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Mathematics Application for Agricultural Development in Nigeria

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Abstract: *It is almost like any career. There is so much integration. There is Mathematics in everything we do. It is well known that if you are out on the form [you] have to figure these chemicals he has to figure his fertilizer volumes; he (have) to keep track of his money. If he is running his own business it is the same thing. He said you deal with mathematics in every single thing you do in agricultures so you need that back ground there to be competent in what you are doing. To concretize this, Dave stated that he have agriculture business in his school. He said basically everything they do in agricultural business bases itself on mathematics. It is in this study the researcher recommended that federal and state governments need to put more incentive to mathematics teachers so as to encourage them to teach well and produce experience agriculturalist that could Produce enough foot (food security) for local and international markets through not only peasant farmers but also mechanized agriculture, by baring good mathematics ability to make weather forecast and other agricultural calculations.*

Key words: *curriculum, national economic goals, economic development.*

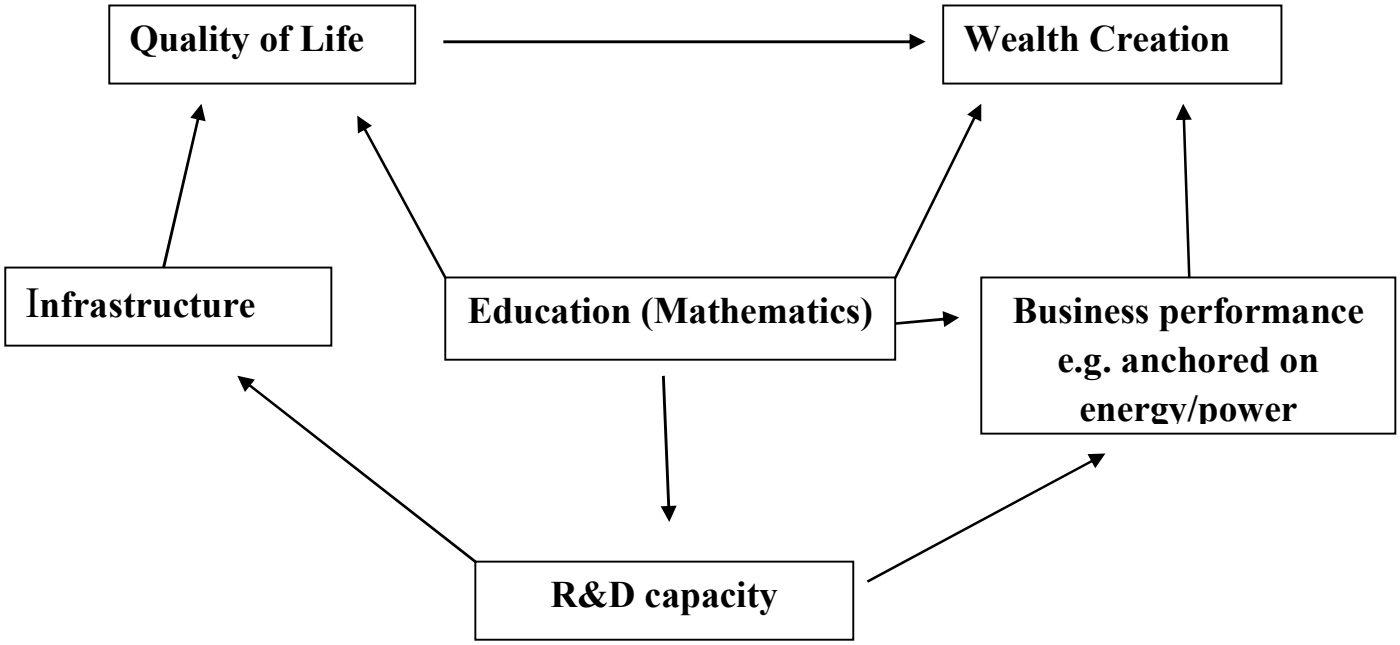
MATHEMATICS APPLICATION FOR AGRICULTURAL DEVELOPMENT

The power and application of mathematics is almost touches every expect of human life. To authenticate this, Ale and Adetula (2009) state that mathematical competence is vital to every individual's meaningful and productive life. According to them again mathematical application is universal to all learning and everyday living from counting possession to measuring properties predicting events, computing taxes/profits, drawing maps/plans, planning budget or welfare providing models, synthesing results. According to Kolawale and Olutayo (2005) and Harbor Petor (2001) all these mentioned are indication that mathematic is useful in domestic, and business deals, scientific discoveries, technological breakthrough, problem solving and decision making in different situation in life.

This also shows that, the knowledge of mathematics is very substantial in our day to day activities. This is why Ale and Adetula (2011) opined that the significance relevance and usefulness of mathematics can never be over

emphasized. Adeniram (2008) and Ale (2009) stated that "the knowledge of mathematics will help Nigeria to":

1. Produce citizens that manufacture materials, machine and tools needed for our industries (gas and oil inclusive) and road construction and water dams.
2. Produce enough foot (food security) for local and international markets through not only peasant farmers but also mechanized agriculture, by baring good mathematics ability to make weather forecast and other agricultural calculations.
3. Invent new design e.g. discover drugs capable of caving diseases as a medical doctor and pharmacist (in conjunction with our herbalist and national pharmaceutical research institute and development NAPRID which make use of the knowledge of medical plants drugs in general and chemistry and biology in particular.
4. Focus on the need for more investment in research and development (R&D) a subset of science and technology. According to them all these, will eventually transform the nation from a consuming on to a productive self sufficient and self reliant and wealthy nation. In an attempt to explain the above points, they produced the following diagram.



Adeniram (2008) and Ale (2009)

Social Values of Mathematics

Mathematics plays an important role in the organization, and maintenance of our social structure (Sidhu, 2006). According to him, "society is the result of the inter-relations of individuals. It consist of male and female, the knowledge of mathematics remains significance as its helps in the smooth transactions, exchange, trade, business as well as in bargaining between the humanity. Sidhu, (2006) opined that mathematics helps in the formation of social norms and their implementation. The dominance of materialistic outlook in our society is one of the chief attribute in mathematics. To corroborate this, Isah (2015) states that "once you formulate any arts, you are using mathematical skills. In this case, weather you a carpenter, painter or iron bender etc. for these works one has to measure or even count and apply basic mathematical skills to it for easy and correct formulation. Sidhu, (2006) in the same vain spewed that the ideas like manpower planning have originated parthly due to influence of mathematics. The statistical data provide bases for both long term and short-term planning for the welfare of the society. Considering these point one can without no doubt agree that the knowledge of mathematics touches the entire activities of human being.

Now, looking at the census that is taking place in every ten years here in Nigeria which we know provide a complete number of people. It is through, census that Nigeria rally on its allocation of money and other infrastructures, hence census rally fervently on the basic manipulation, of mathematical skills.

MORAL VALUE OF MATHEMATICS as "mathematics is a specialized cognitive tool is an **undisputed** agent of nations development and wealth creation. According to Sidhu (2006) the study of mathematics helps in moral development as well as character formulation. Mathematics helps in developing proper moral attitudes as there is no place for prejudiced feelings, biased outlook, doubts and help truths, discrimination, misdistribution of resources, unreasonableness and irrationality in the learning of this subject (Sidhu, 2006). According to him it is the only subject which helps in objective analysis correct reasoning valid conclusions and impartial judgment.

The qualities like honesty, truthfulness, justice, dutifulness, punctuality, self-confidences discrimination between good and evil observation of rules and belief in systematic organization and arrangement are indirectly inculcated

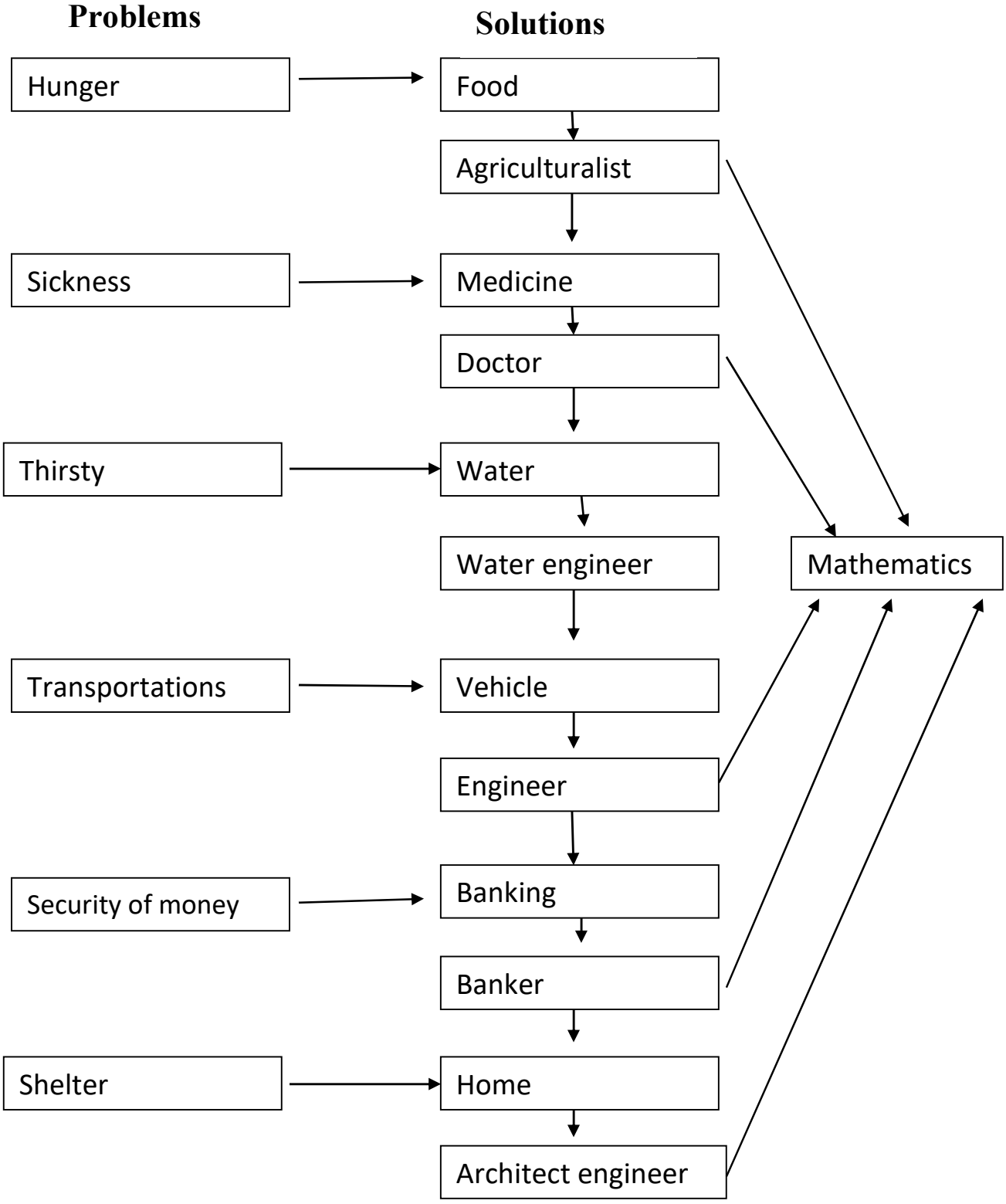
through the teaching of mathematics. These qualities go towards developing a morality and sound character (Sidhu, 2006).

Thus, Greek philosopher Dutton has rightly remarked that….. "gossip, flattery, slander, deceit all speak for a slovenly mind that has not been trained by mathematics.

Importance of Mathematics to Society: Past, Present and Future.

Crustal (1993) in Glen, Gary, Briers, Jamea, Kristiansen, Julie, Harlin, James, Lindner & Timothy, Taxas; Craig & Brain; David (nd). Reflected, on the increasing importance of mathematics in civilization, beginning with the representation or animals by the number of marks on a stick to the advance "as diverse as numerical analysis and theory of fractals" (P. 768). According to them, the transformation from a simple notch to a system of mathematical rules has enable scientist from Euclid to Einstein to explain complex relationships and communicate abstract ideas. This collective mathematical thanking has resulted in practical applications that are ubiquitous in today's society. Ironically, Einstein forewamed, "The problems that exist in the world today cannot be solved by level of thinking that created them".

According to Ale and Adetula (2009) Argues that mathematics is a key to productivities and fulfilling life. They continuous to say "what all these means is that solutions to human problems such as hunger, sickness, thirst, transformation security of money, shelter, education all reside in mathematics method as presence in the following diagram.


Problems
Solutions
Hunger
Food
Agriculturalist
Sickness
Medicine
Doctor
Thirsty
Water
Water engineer
Mathematics
Transportations
Vehicle
Engineer
Security of money
Banking
Banker
Shelter
Home
Architect engineer

In fact, the application of mathematics in scientific concepts in solving various problems or man is what translates directly or indirectly development (Ale and Adetula, 2008)

Agricultural Development

Formal agricultural education started in the united state in 1917, when congress passed the smith Hughes Act (Anderson and Anderson, 2012). According to them, this piece of legislation put agriculture in the classroom to pre-pare, students for the work force. From that point agricultural education had its role in the formal education system. Agricultural education in the public school system has grown tremendously, since its inception at the turn of the last century. Agricultural education courses teach way beyond the boundaries of production agriculture (Anderson & Anderson, 2012).

Agricultural educators are now preparing their students for future careers as biologist, business and industry leaders, political officials and many other advanced careers. No wonder, study conducted in Virginia, agricultural educators indicated that mathematics was a component of the agriculture curriculum, and they believed that mathematics was a component of the agricultural education would lead to higher academic achievement (Anderson, 2006). According to Parr, Edward Liaising and Head (2006) stated that in order for secondary agricultural education to remain effective in prosecuting well prepared and highly qualified graduates, program must provide a strong emphasis on traditional academic skills. To corroborate this Newcomb (1995) states that "the need to have agricultural education students graduate with the demonstrated capacity to think at the high levels of bloom's taxonomy is more urgent than ever. The nature of the world we live in demands it" (p.4). It is essential that the modern secondary agricultural education, curriculum develop well round individuals who are capable of adapting to ever expanding and increasingly, complex, agriculture and food system in which they may be employed national Research Council in (Parr, Ed Ward Liaising and Head 2006).

In a study conducted by Anderson and Anderson (2012), titled Emerging themes in Integrating Mathematics in Agricultural, education: a qualitative study of star Teachers in Virginia. In this study they found that among the agricultural teachers they used, five (5) teachers indicated that agricultural education is

mathematically rich and that agricultural education provides a real world setting, for learning mathematics. Carrie in the same vain stated that "there is a lot of mathematics involve in agriculture. According to him it is already embedded in there and there students should have to know the basics. Jim in Anderson and Anderson (2012) says that a human being deal with mathematics with every single thing he does in agriculture. From this point it would be understand that Agriculturalist, finds the knowledge's, of mathematics in almost every field of agriculture. For this point Macy noted that:

They talk about everything from just simple elementary, mathematics you know counting out change and staff like that to getting into profit los margins. In another findings.

To added: "in Horticulture, it is very easy to integrate mathematics when determine cost per plant, profit margin expected and inexpected cost etc. …….in the agriculture mechanics courses, mathematics is used for measurement both small and (big) woodworking, welding, micrometer etc……. these statements indicated that the teachers, have provided several topics in which they have already integrated mathematics in their curricula and identified agricultural topic that they can integrate, mathematics.

According to Anderson and Anderson (2012) another component of an agricultural educating curriculum is the FFA. The agricultural teachers also identified many career development events (CDEs) that Utilized mathematics. The teachers provided a wide array of CDEs that utilized mathematics, some teachers provided specific CDEs, and while others pointed out that they all used mathematics skills. According to Jim in Anderson and Anderson (2012) (of) all these content have some type of problems solving or team problem and they usually, incorporate something mathematical in their like. Whether it's something basic (such) as figuring square footage of volume of something to a lot of things could be more advanced too"

According to Dave in Anderson and Anderson (2012) some of the areas of mathematics that developed agriculture include "the forestry contest, there is another one where we do angles, need to figure out the height of a tree, figure out how par p you can get a logout of it. They have got to do pacing and figure out what actually means as to the angle they are looking at on the tree to figure out

how tall is really is and use the measurement that way too" agricultural education teachers have shown that there were a lot of content areas that they used to integrate mathematics these include agricultural mechanics, and horticulture, however, the agricultural education teachers state that a teacher should no by all means make a collection with the students until after the fact.

Conclusion

In this paper, it has been argued that mathematics is a key to productive life. What all this means is that solutions to mankind problems such as hanger, sickness thirst, transportation, and so on all reside in mathematics (Ale & Adetula 2011). It also indicated that the knowledge of mathematics help to produce enough food for local and information markets through not only present farmers but also mechanized agriculture by baring good mathematics ability. It has also been presented in this paper diagrammatically how to solve man's problem using mathematics. It has indicated in this paper that a human being deals with mathematics in every single thing he does in agriculture (Anderson & Anderson, 2012). Looking at this therefore, it has been clearly understand that mathematics could be rise to develop agricultural sciences. Some agriculturalists have shown that they all used mathematics skills. They opinion that some of the areas of mathematics that developed agriculture include: the forestry, such we they do angles, where they figure out the height of the tree, figure out how par up you can get a logout of it. Another area of mathematics that was used to developed agriculture including: mechanics courses, mathematics is also used for measurement both small and big wood working, welding, micrometers and so on.

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