

Understanding the Relationship between Research in Humanities and Sciences as a Panacea for Collaborative Research

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Abstract: Man is constantly in interaction with his world; these include the world of animals, plants, other living and non-living things, both physical and abstract. Ever since man emerged from the primitive stage into his current civilized status, he has had to wonder about the information he constantly receives from his environment; whenever he, therefore, exercise faculty or power of reason to draw conclusions or inferences from fact of experience or promises, he is said to be engaged in reasoning. The search for reliable knowledge through valid reasoning led to the development of what is known today as scientific or critical reasoning; this seems to suggest that critical reasoning belongs only to the scientists; however, this is incorrect. Critical method of reasoning is applicable to a wide range of subjects like the natural sciences, social sciences, history, literature, and philosophy. Logically, these disciplines are complementary in nature, therefore, collaborative research is inevitable among researchers in Nigerian's tertiary institutions; and that is our objective in this paper.

Keywords: Complementary; Critical Reasoning; Environmental; Research; Interaction.

1. INTRODUCTION

Research occupies a strategic position in the contemporary world as it is more important in wealth creation than the mere possession of raw materials because the key to sustainable socio-economic development comprises knowledge creation, processing, packaging and dissemination. Countries with poor research capacity must expect to regress and become poorer, since knowledge is expensive, while raw materials, with no value added, are relatively cheap[5].

Today, higher education institutions around the world are differentiated by, among other criteria, the level of their involvement in research, the type of problems they attempt to solve, and the impact of any results they obtain on their societies and the world at large. As a result, many promote research through the structures and facilities they make available and the way they continually empower their staff and students to engage in cutting-edge research activities.

Collaborative research is one of the models of conducting research; other modes are contract research, sponsored research or consultancy. Collaborative research involves research projects jointly developed by two or more individuals, institutions, or organizations. Research with experimental development is a creative work undertaken on a systematic basis in order to increase knowledge, including knowledge of humanity, culture and society, and the use of this stock of knowledge to device new applications. Research is systematic, designed to obtain knowledge, and the result of a research are verifiable.[4]. All researches, either in the humanities or the sciences, have ontological and epistemological positions whether acknowledged or not. In other words, research has a range of underpinnings, as well as methodological techniques/practices; that is, research is undergirded by theory, it is not value free and it is about rigour.

Academic knowledge is typically divided into two branches, the humanities and the sciences. The division is largely historical, only a few centuries ago, all of the sciences were branches of philosophy, which today is regarded as part of the humanities. As the science grew in influence and sophistication, they warranted separate labels such as physics, chemistry, biology, physiology, sociology and economics. Still, the humanities remain at the centre of intellectual inquiry. However, today the branches of science and technology is grown so rapidly that they now overshadow the humanities from which they sprang.

This paper examined the characteristics of research in both humanities and sciences, their similarities and differences, and concluded on the fact that there is the need for effective and efficient collaborative work among researchers in humanities and sciences. Also, recommendations were made to ensure interaction among these researchers.

2. CHARACTERISTICS OF RESEARCH IN HUMANITIES AND SCIENCE

The search for reliable knowledge through valid reasoning lead to the development of what is known today as scientific or critical reasoning. Scientific method is based on scientific thinking or reasoning and it is used interchangeably with critical thinking or reasoning; this seems to suggest that critical reasoning belong only to the scientists. This is not correct.

Indeed, anyone can think of reason critically as long as s/he is trained in the precepts or steps of critical reasoning. This method of reasoning is applicable to a wide range of subject and the natural science, the social science, history, literature, and philosophy. Whenever one is seeking solution to questions relating to man, knowledge and values whether in oneself or other or generally about the nature of existence – both ontological and cosmological through a reliable method critical reasoning become indispensable.

Whereas scientific reasoning is used to describe the form of reasoning practiced by the scientists, critical reasoning is used to describe a similar method when used by other human in other fields of study. Although this method of reasoning appear to be most popular with the scientists today, it was either invented nor development by them. We owe that great achievement to the ingenuity of ancient Greek philosopher. Notable names in this tradition include Thales who was famous for predicting an eclipse which according to the astronomers must have taken place in 585B.C., Anaximander born 482B.C. said to be the First man to make a map and held that earth is shaped like a cylinder. He was original, scientific and rationalistic; Pythagoras 570-497B.C. founder of a school of Mathematicians; Herodotus who lived around 500B.C. and famous for this doctrine that everything is in a state of flux; Parmenides native of Ela who flourished in the First half of the fifth century B.C. He was said to have invented logic-method of valid reasoning and distinguished between the way of truth and the way of opinion. In that tradition is also Anaxagoras 500B.C.-428B.C., first philosopher to teach in Athens. He sought a higher course, independent of mater and found it in Nous, i.e. mind or intelligences. It was Nous, not blind forces that acted upon matters, caused motion and change and produced the rationally ordered cosmos that is evident in the universe's design in order an harmony[8]. His pupils included Socrates, Plato, and Aristotle.

We may then ask 'what constitutes scientific or critical reasoning'? Scientific or critical reasoning is not simply about research questions, observations, hypotheses, data, testing and theories,; these are only the formal or technical parts of the scientific method. Although they are important, they do not constitute the most important aspects of the scientific or critical method or reasoning. The characteristics of scientific method include the following:

- * Use of empirical evidence (empiricisms);
- * Practicing logical reasoning (rationalism); and
- * Possessing a skeptical attitude (skepticism).

The methodological procedures of natural sciences may be directly applied to the social sciences. That the social scientist thereby becomes an observer and that the end-product of his investigations can be formulated in terms of parables to those natural sciences and the analyses in laws or law-like generalisations[2]. Further reinforced positivist tradition in the social sciences by arguing that genuine knowledge is based on sense experience and can only be advanced by means of observation and experiment[1]. Empiricism or positivism is, therefore, the abandonment of metaphysical and speculative approaches for knowledge by reason alone.

Rationalism or the practice of logical reasoning is the use of systematic and valid method of reasoning based on the rules of logic. It includes deductive reasoning inductive reasoning and inductive-deductive reasoning. Human belongs are not

born with logic and it is not just acquired through experience and maturation. Logic as a skill or discipline has to be learned within a formal educational environment. Other forms of thinking such as wishful thinking, emotional thinking and hopeful thinking are much more common, easier and popular but they do not lead to reliable knowledge. Logical reasoning requires painful submission to the truth whatever and wherever it may be.

Skepticism is to possess skeptical attitude about presumed knowledge and this leads to consistent self-questioning, holding of tentative conclusions and being undogmatic which includes readiness to change one's belief in the face of valid evidence.

Critical or scientific reasoning and method are indispensable in research which has been defined as systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relation among natural phenomena [3]. Four characteristics of research, be it in the humanities or the sciences, include the fact that, first, research is systematic and controlled, basing its operations on the inductive-deductive model against experience whose event occur in a haphazard manner. Second, research is empirical; that is, experience is used for validation. Subjective belief must be checked against objective reality. Third, research is self-correcting, there are in-built mechanisms to protect the scientist from error and his procedure and results are open to other professionals through allowing for revision or rejection of incorrect result in time. Fourth, research is a combination of experience and reasoning and it is regarded as the most successful approach to the discovery of truth as far as both humanities and the material sciences are concerned.

3. SIMILARITIES OF RESEARCH IN HUMANITIES AND SCIENCES

Scientific research leads to the formulation of scientific theories. [3] defined theory as, "a set of interrelated constructs (concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among varieties with the purpose of explaining and predicting the phenomena." A theory thus gathers together all the isolated bits of conceptual frameworks for wider application. Scientific theories such as theories of evolution theories such as theories of evolution, plate tectonics, quantum mechanics, relativity, thermodynamics, big bang cosmology among others represent the most rigorous, most reliable and most comprehensive form of knowledge. Similar reliable theories could be found in the social sciences and humanities.

Humanities and sciences are complementary system of knowledge; in this regard when scientific findings and discoveries are complemented with humanistic inquiries there will be tremendously important additional benefit in deepening public understanding of moral complexity of science and technology. Research in humanities increase public awareness of role scientific institution play in our democratic process as well as the many philosophical issues raised by new scientific and technological breakthrough. Characteristics of scientific research are also applicable to research in humanities. These characteristics include purposiveness, rigor, testability, reliability, precision, confidence, objectivity and generalizability.

4. DIFFERENCES BETWEEN RESEARCH IN HUMANITIES AND SCIENCES

Research in humanities involves different, more relativist epistemology in which context is always important, and context can be social, historical, political, cultural or ethnic; while scientific research is a systematic way of data collection and harnessing curiosity through experimental process which provides scientific information and theories for explanation of nature and properties of the world [9].

Research in humanities is more of pure basic research which refers to a body of work carried out without looking for long-term economic or social benefits other than advancement of knowledge; while research in the sciences is more of experimental development which is work undertaken for the purpose of achieving technological advancement for the purpose of creating new, or improving existing materials, devicesm products or processes.

Humanities research do not search for the ultimate correct answer to a question like scientists do, but instead explore the issues and details that surround it.

5. CONCLUSION

Researches have two primary objectives firstly, to build new knowledge, and secondly to disseminate that knowledge and raise awareness of its potential applications. When research is relevant, managers can use its result to successfully solve critical problems with which they are faced and to use the information to reshape the environments in which their organizations operate. Unfortunately, much of what scientists have to say never reaches the ears of practitioners for a variety of reasons.

Scientific researchers disseminate their work in a way which are prone to numerous communication breakdowns, and much work which could potentially make valuable contributions to practice is hapless lost within the vaults of scientific community research should lead to practical outcomes that are useful to society at large. Thus, for scientific researchers, the issue of relevance is very much linked to one's sense of social purposefulness.

Also, scientific research study frequently generates several results, all of which may not be relevant to each stakeholders. Generally, key messages and the channels used to communicate them should be tailored to suit different audiences so that the information is made available accessible, relevant, and useful. This vacuum can be filled by collaboration with humanity researchers and thus making the work of researchers relevant and more acceptable.

For research to be useful it must also be usable; at present, the style and form of scientific writing is impervious to most professionals. Work that is highly relevant to pragmatic issues might be rejected as being irrelevant merely because it is presented in an inaccessibly style thus the need for researcher in humanity to help in filling the missing link.

Too often, articles are littered with detailed statistics, formalized notations, jargon, and excessive references. The use of terse and complex language serves only to obfuscate the message and lessens the likelihood that it shall be understood. Thus, arises a communication problem. The mode of communication of scientists often hinder the end user from understanding and appreciating its uses but a researcher in humanity good in communication in collaboration with the scientist is a sure direction to making scientific discoveries usable.

Undoubtedly, the scientific process can be facilitated, rather than inhibited, when researchers in the humanities collaborate with their counterparts in the sciences.

6. RECOMMENDATIONS

Considering the above submissions, we hereby recommend the followings:

First, that there is a need for synergy between researchers in the humanities and the sciences and this should be seriously and urgently encouraged. Second, researchers in both areas should be educated through workshop, seminars, conferences, etc., on the need for collaboration. Three, the Federal Government should direct its research institutes, such as Nigeria Institute for Social and Economic Research (NISER) and Agricultural and Rural Management Training Institute (ARMTI), to collaborate in some specific research projects.

Four, there is need for our tertiary institutions to introduce new courses that will provide essential background on current approaches to understanding science, including the cultural context of contemporary scientific issues, and such courses will be co-taught by faculty from the humanities and sciences and available to students from both academic areas.

Five, interdisciplinary and trans-disciplinary research collaborations should be promoted; also, networking or collaborative activities involving various parties: industries, other research institutions, etc. should be promoted.

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