

DESIGN AND MODELING OF A RESIDENTIAL BUILDING DETERMINANT FOR CREATIVE CONSTRUCTION

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Abstract

Building Design and Modeling is a process of digitally generating, representing and managing building production information using construction information technologies. This paper focuses on building design/modeling process which encompasses building execution, space relationships, geographic information, quantities/bills and properties of materials. Building information management (BIM) which enhances communication, collaboration and information exchange between the project team. To this extend, the techniques to develop Building designs and Models that will be intelligent and wholly represents the physical and functional characteristics of a facility is also presented. These intelligent digital design/modeling concept visualizes the different views of a building, and also simulates the construction development process in order to identify improvement areas and highlight areas of potential conflicts via clash/interference detection. Furthermore, the paper posed some objectives pertaining design and modeling of a residential building to determine the economy that is involved in the execution of the structure and finally, Recommendations and suggestions were made.

Building design is the art of representing the building to be constructed on a paper in a systematic process to serve as a guide to the builder. It is the designers' principal language and the means by which designers' intentions are discussed with the client and statutory authorities; to interpret or communicate what the builder is to construct on the site.

Building designs must contain sizes of rooms of the building, the height, width and thickness of walls, types and sizes of doors and windows and roof members and finishing details. The designs should be internationally readable, supplemented by schedules and specifications of materials and workmanship. The construction professionals must learn to develop designs capable of identifying activities and building a logic sequence network. Developing a construction schedule is difficult since one has to construct the building step-by-step after visualizing the drawing.

Two Dimensional Drawing according to Mensser, Yerrapathruni, Whiskre and Barratta (2003), (2D) is a traditional tool used in the then Architecture, Engineering and Construction (AEC) Industry to analyze project designs and plan their construction. Designers use 2D drawings to describe their ideas to other project participants. Visualization of the facility is communicated using 2D drawings and project information is primarily exchanged via paper documents. Individuals need training to

interpret 2D drawings and visualize projects based on their previous experience and knowledge. With building geometry getting more and more complex, even experienced personnel misinterpret the designer's intention, which can lead to additional time and cost.

And for designers to convey detail information about construction process the need for modeling is necessitated to allow project teams to visualize construction plans; identify construction consequences and space conflicts; identify safety issues; and improve communication of the project team members (Koo and Fischer 2000).

Objectives

The objective of this paper is to:

1. Improve the value of design and modeling in building construction engineering.
2. Assessed the occurrences of errors in the construction industry.
3. Determine the cost efficiency in engineering construction.

Model Visualization

Simulation modeling and visualization are used to overcome the deficiencies of the traditional scheduling techniques. Advanced visualization techniques such as 3D visualization, 4D models and virtual reality models can be utilized for more effective generation, communication and evaluation of schedule information. 3D modeling has been around for more than three

decades, and it is becoming more useful and economically viable tool. 3D modeling can better present the physical reality of a structure than 2D drawings. 3D models have been increasingly used in a number of different areas such as automobiles, aerospace vehicles, buildings and so on. Various computer-based 3D visualization activities have been used for construction planning. Kamat and Martinez (2001). (2001) described a 3D visualization system for construction operations simulation. The construction system can be analyzed at the operation level of a detailed plan construction process. Interactions of various resources, such as materials, labor, equipment and temporary structures can be viewed when the building is being virtually constructed. Thabet (2001) proposed a virtual construction model to integrate the design and construction process to improve project constructability during the pre-construction stage. The model allows the users to virtually and interactively construct projects from pre-defined construction Computer Aid Design (CAD) assemblies or components. The construction process can be rehearsed, which allows the users to analyze and criticize designs as well as perform what-if scenarios.

Songer, Senger, Dickmann and Karet (2001a) quantified the benefits of 3D models and walk-thru for schedule development for construction projects. Completeness, reasonable activity duration and valid activity relationships were used to measure the "correctness"

of schedules. Critical path and total float, work flow and resource use were used to define "goodness". Schedulers can generate more correct and better construction schedules by using a 3D model and a walk-thru than by using 2D plans. The walk-thru model enhanced the spatial comprehension, which enabled the schedulers to schedule concurrent activities without the fear that they were scheduling too many activities in the same area or at the same time and it also enabled them to develop correct schedules, as well as effectively minimized the disadvantage of inexperience.

Applications of Models in Construction Projects

Model results from the linking of graphical images to the fourth dimension of time (Koo and Fischer 2000). A model simulates the construction schedule and actually shows which pieces of projects will be constructed in what sequence. By combining 3D models with construction activities, 4D CAD animations can display the progression of construction over time, which provides the opportunity to improve the quality of construction plans and schedules (Rischmoller, Fisher, Fox and Alarcon (2001).

These models have been used on large projects and process plants. More and more construction companies realized the benefits and began to explore the possibilities of this tool as a means to increase their competitiveness.

Modeling has a tremendous value in terms of increased productivity and decreased waste on job sites. The main value is conflict resolution since 4D allows visualization of construction sequence. Another benefit is the ability to run what-if scenarios to determine optimum scheduling and resource management. In the same way, project stakeholders, from the owner to the tiling subcontractor, can see how the project is supposed to progress by using models.

The Model benefited various trades on the project. It lowered the construction cost by helping subcontractors to avoid sequencing conflicts. The project manager found the 4D model valuable in coordinating construction tasks and communicating the intent of the schedule. And they can also understand a construction schedule more quickly and completely with 4D visualization than with the traditional construction management tools, and they have much better communication with different trades related to the project. With successful applications of 4D CAD in the industry, it is feasible that 4D CAD may be very beneficial in construction engineering education. It can provide the opportunity to improve construction engineers to experience the dynamic nature of construction.

The application of 4D model reviews can help construction planners to optimize construction sequences, identify and resolve schedule conflicts, and provide feedback from construction teams to design teams. It also gives

planners the ability to track and manage workers and resources. By allowing planners to make important decisions regarding deadlines, sequence and resource utilization ahead of time, 4D model reviews can dramatically improve project constructability and avoid rework and also offers the opportunity for planners to perform detailed trade sequencing and production planning (Yin 2003). Workspace congestion and inference between crews and stored materials can be predicted and minimized through visual analysis of construction sequences, so that productivity rates can be maximized.

Design/Modeling Procedures.

Design is define as a drawing or the graphical representation of something that show how it is to function or be made. Design involves creating, formulating and manufacturing which has to do with creative thinking. While modeling in its simplest term is the physical representation or copy of an object that is larger or smaller than the actual size of the object used as a guide to making the real object in full size. To construct an effective model, the following forms of drawing will be discussed and represented diagrammatically as:

- Site plan
- Floor plan
- Roof plan
- Elevations
- Schedules (doors and windows)

Site Plan

Site plans are drawn to show location of a home on the property in its context. It is an overview of the construction site and the home as is constructed in reference to the boundaries of the plot. Site plans outline location of utility services, location of driveways and walkways, and sometimes even topographical data that specify the slope of the terrain.

Floor Plan

Floor plan is a process of allocating interior space to meet functional needs which indicates room, all the doors and windows and any built-in elements such as plumbing fixtures and other services that may be required. It may also specify finishes, construction methods, or symbols for electrical items.

Roof Plan

A roof plan is a drawing to show the shape of the roof, roofing materials, vents and their location and the type of underlayment are also specified on the roof plan.

Elevations

Elevations are orthographic representation of the exterior of a structure which is projected from floor plan. The drawings are prepared to show the design, materials dimensions and final appearance of the structure's exterior components such as the front or approach, rear or back, right and left side elevations respectively.

Schedules (Doors and Windows)

Doors and windows schedules are part of the building drawing that are drawn to illustrate the accurate dimension (height and width) of the proposed doors or windows to be installed after the completion of the block work.

Conclusions

4D CAD models enable more people to understand a schedule quickly and identify potential problems, since it allows people to visualize the construction process as it would be actually built before the construction starts. Koo and Fischer. (2000) studied the effectiveness of a 4D model in conveying a construction schedule. It also enables the identification of potential conflicts between building elements and work spaces, safety hazards created due to proximity of construction activities, and the visualization of construction plans (Fischer and Kunz (2001). The models are very useful in conveying which components are being built at a certain time and location. 4D CAD is effective in:

- verifying the completeness of the schedule;
- finding inconsistencies in the level of details among the schedule activities;
- discovering any impossible schedule sequences;
- identifying potential time-space conflicts; and

- anticipating accessibility problems.

Models are effective in evaluating the execution of a construction schedule. They allow users to detect mistakes or potential problems prior to construction. The main benefits that a 4D model provides are as to:

- Visualization tool- ability to convey planning information
- Analysis tool - enhance collaboration among project participants, and
- Integration medium - support users to conduct additional analyses.

Songer (2001b) quantifies the advantages of 3D/4D model presentations for schedule review of construction projects. Once a schedule has been created, 4D animation is useful to review and analyze it. 4D media can improve a schedule reviewer's ability to identify the "correctness" and "goodness" of the schedule. With the aid of 4D CAD animation, missing activities and logic errors in the schedule are dramatically reduced, safety and overcrowding issues are easily identified, and better work flow can be achieved.

Recommendations

To achieve an economic and creative construction in the building industry using design and modeling techniques, the following recommendations are made.

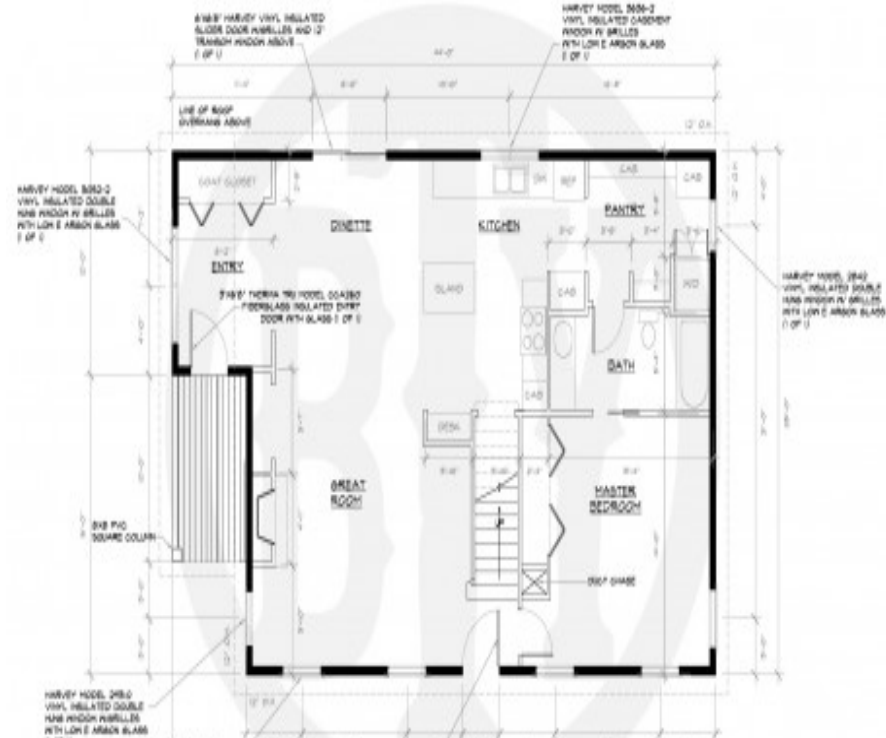
- The concept of building construction should begin by putting the ideas of the client to that of the professional advice.
- Preliminary sketches and final sketches must be provided for decision making if projects must commence.
- Prototype model of the physical building must be produce in relation to the final design.
- Bill of quantities (BOQ) must be produce to guide construction cost.
- Construction programme or programme of work must be schedule in order to maximize time frame for the construction

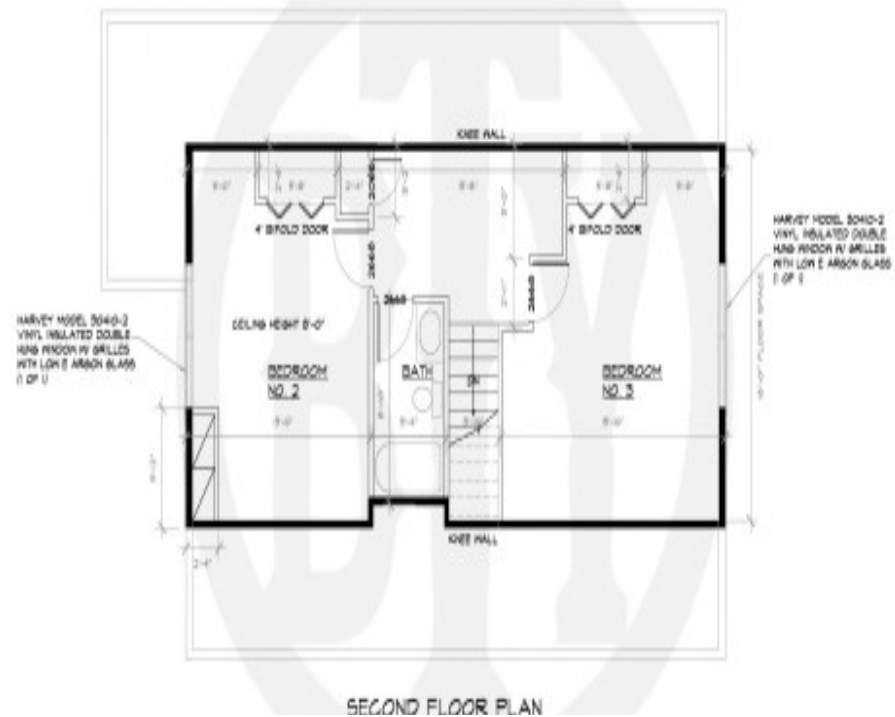
References

- Kamat, V. R., and Martinez, J. C. (2001). "Visualizing simulated construction operations in 3D." *Journal of Computing in Civil Engineering*, ASCE, 15(4), 329-337.
- Koo, B., and Fischer, M. (2000). "Feasibility study of 4D CAD in commercial construction." *Journal of Construction Engineering and Management*, ASCE, 126(4), 251-260.
- McKinney, K., Fischer, M., and Kunz, J. (1998). "Visualization of construction planning information." January 6-9, San Francisco, CA.

- Riley, D. R. (1998). "4D space planning specification development for construction work spaces." International Congress on Computing in Civil Engineering, 354-363. 119
- Rischmoller, L., Fischer, M. A., Fox, R., and Alarcon, L. (2001). "4D planning and scheduling (4D-PS): Grounding construction IT research in industry practice." IT in Construction in Africa - CIB W78, Mpumalanga, South Africa, 1-11.
- Songer, A. D., Diekmann, J. E., and Karet, D. (2001a). "Animation-based construction schedule review." Construction Innovation, 2001(1), 181-190.
- Songer, A. D., Diekmann, J. E., Rasheed, K.-A., and Hays, B. (2001b). "Construction schedule using 3 D CAD and walk-thru." Construction Innovation, 2001(1), 191-207.
- Thabet, W. Y. (2001). "Design/Construction Integration thru Virtual Construction for Improved Constructability. Website crafted by [Clay Pot Creative](#).
- Yin, R. K. (2003). Case Study Research; Design and Methods, Sage Publications, Thousand Oaks CA.

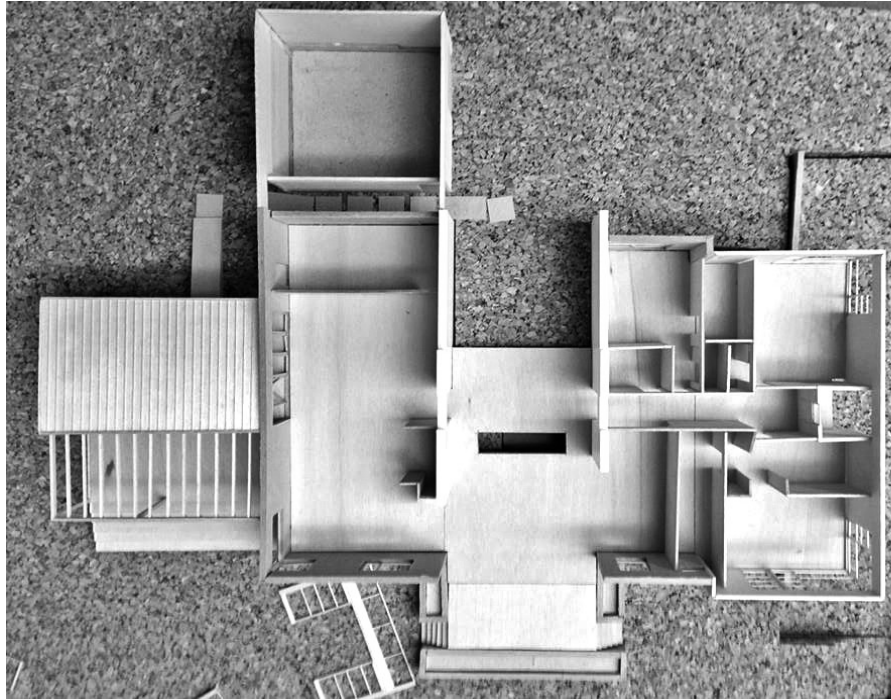
Building Design (plans & elevations)







Modeling Procedures



Building Model



CREATIVITY AND INVENTIONS IN FUNCTIONAL SOCIAL STUDIES EDUCATION

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Abstract

Creativity and inventions in Nigeria are very crucial to the growth and survival of a sovereign society. To this end, this paper recognizes the fact that functional Social Studies education is an instrument for fostering creativity and inventions in the citizenry. On the basis of this, the paper examines the concept of functional education as well as the concept and objectives of Social Studies education. The paper also examines the role of functional Social Studies education in foresting creativity and inventions in Nigeria. Conclusion and recommendations are made.

Creativity and inventions are vital for the advancement of any given society. These are ideals desired by all nations for their citizens. The only way of achieving these is through the provision of functional education, like Social Studies, to every citizen of the country (Inyang, Akpan & Udo, 2009).

In Nigeria, the issues of creativity and inventions have been posing challenges to the government and to all well meaning Nigerians. The Nigerian society has been faced with so many problems right from independence and these have served as obstacles to the

Creativity and Inventions in Functional Social Studies Education - Imoh-Obong Inyang Inyang and Ubong James Akpan

efforts of Nigerian government towards national development.

According to Ololobou (1989), Social Studies education is an organized, integrated study of man and his environment, both physical and social, emphasizing on cognition, functional skills, desirable attitudes and actions for the purpose of producing an effective citizenry. This type of education can be said to be the study of man in his ability; this study draws from a wide variety of sources to relate the individual to his social environment i.e. where he lives, his activities in the past and present, his culture, his frame of mind and how he relates. It focuses on developing the right values, attitudes and abilities which will help the people to get on well as good citizens. Above all, it has as its central interest the child awakening to his civic and national duties.

Nigeria's philosophy of education aims at the development of the individual into a sound and effective citizen. This, it hopes to achieve through the provision of functional and qualitative educational opportunities for all citizens at all levels of education both inside and outside the formal school system. In the light of this Ukeje (1970) opined that, "the primary aim of education is to produce good citizens". To do this, according to him, education should be geared towards inculcating national consciousness, national unity and the right type of attitudes for the survival of the individual and the Nigeria society. Hence Social Studies

education is needed from the primary level of education.

This has become more imperative particularly in some third world countries like Nigeria that are witnessing challenges of national development and a steady ethical decline and moral degeneration which has manifested in the production of wrong caliber of citizens who are corrupt, violent in nature, drug traffickers, undiscipline to the core, nepotic, greedy, power drunk, arrogant, materialistic, sexually immoral, fraudulent, promiscuous, unjust and above all, morally bankrupt.

The reason for this, according to Oganwu (2002), is that the major social institutions are bereft of any authentic cultural education with emphasis on values, beliefs, attitudes, knowledge of social skills, traits and abilities required for development of the nation and members of the diverse communities. These can be seen in functional Social Studies education which aims at internalizing the ideas of the society into the youths. Olowo (2008), states that Social Studies education is a conscious process of inculcating certain values, habits, skills and attributes which the society considers desirable and essential for its survival.

Efforts made by some third world countries to cleanse their country from unethical codes and immoral acts sometimes ended up in futility, due perhaps, to lack of commitment by leadership and unpatriotic behaviour of the citizenry. This simply means that

there is a show of bad citizenship qualities in every facet of their national life, therefore posing challenges on creativity and inventions in these countries. It is therefore not surprising that in contemporary Nigeria, people earn money without working for it. There is no fellow feeling, among citizens as brethren of one nation. No laws are diligently enforced for social protection even as the slogan “use what you have to get what you want” has become the order of things.

Every individual, community, society, nation and the world at large desires creativity and invention. One of the major approaches to creativity and invention is through education which has to do with the inculcation of knowledge, skills, values and attitudes, with the major aim of transforming the individual who in turn becomes an instrument of development to himself, family, community, nation and the world. Education plays the greatest role in the process of transforming the child who would eventually transform the nation through creativity and inventions.

From the foregoing, there is need to make use of functional Social Studies education to make the upcoming Nigerians i.e. the target group and others to internalize some of the moral and social values and behaviours, so that they can behave appropriately. The thrust of this paper however, is how functional Social Studies education can be used to ensure creativity and inventions.

Functional Education

Functional education is the type of education that enables the child to face practical problems with practical solutions. This is the hall mark of our indigenous education before the advent of western education in Nigeria and Africa as a whole.

Fadeiye (2005) agrees that through this medium a child acquires practical knowledge and skills necessary for survival in his environment. Functional education encourages discipline, respect for elders and constituted authorities, respect to the norms and values of the society as well. In support of this assertion, Ajeyelemi (2008) viewed functional education as one of the most efficient ways to groom excellent leaders and empower the poor. In the past decades, Nigeria made great efforts to produce good leaders and reduce poverty through education. But as the country with the largest black population in the world and with limited educational expenditure, Nigeria, unfortunately, still lags behind in the pursuit of all the millennium development goals particularly those relating to universal literacy, eradication of poverty and sustainable national development.

Fanfunwa (1982), revealed that education in the African society was regarded as a means to an end and not an end in itself and as such the main guiding principle was functionalism. Particularly, education emphasized learning by doing, social responsibility, job orientation, political participation,

spiritual and moral values. The curriculum according to him was relevant to needs of society and the learners. Functional education refers to education that comes from the child's needs, and that uses the child interest as a mechanism for activating him towards his desirable activities. Its purpose is to develop the life of the mind; and acts from the wholeness of organic life, with reflection on practical life in the present and in the future (Ajeyelemi, 2008).

From the definitions of functional education outlined above it seems evident that functional education is not an education limited to merely learning the subject matter or being an end in itself. Durosaro (2008) opines that functional education attempts at non-formal goals to train students toward a practical mastery of the subject, to get them into the habit to adapt to any situation, to bring them to experience first-hand, the studied subject by do-it-yourself work and experiments. It connects all studies with specific needs and roles towards which the child's interest should be directed. In this way, the child will gain thinking habits and develop the technical means needed for them that will improve as time goes on, and that will aid him in solving his practical problems (Ajeyelemi, 2008).

The Concept and Objectives of Social Studies Education

Concept of Social Studies Education

Social Studies has been defined by people differently. For instance,

Social Studies education can be defined as the study of man in his environment. It is the study of how man influences and is influenced by his physical, social, economic, political, and psychological environment. Aina, Adeoyin, Obilo and Ahmadu (1982), described Social Studies as the study of man in his totality. It draws from a variety of sources to relate the individual to his social environment, developing the right attitudes, values and abilities to help him grow to become a responsible citizen capable of performing his civic and national obligations.

To Kissock (1981), it is a programme of study which a society uses to instill in students the knowledge, attitudes and actions which it considers important concerning the relationship human beings have with each other, their world and themselves. Dubey, Onyabe & Perokupek (1980) also provided a useful definition of Social Studies. According to them, Social Studies is a subject that investigates human activity. It studies man at home, at work, at play, in politics, in the village, in the nation, everywhere, engaged in his busy programmes. According to them, Social Studies is particularly interested in man's problem and how to solve them.

Ogundare (2004) also defined Social Studies as a study of problem of survival in an environment and how to find solution to them. It is a multidisciplinary study of topics, problems, and issues, a concern or an aspiration. According to Okonkwo

(2000), Social Studies is the study of man and his physical and social environments and how man interacts with others. Ololobou (1989) opines that Social Studies as an organized, integrated study of man and his environment, both physical and social, emphasizing on cognition, functional skills and desirable attitudes and actions for the purpose of producing an effective citizenry.

The focus of the Social Studies education from the above definitions therefore is essentially man, the society and the environment and its ultimate, is to equip individuals with knowledge and understanding for effective relationship and living, acquire knowledge of problem-solving through inquiry and effective tool for addressing challenges in the society.

Aims and Objectives of Social Studies Education

The general aims of Social Studies education as stated in Aina, Adeyoyin, Obilo & Ahmadu (1982), are:

- (i) The development of an understanding of the environment of the children.
- (ii) The development of certain skills and abilities which will enable children deal with and manage the forces of the world around them.
- (iii) To inculcate in children the desire for harmonious living through an understanding of the social and cultural diversities in the society.

The objectives of Social Studies education according to Okonkwo (2004), include the following:

- (i) The creation of awareness in the learners about their surroundings
- (ii) The development of specific fundamental dispositions such as the attitudes, values and norms of the society.
- (iii) The promotion of effective and active citizenship.
- (iv) The promotion of an understanding of social problems of the locality and finding possible solutions to them.
- (v) Helping the learners to develop the right attitudes towards the leaders of the government.
- (vi) The creation of an understanding of their role during elections especially of how to discharge the duties efficiently.
- (vii) The demonstration of flexibility and willingness to accept necessary changes within a system i.e. education, government, or law, for the good of all.
- (viii) The appreciation of rules and regulations that guide behaviours for mutual respects are very important, regardless of our differences.
- (ix) The creation of an awareness that discipline is essential for an orderly society.

- (x) To give man adequate information and knowledge about his society and the wider world.
- (xi) To help man develop proper value judgment and ability to criticize, analyze, select and evaluate issues and events in their proper perspectives.
- (xii) To help man develop proper valuable, socially acceptable concepts, ideas and philosophies of life etc.

By the objectives of Social Studies education above, the Nigerian child and every other individual is expected to become creative, resourceful, responsible, understanding and patriotic. The essence of Social Studies in schools is to prepare individuals for the society and also make them become useful to themselves by being able to solve their problems and also the problem confronting their societies, in terms of becoming creative and inventive citizens in their countries.

The Role of Functional Social Studies Education in Fostering Creativity and Inventions

Functional basic Social Studies Education is the education given to children within the ages of 3 to 14/15 years. This implies that the child will spend 6 years in primary education and 3 years in junior secondary education which is compulsory and free (FRN, 2004). Adedokun, Okediran and Augustus (2005) further submit that basic education is a compulsory

education for the child which is supposed to be a prerequisite to social, economic and political advancement of a people world wide.

Functional basic Social Studies education is a discipline that takes its root primarily from but not limited to, subjects of Social Sciences (Akinola, 2008). Essentially, it reasonably and systematically draws on relevant concepts from these disciplines to address socially related issues and themes. It is more adequate not only in helping the youths to understand their societies, people and their problems, but also in equipping them with the knowledge, understanding and competencies to assist in improving the society thereby leading to creativity and inventions (Olowo, 2009). Social Studies education in Nigeria has been structured and taught to provide learners with the relevant knowledge, skills, attitudes and values that would enable them to become functional citizens capable of addressing the problems and issues of their society. The integrated nature of Social Studies education makes it possible for emerging national and global issues, cutting across a number of disciplines, to be incorporated into it as recent curriculum revision exercises has demonstrated. Functional Social Studies education leads to important innovations as it puts in the education centre-stage, the child and his needs and its moral and social view; wishes to make the houses of learning into houses of education that promote the creative spirit.

Nigeria as a developing country needs to overhaul her educational system in order to improve the national productivity and ensure creativity and inventions in the country. In the words of Myint (2008), lack of education, skills, creativity and inventions among the population is a crucial factor in underdevelopment as education and skills are required to raise administrative capacities and capabilities of the people in developing their skills, enterprises, initiative, adaptability and attitudes.

Adeniyi (2008) opines that for a country to ensure creativity and inventions, that country needs a comprehensive education that will impart and impact the right attitudes, skills and knowledge as well as stir up the productive potentials of the citizenry. Hence, functional Social Studies education can be used to address these challenges in the country.

Nigeria being one of the developing countries, is desirous of national development in order to attain the goal of building a united, strong and self-reliant nation. Nigeria, according to Ogankunle (2008) believes in the capacity of functional education to promote and strengthen creativity and inventions for a united and strong nation. It, however, needs to be noted that creativity and inventions via functional education are not inborn rather they are developed. In essence, it takes training and acquisition of essential skills and experience for them to be developed. Social Studies education by scope and nature is well

disposed to defend this process. This is in agreement with Nebraska Social Studies Mission Statement (1995) that:

“The mission of the Social Studies is to develop capable citizens who are creative, inventive, empowered with knowledge, skills, and attitudes enabling them to make informed decisions in culturally diverse and interdependent world”. In addition, it equips the youths and other learners with skills that will make them engage in proper interpretation of their environment and serves to assist them responsibly, adapt to the environment or alter the same as situation may demand (Akinola 2008).

Social Studies education frees learners from the possible imprisonment of the environment and makes the learners to be masters of complexities that the environment is prone to, specifically, Social Studies education develops in learners the following:

- (i) Intellectual skills: This is ability to grasp new information and engage in critical reasoning that involves creativity and inventions.
- (ii) Personal life skills: The learners are made to develop positive attitudes and behaviours, and gain emotional stability.
- (iii) Social skills: The learners are developed in the areas of interpersonal relationship with respect to comradeship, friendship, cooperation, leadership and fellowship.

(iv) Entrepreneurial skills: Learners are exposed to information that could assist them in pursuit of career in life.

The above reveals the fact that functional Social Studies education is given to total development of learners. When this is allowed to be in place, learners would have been sufficiently prepared to take their places in the society and at the same time act responsibly in such position with effective and efficient capabilities.

The experiences acquired in Social Studies instructional processes are translated into practical living by learners to encourage warm human relationship, co-operative community living and national and political stability paving way for efficient and effective development in all facets of national life.

Functional Social Studies education can be used to address the challenges of creativity and inventions in a country by facilitating economic efficiency in the life of individuals. This is because, this type of education provides experiences that build attitudes, understanding and skills essential for effective workmanship. Effective work habits, study skills and perseverance are emphasized in carrying out individual and group responsibilities. Functional Social Studies education will also help to develop in the life of the individuals the needed background information on economic activities, problem of production, distribution and consumption and also on the problem of development so that they can become

competent workers at home, community and nation (Michaelis, 1964).

Functional Social Studies education helps to foster creativity and inventions by helping students or individuals to know and understand the available resources in their countries and how to go about utilizing such resources for the development of their countries thereby ensuring effective and efficient national development.

Above all, creativity and invention can be achieved by any country with functional Social Studies education that helps to inculcate in the life of an individual the spirit of acceptance and of respect for the worth of others. This type of education is seen as a means for the inculcation of desirable values and social attitudes in the life of an individual and as a means of social reform. Some of the societal values to be inculcated are honesty, fair-play, hardwork, patriotism, obedience, discipline, loyalty, respect and self-confidence, etc. These are desirable moral values needed in the life of individuals that go a long way to strengthen capabilities and to ensure creativity and inventions in the country.

Conclusions

Functional Social Studies education can be seen as the effective tool for solving the nation's problems for instance, the problems of creativity and inventions in developing countries like Nigeria. Nigeria needs this type of education that will impart and impact the right knowledge, skills and attitudes

as well as stir up the productive potentials of the citizenry. The paper under-scores the reality of functional education offered by Social Studies as a problem solving discipline and very crucial to realizing creativity and inventions.

This is on the account that Social Studies offers education that provides individuals with the relevant skills, attitudes and values that are capable of addressing the problems and issues of the country especially the third world countries.

Recommendations

For creativity and inventions to be achieved, functional Social Studies education has become inescapably imperative. Also, in order to contribute meaningful to solving the problems confronting the society, the bottom line is that functional education is the hinge on which the door of literacy is held and which promotes excellence in every sector. Based on this, the paper recommends that:

Social Studies education should be enlisted as a compulsory subject and should not be terminated at the junior secondary school level. It should not be taken as elective or general studies programme that are hardly taken seriously, but as a core course of study. This will go a long way in assisting the youth to exhibit and discharge their skills, creativity, inventions, right attitude and knowledge that will accelerate and strengthen national development in the country.

The governments, both at the state and federal levels, through the Ministry of Education in conjunction with other regulatory bodies/agencies in education should also provide basic infrastructures, teaching and learning equipment, materials and other resources that are grossly inadequate for the ever increasing students population at every level. On a final note, re-structuring of Social Studies curriculum to strengthen the teaching and learning responsibilities by the youths towards their communities, individuals and corporate existence of their beloved nation, Nigeria. This can be achieved through training and retraining of Nigerian teachers on the skillful use of suitable strategies that will enhance effective functional education for national productivity that will ensure creativity and inventions in the country.

References

- Adelore, O. Okediran, A. & Augustus, O. (2005). *Basic education for socio-economic and political development in Nigeria. issues in language communication and education*. Ibadan: Constellation Books.
- Aina, N. P., Adeyoyin, F. A., Obilo, E. E. & Ahmadu, S. U. (1982). *Social Studies: A book on methodology*. Ibadan: Evans Brother Ltd.
- Ajeyeleme, D. (2008). Fundamental education and leadership excellence for national development. A key note address presented at the 3rd National Conference of school of Education, Adeyemi College of Education, Ondo.
- Akinola, O. O. (2008). Social Studies education and leadership excellence. National Conference of School of education, Adeyemi College of Education, Ondo.
- Dubey, D. L., Onyabe, V. O. and Perokupek, P.E. (1980). *Social Studies methods for Nigerian teachers*. Ibadan: University Press Limited.
- Durosaro, S. O. (2008). Functional basic education for an egalitarian and self-reliant society. A lead paper presented at the 3rd national Conference of School of Education, Adeyemi College of Education, Ondo.
- Fadeiye, J. (2005). A Social Studies text-book for colleges and universities, part 2. Ibadan: Akin-Johnson Press and Publishers.
- Fafunwa, B. A. (1982). African education in perspective. In FaFunwa, Babs A. & Aisiku, J. U. (eds.) *Education in Africa: a comparative survey*. London: George Allen & Unwin.
- Federal Republic of Nigeria (2004). *National Policy on Education*. Lagos: NERC Press.
- Inyang, I. I., Akpan, C. U., Udo L. A. (2009). Revising citizenship education curriculum for national development. *Journal of Curriculum Organization of Nigeria (CON)*. 3 (1&2) 59-68.
- Kissock, C. (1981) *Curriculum planning for Social Studies teaching*. New York: John Wiley and Sons Ltd.
- Michaelis, J. U. (1964) *Social Studies for children in a democracy*. New Jersey: Prentice-Hall, Inc.
- Mijint, H. (2008). *Education Development Encyclopedia Britannica*. Ultimate references suit. Chicago. Encyclopedia.

- Nebraska Department of Education. (2008) *Social Studies education*. Nebraska
<http://www.indestatence.us/ss/>.
- Ogankunle, S. J. (2008). Functional basic science and technology education; an antidote to national development in Nigeria. A paper presented at the 3rd National Conference of the School of Education. Adeyemi College of Education, Ondo.
- Oganwu, P. P. (2002). Toward a culture laden citizenship education for Nigerian schools. A paper presented at the annual seminar of the School of Arts and Social Science, College of Education, Warri, held between 2nd -28th October.
- Ogundare, S. F. (2004). *Foundations of Social Studies*. Western Zone: University of Ibadan.
- Okonkwo, M. E. (2004) *Social Studies for effective citizenship* (Ed. Ololobou, Y. P. S.) Kano. The Kano, Zaria Social collective.
- Ololobou, C. O. (1989). *A structural analysis of the national Social Studies curriculum for JSS in Nigeria*. Unpublished M.Ed. Thesis, Faculty of Education, Bayero University, Kano.
- Olowo, O. O. (2008) Social Studies as a tool for achieving citizenship training in Nigeria education reforms. *The Nigerian Journal of Education Review* 7 (7) School of Education, Federal College of Kano: 170-179.
- Olowo, O. O. (2009) Functional Social Studies education for national productivity: An antidote to sustainable development in Nigeria. *Nigeria Journal of Curriculum and Instruction* 3 (7) 30-35.
- Ukeje, B. O. (1970) *Foundations of education*. Benin City: Ethiope Publishers.