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Challenges of Data in Educational Planning

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Abstract. Premised on the haphazard way in which programmes are implemented in the educational sector which in most cases turned out that resources (human, materials and fund) were not adequate such that most programmes which could have optimally benefit the society turned out the negative way, this study examined the effect of data on planning. Planning is futuristic and can only be useful in as much as data is adequately available for appropriate planning. The study looks at planning and goes ahead to examine the place of data in planning. Various forms of data is brought into focus. The study also looked at challenges of data in education industry and goes ahead to suggest ways of alleviating challenges of data in education industry. The study suggested the use of modern Information Communication Technology in gattherin of data in education industry to minimize delays and distortion of data among other means. The study concluded by emphasizing that development and implementation of plans in education industry will always be a herculean task in the absence of appropriate data.

Keywords: Data, Planning, Education Industry.

1. What is Planning?

A cursory look at the meaning and definition of planning will assist in putting the definition of educational planning into focus. Planning has been described as a futuristic action aimed at achieving certain goals efficiently and effectively within a time limit putting in mind available resources. Gbabamosi (2005) citing Drior (1963) defines" planning as preparing a set of decisions for implementation aimed at achieving goals by optimal means". Gbadamosi (2006) opined thus "Planning is a means of willing the future, a process by which one can programme in desirable opportunities that one is capable of imagining. Adeniji (2009) opined that planning is the projection of idea for the future, a detailed programmes of activities worked out ahead of time for the achievement of stated goals. The implications of the definitions cited above is that planning is of the future. It is based on what is to be achieved at a time yet to come. However, there is a time limit within which such ideas, goals must come into fruition give the resources which must be optimally utilized. The question of doing what it is supposed to do hangs it on its effectiveness while achieving the highest possible with the little talks of efficiency. Business Dictionary (2016) sees planning as a" basic management function involving formulation of one or more detailed plans to achieve optimum balance of needs or demands with the available resources". According to Business Dictionary, the planning process identifies the goals or objectives to be achieved, formulates strategies to achieve them, arranges or creates the means required, and implements, directs, and monitors all steps in their proper sequence.

MacEwen (2016) opined that the process of planning includes the determination of

objectives and outlining the future actions that are needed to achieve these objectives. Various steps that are followed in the process of planning are:

(i) Identifying the problem: It involves identifying the goals and purposes for which the plan is being evolved.

(ii) Gathering information about the activities involve: This implies an attempt to foresee the effect of the plan on the sample space or population for which it is designed for.

(iii) Analysis of information: The information collected in the process of putting together the plan needed to be put into thorough analysis. This is is to prevent undue and unnecessary repetition of information.

(iv) Putting in place alternative plans: The question of if this fails what next? Is answered by this process. A plan that has no alternative cannot be redesigned to fit into changes in the future. The creativity of the planners is called to question here.

(v) Choosing the most appropriate plan among options: This involves re-examining all options available. At this stage the plan which is acceptable to the operating personnel is proposed. The adaptability and the cost of the plan are also taken into consideration.

(vi) Plan implementation: Detailed like who will perform which activity under the plan and the time within which the plan should be carried out is determining in this step.

(vii) Review the plan: This process involve ongoing review of the plan as it is being implemented to ensure corrections that are likely to come up during implementation which if not carried out will jeopadise the expected outcome of the plan.

2. What is Educational Planning?

What can be deduced from above definitions of planning with reference to educational planning is that when planning principles and processes is applied education, it is termed educational planning. Gbadamosi (2005) describe educational planning as a dynamic process, in a dynamic environment which enriches itself from various views arising from the discourses on what is and what is not. The writer opined that educational planning is aimed at transforming educational system to ensure maximum realization of educational goals within the limited available resources.

Basically educational planning involves the use of techniques and procedures of normal planning as done in other fields of human endeavours to enhance the effectiveness and the efficiency of the education industry. Educational planning is more than a technical exercise. It is also an organised social process involving a variety of actors.

It is a process where several issues and dimensions have to be taken care of. Such dimensions include, political, legal, demography, cultural, sociological, economics, among others. In fact, practically all aspects of the societal life is represented in educational planning.

The process of educational planning involves:

Identification of the desirable educational goal: This is always as a result of the yearnings of the society to fill an obvious gap. It may be as a result of changes in the global village called world. It may also be as a result of the fact that the previous plan being operated can no longer subsist the society or obvious flaws that make it impossible to continue its implementation. Hence the design of a new plan.

Collection and examination of information on education: This refers to sourcing of past information on the situation, identifying desired outcome and more importantly the resources available to the system. In most cases the first set of information will be in jumbles. Analysing each information in the light of it desirability will prevent unnecessary duplication of data and waste of efforts /resources.

Identifying the operators of the educational plan: This will involve all stakeholders. Those to benefit, those to operate, professionals, all aspects of the system that has one thing or the other to contribute towards the success of the plan.

Prioritise the educational needs of the society: This will involve placing the needs of the society on scale of preference and the cost of

achieving all plans that can be used to achieve the same outcome.

Making the most appropriate decision on the educational plan: The plan that will be most cost-effective and efficient is decided upon at this stage. This requires objectively deciding on what will benefit the society most in the view of the prevailing situation as well as the available resources.

Plan implementation: At this stage, the operationalizing of the various aspects of the plan as well as putting in motion the activities that will lead to the achievement of the goal desired becomes very visible.

On-going evaluation of the educational plan: It is important to carry out the on-going evaluation of the educational plan being implemented. Sometimes impact assessment reveals early enough the flaws of a plan thus making it possible to correct such flaws and prevent huge financial and material loss.

Evaluation of the education system and replanning: A time limit is set for the general evaluation of the plan during which it would have been operated and outcomes would have been observed for some time. General evaluation will lead to replanning of the education and in some cases jettisoning the entire plan for a new one.

In effect, educational planning involves a step by step rational approach to the achievement of educational goals by being practically futuristic in the design and implementation of educational plans with particular reference to available resources for the time-bound achievement of optimal goals of education. Within these discourse, certain things cannot be overlooked. The issue of appropriate data in putting in place an effective and efficient educational plan cannot be overemphasized.

Sri Aurobindo Marg (2004), listed some points as steps in educational planning. They are:

I. Diagnosis of Present Position with respect to: General Scenario and Educational Scenario

II. Review of Past Educational Plans, Programmes and Policies

III. Projections of Major Socio-Economic and Educational Trends

IV. Plan Formulation and

V. Plan Implementation.

3. What is Data?

There is an erroneous belief by the lay person on what data is. Some will readily opine that data is about numbers alone. Data has been described as a value assigned to a thing. According to Vangie Beal (2016), data is distinct pieces of information, usually formatted in a special way.

In general, data are information that have been gathered and translated for some purpose, usually analysis. It can be any character, including text and numbers, pictures, sound, or video. If data are not put into context, they don't mean anything to a human or computer.

Data is a collection of facts, such as numbers, words, measurements, observations or even just descriptions of things. Data can be qualitative or quantitative.

Data can be described as information which can be used to enhance knowledge. Events that leave behind perceivable physical or virtual remains can be traced back through data.(Wikipedia)

Information in raw or unorganized form (such as alphabets, numbers, or symbols) that refer to, or represent, conditions, ideas, or objects. Data is limitless and present everywhere in the universe. (Business Dictionary). Data that required in the education industry are multifarious. They include, number of teachers available for the industry at all levels (primary/preprimary. Secondary and tertiary). It is also required at the level of each profession,

Number of schools at each level and their carrying capacities, past policies, population of students,

Present and expected future enrolments, age classification of births in the country over a specified period, Available material resources at all levels, funds, available professional /human resources in each level among others.

Types of Data: They include Qualitative and quantitative data

Qualitative data is everything that refers to the quality of something: A description of colours, texture and feel of an object, a description of experiences, and interview are all qualitative data.

Quantitative data is data that refers to a number. For example, the number of eggs, the size, the

price, a score of some students, amount of money, etc.

However there are also other categories that you will most likely encounter:

Categorical data: when the data is described using particular attribute to describe it such as "new", "old" ,"broken" etc.)

Discrete data: In lay mans language, these are whole numbes. For example 3eggs, 2bicycles, scores of tests that are whole numbers, number of boys or girls in a class. Continuous data: these are mostly data obtained from measurements. For example, length of plots of land (105.4m), length of cloth (10.2m), diameter of ball (2.3cm). They are continuous in nature.

4. Challenges of Data in Education Industry.

As discussed above, a good educational plan is hinged on available data in the required multifarious form. Most of the previous policy enactment either by indigenous government in Africa or by foreign educational agencies is often challenged because of the non-availability of dependable data. Most countries in Africa cannot boast of correct educational data as well as birth registration thus making it difficult to prepare an adequate educational plan for their countries. A number of challenges makes it difficult for some of this countries to have appropriate up to date data that can be used for effective and efficient educational plan. Some of these problems are discussed below.

Funding: The process of gathering or collecting data for education is capital intensive. Most governments do not fi=und the process adequately thus a haphazard job is done. Hence the data is hardly useful when available.

Geographical locations/terrains: Most rural areas are not readily accessible to enumerators. Family units exists in these places. Data collected in such areas are not appropriate as they do not represent the actual number of people in such areas. So also the material resources in such areas are not enumerated.

Personnel: In most cases, professional personnel are not available to provide technical support for enumerators. In these days of computer processing of figures, many people involved in data collection are not computer literate. Hence they mishandle the result or computer sheet thus leading to inadequate data processing.

Political Interference: The issue of politicizing data collection in education system or general census is a major problem. Since fund from federal level are based on population, sometimes the data collected are falsified. Sometimes data collected within the same organisation are different. Hence such data cannot be used for any meaningful educational planning.

Inconsistencies in government policies encourages inappropriate data gathering. Sometimes two or more different organisations are entrusted with collection of data within the same period and for the same purposes. Sometimes, these organisations will be at loggerheads with each other. Even their sources of primary data gets bored and frustrated with too many paper works that are often a repetition of earlier one. This does not encourage accurate data collection. Each of them end up providing different data from the same sample space.

Culture: Gathering of appropriate data is sometimes inhibited by the culture of some areas. In some areas it is a taboo to disclose the number of children a family has or even allow them to be counted. These practices does not encourage appropriate data gathering.

Religion: Religion is very powerful and sensitive in this part of the world. Some religion does not allow visitors to the quarters of women be it wives or daughters. Such people cannot be enumerated.

Insurgency: Some African countries in recent time like other parts of the world has been experiencing insurgency. The activities of these people makes it difficult to collect data in the areas where they operate.

Insecurity: Various forms of insecurity is daily contributing to the challenges of data gathering. Activities such as kidnapping, robbery, suicide bombing, fraudsters among others makes people to suspect every activities such that pilot samples are difficult to access in areas enumerators are not familiar with. Such people may be apprehended and maltreated before they show evidence of being in the area for data collection.

Communication breakdown: In areas where illiteracy still pervade the society, it is often difficult to have some questions answered. In some community, talking about sex is almost impossible. So also they find it difficult to respond to questions posed by interviewers. Hence data collection become tedious in these kind of environment.

Nonchalant attitude of record keeping officials: Most times, officers in charge of keeping records in ministries, parastatals and organisations including education institutions do treat records the way it ought to be treated. May officers cannot account for past records in their care thus making it impossible to collect data from such sources.

Unstable academic calendar and system: This has make it impossible to collect educational data that will be whollistic for the country. It is either several states primary, secondary, or tertiary institutions are on strike or the federal institutions are protesting. Collecting their data all at once becomes a herculean task.

Gbadamosi (2005), listed certain factors as constraints on data collections in Nigeria. They include: dearth of data, inadequate skilled personnel, inadequate finance, geographical maps, transport barriers among others. In the same vein, Arun (2006) listed constraints of data collection in Nigeria to include appropriate infrastructure, public attitude, dissipation of efforts, problems of data collection itself such as age shifting, supervision of enumerators and their remuneration, registration of birth and death rates among others.

Vangie Beal (nd), listed what he called Vbased characteristics as ten challenges associated with the main tasks involving big data. They are as cited below:

Volume: = lots of data. The actual numerical scale at which the data volume becomes challenging in a particular setting is domain-specific. Many tons of data is now being dealt with.

Variety: = complexity, thousands or more features per data item, the curse of dimensionality, combinatorial explosion, many data types, and many data formats.

Velocity: = high rate of data and information flowing into and out of our systems, real-time.

Veracity: = necessary and sufficient data to test many different hypotheses, vast training samples for rich micro-scale model-building and model validation, micro-grained "truth" about every object in your data collection, thereby empowering "whole-population analytics".

Validity: = data quality, governance, master data management on massive, diverse, distributed, heterogeneous, "unclean" data collections.

Value: = the all-important V, characterizing the business value, and potential of big data to transform your organization from top to bottom.

Variability: = dynamic, evolving, spatiotemporal data, time series, seasonal, and any other type of non-static behavior in your data sources, customers, objects of study, etc.

Venue: = distributed, heterogeneous data from multiple platforms, from different owners' systems, with different access and formatting requirements

Vocabulary: = schema, data models, semantics, ontologies, taxonomies, and other content- and context-based metadata that describe the data's structure, syntax, content, and provenance.

Vagueness: = confusion over the meaning of big data (Is it something that we've always had? What's new about it? What are the tools? Which tools should I use? etc.).

Suggested Solution to Data Challenges in Educational Planning

Data Archives: This could be set up as done in advanced countries of the world. In this place, the duty of keeping all information that can be termed data is entrusted. It will hold first hand acts, data, and evidence. The data format can be in various materials such as letters, reports, notes, memos, photographs, digital files and other primary sources.

Cyber infrastructure: It is the coordinated aggregate of software, hardware and other technologies, as well as human expertise, required to support current and future discoveries in science and engineering. Setting up a place like this here will ensure first hand data collection that will be appropriate particularly for educational planning.

Enlightenment campaign among stakeholders: This can take several forms. One of such is through workshops and seminars.

Keeping records should be made part of all seminars and workshorps. Also, the need to supply correct undiluted and unfalsified data should be stressed.

Appropriate funding: There is little that cn be done if data collection and preservation is not funded in the required sum. However, such funding should be devoid of political playoffs. The amount released shuld be to the appropriate agency meant for data collection and preservation.

Centralising all agencies involved in data Management: There is the need to centralize all agencies that has to do with data collection particularly educational data. This will ensure availability of educational data for educational planning at all levels. Data would be available as at when needed. The issue of not knowing which agency an supply what will be removed. This however does not preclude branches in other agencies but they must liaise with the central body to prevent duplication and it is the central body that will be responsible for supplying any data required for planning purposes.

Reduction in frequent changes in educational policies: There is the need for continuity in government policies in education. As noted by people, most policies are good, it is the operators that in most cases fail to follow the process of implementation as laid down. Also, policies implementation in most cases are not allowed to mature before it is thrown overboard. This most times render useless some infrastructure already put in place and encourages wastages and begin-again syndrome. Operators of the political atmosphere in countries should note that government ought to be continuous. The tendency to be termed originator of a particular system should be done away with as much as possible and should be used only when it has been discovered that the subsisting policy can no longer be corrected and cannot serve the educational purposes of the country.

Special courses to train specialists/personnel: As noticed earlier on, there are not enough personnel that have the knowhow of data collection and preservation. Special courses should be mounted to produce enmasse personnel for the purposes of data management particularly educational data. During collection of data, adhoc staff should be given appropriate training and properly examined to determine their suitability to the work before being engaged in the work. It should nbe emphasized that the human involvement in data management is paramount as they decide what should and would be done even in the days of computer and modern gadgets in data processing.

Appropriate charting of geographical areas by specialists: There is the need to appropriately chart areas to be covered when collecting data so that such data could be correct and be useful in educational planning. Various methods now exist that could be tapped into to produce appropriate geographical maps that will be useful for enumerators and interviewers.

Communication diversification: During collection of data, communication should be such that can be understood by the natives. This will enable deep understanding of the request of enumerators and interviewers. Hence, information supplied will be of use in planning.

Enlightenment of the Population: This is necessary from time to time to enable the entire population particularly those in the remote areas on the need to embrace enumerators, interviewers and others on duty and provide appropriate information that will be useful. Such enlightenment should include explanation on cultural perspectives that can work against the result of data gathering and collation for preservation.

Enhancement of security: Government should strive to reduce to the barest minimum insecurity and insurgency in the country. This will help to improve data gathering in such areas.

Eleazar (2006) suggested the use of the following on issues on data management in the country. They are:

- e-Research

Commonly used term in the UK and Australia that is synonymous with the US favored "e-science", it has been defined as encapsulating research activities that use a spectrum of advanced information and communications technology capabilities and embraces new research methodologies emerging from increasing access to:

Broadband communications networks, research instruments and facilities, sensor networks and data repositories;

Software and infrastructure services that enable secure connectivity and interoperability;
Application tools that encompass discipline-specific tools and interaction tools.
E-research capabilities serve to advance and augment, rather than replace traditional research methodologies, but there is a growing dependence on e-Research capabilities.

- E-Science (or eScience)

It is used to describe computationally intensive science that is carried out in highly distributed network environments. It is a new research methodology (Hey and Hey, 2006) rather than an emerging "science".

- E-Scholarship

This newer term derived from e-science includes a broader focus of data issues in all disciplines, such as the Digital Humanities. The following E-scholarship goal was drafted in 2010 to provide a framework for continued development in this area. 'The Libraries will provide life-cycle management solutions for digital content through engagement in strategic partnerships, leveraging of Libraries' (and campus) assets, developing and sharing our expertise, and collaborating to develop essential infrastructure.'
Grid Computing (or the use of computational grids)
It is the application of several computers toward a single problem at the same time usually to a scientific or technical problem that requires a great number of computer processing cycles or access to large amounts of data. {MacEwen, 2016}

5. Conclusion

Proper educational planning cannot take place in the absence of adequate and appropriate data. Several government policies at all levels (Federal, State and Local) at all levels of education, (Pre-primary, Primary, Post-primary and Tertiary) seems not to work as a result of the use of "rule of thumb" in planning. Scientifically verified and processed data is needed to properly plan education in the country. It is therefore imperative for all stakeholder to begin to do appropriate things that will make available usable data in the field of educational planning. The process of gathering, processing and the entire management of data should be rejuvenated such that current data in education comes in within two weeks of the academic calendar and with as little bottleneck and delays as possible. For example, schools should be able to input their data directly using the internet copying all appropriate organisations that need to have the data. The use of supercomputers to process such data such that the data could be used to plan for educational event within the academic year and the coming one will make educational planning relative and easier than it is presently done. These processes if adopted will ease challenges of data in educational planning.

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