



The Riddle of the Cock, Scientific Research Process and Solving Sustainable Development Challenges

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Abstract. Riddles in Africa, are means of explaining to people or finding solutions to some puzzles of life in such a way that at the beginning of the riddles, the concerned person/s or group would not know that everything is about him/her because they are always intellectual. In addition, a sustainable development (SD) challenge requires making decisions that call for a scientific process to make such a decision rational. Many researchers struggled with understanding the scientific process of achieving a sustainable development goal or/and any challenge that faces any sustainable development goals (SDGs). Therefore, the sustainable development research process in its nature is a puzzle that needs an intellectual interpretation and understanding. With these requirements of the process and to have a better understanding of the same, an indigenous riddle is presented in this study to unlock the mysteries in the sustainable development research process to arrive at a rational SDG or/and solve any SD challenges. The objectives include making readers: understand that the sustainable development research process is in stages/steps; know that one stage/step leads to the next one; know the components of each stage/step; and use the stages to formulate a research process that will solve a sustainable development challenge. The method involved using the different stages in the riddle (situation analysis) to explain what the process is all about. Findings from the riddle presented it as suitable to explain the sustainable development research process. It was concluded that the adoption of indigenous riddles will go a long way to explain the scientific research process in solving any of the sustainable development challenges.

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1. Introduction

There are various forms of scientific research processes employed by different professionals in solving different problems. According to Kumar (2011), professionals adopt method/s and processes developed by researchers/scholars to increase their understanding of their profession and to improve their professional knowledge base. It could be deduced from this that every professional practice follows particular processes/standards tested and developed by others scholars/researchers over a long time. Therefore, these tested processes/standards require research skills, which could be categorized as scientific research. Indeed, the validity of one's findings relies on the soundness of the research methods/processes adopted by you (Kumar, 2011).

Research could be defined as a scientific approach to answering a research question, solving a problem, or generating new knowledge through a systematic and orderly collection, organization, and analysis of information with the ultimate goal of making the research useful in decision-making (Kumar, 2011). To corroborate this, Glazunov (2012) establishes that scientific research

relies on the application of the scientific method, a harnessing of curiosity. Kabir (2016) opines that scientific research is being taught in many academic departments/disciplines such as Urban and Regional Planning, Estate Management, Quantity Surveying, education, and marketing, with the scientific research process forming one of the course topics. The scientific research process is based on a step-by-step approach to a research inquiry and each step requires some methods how to achieve its goal.

It is noteworthy that in our daily lives, we put the research process into practice unknowingly (Oyediran and Oyediran, 2018). For instance, planning to own a house involves a process. The process is determining the first thing to be done and why one needs a house but not other things such as a car, what type of house one needs, the location, collecting data on how much will it require, the masons to work in the site and why the choice just to mention but a few. However, weighing some studies on the scientific research process and finding solutions to sustainable development challenges, there is a need to look for an interesting, unusual, or/and inventive way from the



African archive. As a result, the purpose of this study is to use the “riddle of the cock” to explain the scientific research process in planning and unlocking the solutions to sustainable development problems. The objectives to achieve this include making readers familiar with the research process in stages/steps; knowing that one stage/step leads to the next one; knowing the components of each stage/step; and using the stages to formulate solutions to sustainable development challenges. Therefore, this paper is intended mostly for researchers with little or no previous knowledge about the scientific research process and using riddles to solve the problem. This study is sectioned into five segments. The first section takes the reader through an introduction; the second section presents the review of literature on the scientific research process and sustainable development; the third section states the subject riddle; the fourth section talks about the adopted methodology; next is the link between the riddle and scientific research process; and conclusion and recommendations were lastly made.

2.0 Literature Review

2.1 The Scientific Research Process

Research could be considered a process of knowing what a problem is, why is it a problem, and how can it be solved or reduced. The “how” tries to spell out the process (sequential steps) of how it could be solved. According to Caparlar and Donmez (2016), scientific research can be defined as research conducted in a planned way to contribute towards science through the systematic collection, interpretation, and evaluation of data and passing judgment on an issue or case. These authors explain that at the inception of scientific research, the researcher should know what the problem and its nature is, plan well (state the processes to be involved) and specify the methodology to adopt in achieving one’s goal/target. Therefore, a scientific research process can be seen as a connected series of actions designed to collect and analyze the mass of data necessary to solve a research problem (Oyediran, 2020). In a simpler form, a scientific research process reveals the course of activities that are intended to heighten understanding of the nature of the problems requiring examination, the alternative possible solutions that exist, and the relative merits of these alternatives. The literature reveals the characteristics of the scientific research process to include: 1. It should not be an accidental or random set of activities (Olajuyi, 1990; Oyediran and Oyediran, 2018); 2. It should be continuous (Oyediran, 2020); 3. It should enable us to proceed toward new solutions as new problems arise.

Ideally, scientific research must follow a certain structural process (Glazunov, 2012). The author establishes that the goal of any scientific research process is to produce new knowledge, which takes three main forms. The first one is exploratory research, which structures and identifies new problems; the second is constructive research, which

develops solutions to a problem; and the third one is empirical research, which tests the feasibility of a solution using empirical evidence. Glazunov (2012) expresses that the step order may vary depending on the subject matter and researcher but identifies 9 steps as part of the most basic and applied scientific research. These steps include the formation of the topic, setting of hypothesis, conceptual definitions, operational definitions, gathering of data, analysis of data, test, revising of hypothesis, and conclusion, iteration if necessary. From another perception, Kabir (2016) submits that the scientific research process consists of various components that follow the major processes (Figure 3.1)

Kumar (2011) likens the scientific research process to undertaking a journey. The author identifies two important decisions to make in the research journey, which include what you want to find out about or, in other words, what research questions you want to find answers to and how to go about finding answers to them. The path to finding answers to your research questions constitutes research methodology. Kumar (2011) expresses that just as there are posts (directing/guiding travelers) along one’s way to his/her destination, so there are practical steps through which you must pass in your research journey to find the answers to your research questions (Figure 3.1). It should be noted that at each operational step in the scientific research process, a researcher has to choose from a multiplicity of methods, one which will help in achieving one’s research objectives.

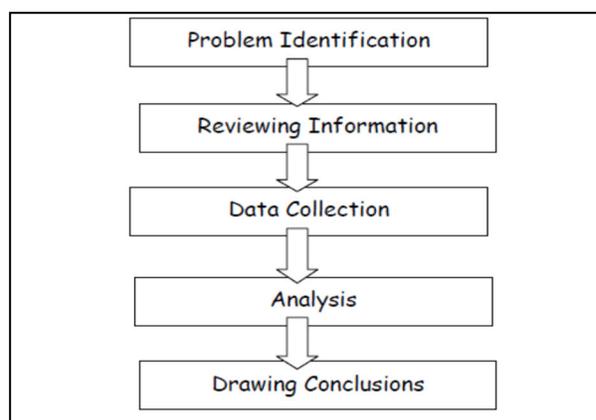


Figure 2.1. Schematic Characteristics of Scientific Research Process

Source: Adapted from Kabir (2016).

2.2 Sustainable Development Challenges

Sustainable development that is tripartite includes environmental, social, and economic aspects of life (Kanayo, Kizito, and Udefuna Patrick, 2013; Oyediran, 2014). Oyediran (2014) expatriates that the definition could be interpreted as meeting the needs of the present generational needs without any hindrance in meeting the future generational needs. The author expresses his



submission using an equation that states thus: $SD = Pg - H + Fg$. Where; SD stands for Sustainable Development; Pg stands for Present Generational Needs; Fg stands for Future Generational Needs and H stands for Hindrances. To Freedman (2018), sustainable development means fulfilling peoples' needs without discouraging the chances of others and covers issues like ecological, social, and financial advancement that are crucial to the social prosperity of all in the society. It is noteworthy to state that sustainable development is similarly substantial in both developed and developing nations, despite them managing polarly inverse sides of the range (Imasiku, 2020).

Having briefly explained sustainable development, it is imperative to know its challenges both in global and developing countries. Globally, challenges for sustainable development include: having poor or no capital budget to plan and complete economic activities; having a business climate that is characterized by civil war; natural calamities such as earthquakes, floods, and tremors; the prevalence of clashes between long-term sustainable investment and immediate gains or profits (Imasiku, 2020). Other challenges cited by the author are public goods abuse (Andvig, Odd-Helge, Amundsen, Sissener, and Søreide (2001), poor municipal service delivery, climate change, hunger, and malnourishment, the existing disparity in the per capita income, rapid urbanization, failure to meet sustainable energy demands (United Nations, 2013), recurrence of global financial crises, pandemics; and unsustainable consumption and production.

The Organisation for Economic Co-operation and Development (OECD) (2001) identifies the prominent challenges that hamper sustainable development in developing countries as; extreme poverty, rapid population growth rate, rapid urbanization, deforestation, the environmental impact of extractive industries, rate of economic growth, rural development, climatic variability, and natural environmental hazard. Iganigan and Unemhilin (2011) establish that one of the main challenges developing countries is how to provide an equitable standard of living, adequate food, clean water, safe shelter, and energy, a healthy and secure environment, educated public, food security (Akinboyo, 2008) and satisfying job for present generation and posterity.

In Nigeria, Moti and Vambe (2008) identify pervasive conditions of poverty; threatened and degraded agrarian and production environment; the prevalence of anti-development activities; ignorance, apathy, and denial as well as domestic and international dualism as some of the challenges to sustainable development. The foregoing revealed that there are sustainable development challenges facing both developed and developing countries and require urgent attention/s. This section contributes to the various knowledge of how to achieve sustainable solutions to the development challenges through riddles which is one of the African indigenous knowledge.

3.0 The Riddle of a Father's Cock'

In Africa, a large number of grandfathers are good story and riddle tellers most especially in rural areas. Children and younger ones visit them during holidays to listen to and learn many riddles and stories. One of the most exciting riddles and good in explaining the scientific research process was "the movement of a father's cock". Due to the pedagogical function of this riddle, a Nigerian Fuji musician; Alhaji Late Sikiru Ayinde Barrister composed a song to expose this riddle to the whole world.

In one of his albums, he sings of his metaphorical 'Father's Cock' which moves around in the morning with four legs; in the afternoon time sees the cock move around with two legs, and in the evening time, the cock uses three legs. The Fuji musician compares the movement of his father's cock at a specific time of the day with child development and movement at different stages of life. For instance, where the cock is said to move around with four legs in the morning symbolizes the first effort a child takes towards walking. Here, the cock's metaphorical four legs are compared with the child's two legs and both hands which he uses to crawl as a kid. To Barrister (the Fuji musician), the child's efforts towards walking suggest that his life is full of struggling and painstaking efforts - which if he fails in any of the stages, might have a negative impact on the entire life of the child.

The second time is in the afternoon when the cock moves with two legs. Obviously, in the stages of walking a child, the first is crawling. The second stage which is the actual walking is compared to when the cock uses its two legs. This stage suggests the fruits of hard work i.e supposing the child fails to crawl (efforts), he might not be able to walk around using two legs (fruit). According to the singer, this stage symbolizes the youthful age where efforts must be made by the child to prepare for old age.

The last time is in the evening. The cock uses three legs to move around. When compared to a child's development, Barry says this is the stage when the child already becomes elderly and now relies on a walking stick. The third leg is symbolized by the walking stick. At this stage, the child has grown into a decrepit father who is at the mercy of others and perhaps the dividends of his hard work while still a young person. This is the stage of regret for some people who failed to take advantage of their nimbleness while they were young. Barry prays, "May we all not grow up to use the walking stick of poverty and penury". At this stage of life, one is too old to walk around without the aid of a walking stick. One is so tired and weak. The strength is gone. This is the stage of epiphany. The child who could run with the strength of an antelope, now hardly moves. The 18 minutes song has in it the allusion with a metaphor that portrays the ephemeral nature of human life and the need to prepare for the eventuality and the inevitable.

4.0 Methodology

This research work is descriptive as it involves observations and the description of the subject's behavior without influencing it in any way, and depicts participants accurately based on the observations made of their behavior. By this, the contents of the riddle and every event were interpreted and linked to the scientific research process to make the learners understand the process more.

This makes the readers more knowledgeable on what are the stages of a scientific research process, in what order are the steps, can any of the steps be skipped and what kind of scale is followed. Data used were from secondary sources. This involved using some scholars' works to explain each event. The analysis of the various deductions was done by comparison and synthesis as recommended by Bowen (2009).

5.0 Links between the Riddle, Scientific Research Process, and Sustainable Development

According to Slocum (2009), a riddle means speaking in an intentionally obscure way. The author expresses that a riddle requires mental challenge (stimulating thinking of potential solutions), provides a rewarding experience, and helps the solver to think in a new way. Therefore, the riddle of the cock under study demands thinking in a new way to link it to the scientific research process and to solve sustainable challenges most especially in town planning which is seen as "art and science". The riddle of the cock reveals the developmental process of human beings –four legs when one crawls with 2 legs and hands, 2 legs when one starts walking, and 3 legs at old age when the walking stick is being used as a support (Figure 5.1).

6.0 Excerpts from the Riddle that Explain the Scientific Research Process

The following features from the riddle could be used to explain a scientific research process:

Emphasis is laid on the developmental process of the cock. It started from the cradle stage where the cock was crawling. This stage could be likened to the preliminary stages of a scientific research process where a researcher will be thinking about a problem to be solved (problem identification) and reviewing the literature on what to be done. In addition, the second stage when the cock was walking with two legs could also be likened to the stage in the research process when data would have been collected and analyzed. At this stage, one's research has had a shape and is almost done. By the time conclusion, recommendations, and review were made; the cock had started walking with 3 legs. With this, while reviewing, another problem would have been created and the process resumes again (rejuvenation).

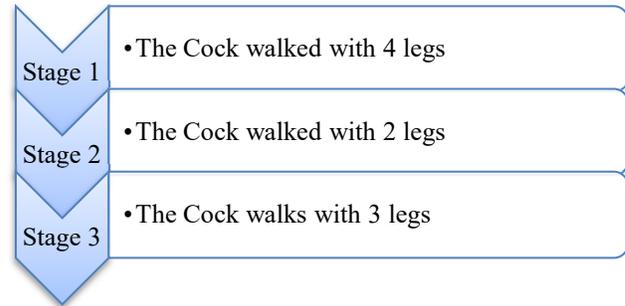


Figure 5.1. Stages of the Metaphorical Cock
Source: Author's Construct, 2021.

In addition, from the riddle, it could be deduced that the cock's movement was sequential, and no stage was skipped. A stage led to the other. According to Oyediran (2020), the research process is sequential and no stage can be skipped. Therefore, this riddle can be used to explain the scientific research process.

Another deduction was that the cock's movement did not happen by chance but took some time. This explains that in every stage of the scientific research process, some activities that require time were involved. For example in data collection, activities such as determining the sample frame and size, questionnaire administration, or observation were involved and take some time.

It could be inferred from the riddle that every stage was like a billboard telling people whether one is developing/growing or not. Each stage gives a situation report of how far a researcher had gone. In a scientific research process, each stage could be evaluated to know whether there had been an error somewhere or not before proceeding to the next stage.

It should be noted that the developmental process in the riddle is similar to everybody irrespective of one's nation and continent – Africa, America, or any other continent. Likewise, the scientific research process, irrespective of the area of research/study, the research process has similar stages only that the stages depend on the task at hand and the resources available.

7.0 Conclusion and Recommendations

7.1 Conclusion

Understanding the "how" aspect (process) of scientific research is the best way to help researchers conduct good research and achieve sustainable solutions to the various development challenges. However, different researchers/scholars had postulated stages of a scientific research process but all the postulations came back to the same point that is summarized in the riddle as infancy (preliminary), adolescence (main), and old age (conclusion, recommendation, and review) stages. From the foregoing, this study broadens the knowledge of readers on another means (riddle) of achieving sustainable solutions to the various development challenges which are



evidence that Africa is blessed with methods of teaching such as storytelling, analogies, and riddles.

7.2 Recommendations

It is recommended that a scientific research process in whichever way should be free of error/s and includes the required details if sustainable solutions are to be guaranteed in any development challenges. In addition, other researchers with the same development challenge should produce similar result/s following the same process. To proffer sustainable solution/s to every development challenge, methods should be innovative and flexible allowing various means to observe and understand the cultural background of the concerned community. It would be beneficial to the researcher/s or planner to search for innovative means mostly traditional/indigenous to explain the situation of things to those concerned. Government should encourage the indigenous methods of achieving a sustainable solution to development challenges through its inclusion in the tertiary schools' curriculum.

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