serious academic discipline, which attracts the most talented in most developed countries. 'This is why it is most pathetic that the study of history has been relegated to the background in various schools in Nigeria. This explains why the country remains a crawling giant. More than ever before, ethnic chauvinism has become the major driving force of Nigeria's national polity. Nigerians many times (albeit, with good reasons) have not only queried the basis for nationhood but also doubted her permanent survival. Indeed, after more than forty-five years of so-called independence, the Nigerian Union, according to Professor Adebayo Adedeji, (1999) remains

largely "a cohabitation without marriage." I would argue that a major reason why so much violence (physical and psychological), aggression, hatred, poverty, et cetera, dominates the day to day existence of the people in Nigeria is that, collectively, they lack historical consciousness. They tend, indeed, to act or react based on the present situation and care little about the past. It is therefore not surprising that few care about the kind of future to be built for both the people and the nation. Due to the fact that Nigerian statesmen lack a proper sense of history, the politics of the belly and that of the moment dominate the polity. Merit is consequently slaughtered on the slab of power profiteering. With all these vices, development at all levels in Nigeria remains a wild goose chase.

To escape from this seemingly inescapable quagmire, there is an urgent need to imbue Nigerians with an enduring sense of history. As Professor Ajayi (1995) once submitted: The nation suffers which has no sense of history. Its values remain superficial and ephemeral unless imbued with a deep sense of continuity and perception of success and achievement that transcends acquisition of temporary power or transient wealth. Such a nation cannot achieve a sense of purpose or direction or stability and without them the future is bleak "

It is in the light of this that a study of this nature becomes absolutely imperative as part of the ongoing efforts towards the historical awakening of Nigerians. This section will, *inter-alia*, focus on the unbreakable nexus between history and national development; bring out the relevance of this link especially in this era of globalization; analyze what a country like Nigeria in search of her soul and awesome technological breakthrough could gain from such an "unattractive" and non-materialistic" discipline such as history; and lastly, will suggest how Nigerians could be imbued with an enduring and proper sense of history for national development.

Arguably, development at all levels (personal or national) in human society is

a multi-faceted process. At the level of the individual, it implies multiplied skill and capacity, greater freedom, creativity, self-discipline, responsibility and material well-being. It must, however, be noted that the achievement of any aspects of personal development is strongly tied to the state of the society as a whole. "At the national level, development will naturally mean the pulling together of the above-stated personal virtues for the benefit and well-being of people within such a nation. More often than not, as Walter Rodney (1986) once contended, development is used in an exclusive economic sense - the justification being that the type of economy is itself an index of other social features. A society develops economically as its members increase jointly their capacity for dealing with the environment, which of course depends on the extent to which they understand laws of nature (science), on the extent to which they put that understanding into practice by devising tools (technology), and on the manner in which work is organized. "

I, therefore, contend that for any nation to develop, the collective spirit of the people must be well nurtured and propagated. Here lies the significance of history. History, in the words Prof. Babatunde Fafunwa (1990) is: A people with no knowledge of their past would suffer from collective amnesia, groping blindly into the future without the guide post of precedence to shape their course " Also writing on the intimating interaction between Nation and History, J. F. Ade Ajayi (1995) stressed that:

... History interacts with the nation. For the nation is a product of the history in the sense of historical circumstances and events, and therefore the nation cannot escape from its past. At the same time, the nation is shaped by the effort of historians, among others, who try to establish the history of the nation, influence its group memory and seek to define its nationality-that is, the essence of what binds its people together, what constitutes their identity, what makes them a people distinct from other peoples.

Indeed, what historical understanding does essentially for any nation is to place its developmental predicament within rational time perspectives of human evolution. This is the utility value of history. History also helps people not to undervalue what they are and overvalue what they are not. It, in turn, provides confidence - building strategy to any prostrate nation that is striving to grapple with present problems".

Development should and must not only be conceived materially. This is because humans are not solely materialistic in nature; they are equally spiritual, artistic and creative beings. Development *ipso facto* is to my mind twofold. Firstly, it entails concerted efforts at satisfying basic/crucial human needs such as food, shelter and general well being through productivity. Secondly, it equips citizens with enduring moral values such as, hard work, honesty, integrity, transparency, justice, and discipline. Indeed, the two are inseparable as a nation full of impoverished people cannot improve its material base and neither can a morally decadent society dream of dazzling development at any level.

Writing in the same manner, B. O. Oloruntimehin (1976) aguishly contended that: To advocate that studies in the sciences and technology should be pursued to the relative neglect [humiliation] of the humanities and social sciences is to express appetite for the materialism which technology creates rapidly, but without required for the organic growth and stability. Every one of us including the scientist and technologist has to be a citizen. Without, the socializing influence of training in the humanities (especially history), the aggregation that we represent as citizens cannot be properly called a nation. A nation that lacks clear self-identity and which is structurally incoherent cannot be strong whatever its wealth and the amount of gadgetry at its disposal. "

The developmental nature of the historical discipline is further emphasized by the fact that every discipline has its root in history. This makes it virtually impossible for any discipline not to pay attention

to its history. Thus, we have the history of science, of medicine, of banking, of engineering, of knowledge, of development, and even the history of history. For example, no rational medical doctor will attend to his or her patient without perusing his or her medical history. For it is within that context, that the doctor will appreciate better the patient's ailment and what medication to prescribe. History, therefore, is a key factor in all disciplines and in the training of minds. Similarly, it is a duty for any nations that are desirous of development in all its ramifications to always delve into its past achievements as well as those of other lands. With this the nation will be able to learn from the past errors, to draw inspiration from worthy past efforts, and to strategize for the future development.

All I have said is not to deny the importance of the acquisition of scientific skills and knowledge. The point of emphasis here is that those skills should be accompanied by appropriate moral values without which the society will return to the Hobbesian state of nature of battle of all against all. History tends to produce thinking men and women who are imbued with curiosity, who will not accept any view hook, line and sinker, who through questioning and reasoning will be able to come to their own conclusion, who have become full of knowledge, and who by that means would be able to contribute to the development of their society. This is the outstanding link between history and national development.

CONCLUSION

It has been established from the foregoing that the teaching of history is indeed relevant in the general studies program (GSP) in the universities of science and technology in Nigeria. Without the knowledge of the past achievement in human history, little may be achieved in the expansion of knowledge and new discoveries in science and technology. The knowledge acquired with the teaching of the subject of history has helped to confront and solve several human problems in the area of medicine,

pharmacy, computer science, Engineering, and telecommunications. The nation benefits from the knowledge acquired through the teaching of history. It assists to produce graduates who are imbued with curiosity, questioning, and reasoning that will drive the growth and development of science and technology in Nigeria. Further studies may be carried out on the perception of science students to the teaching of history in the university of science and technology as well as determining whether the universities of science and technology in Nigeria meet the benchmark for minimum academic standard in the teaching of mandated history courses in the University of Science and Technology in Nigeria.

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