Social Studies and Biology Education as Mobilization Strategies for Global Citizenship

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Abstract

In recent years, a greater emphasis has been placed on how nations socialize and prepare the next generation of citizens. Schools have a key role in this essential educational process. Both citizenship and democracy features prominently in education around the world. There are elements of citizenship education in many subjects. Education is an instrument for the" production" of good citizens. It affords students to develop as successful learners, confident individuals and citizens who will make positive contribution to the society. Democracy needs active, informed and responsible citizens, Citizens who are willing and able to take responsibility for themselves and their communities. The obligation of this paper is to highlight teaching strategies that will help develop civic skills and scientific values in students for a sustainable future by educating students from early childhood to become clear thinking and enlightened citizens who will participate in decisions concerning the nation. Social studies and biology education should be geared towards developing critical thinking skills which will translate to willingness to investigate issue and readiness to participate in actions aimed at achieving sustainable future. Biology education provides an understanding of public health as a critical component of good citizenship and a prerequisite for taking responsibilities for building healthy societies. The paper focuses on social studies and biology education as a tools for achieving citizenship. It presents the relevance of social studies and biology teaching strategies as instruments for effective citizenship education.

Keywords: *Social Studies, Biology Education and Global Mobilization*

Background to the Study

Mobilization is a process to raise awareness, which impels and involves educational, local, national institutions, local leadership and local communities for collective action towards common vision (Rids, 2012). It is the act of organizing and encouraging a group of people to take collective action in pursuit of a particular objective. It entails a group of people transcending their differences to meet on equal term in order to facilitate a participatory decision-making process. In other words it can be viewed as a process, which begins a dialogue among members of the society to determine who, what and how issues are decided and also to provide avenues for everyone to participate in decisions that affect their lives. On the other hand strategies are approaches that a teacher for example adopts to explain subject matters to the learner. They offer general guidelines on the purpose of teaching and the content to achieve the objectives.

Social studies is an integrated study of social sciences and humanities to promote civic competency within the School programme. Bozimo (2007) sees social studies as a specialized area of study that deals with the study of man and his environments and how they interact with one another. Environment in this context, connotes, social, political, cultural and technological aspects of man. The purpose of social studies education is to help young people develop the ability to make informed and reasoned decisions for the good of the public as citizens of a culturally diverse and democratic society in an interdependent world. It engenders sound education for the citizens as well as inculcates a sense of social consciousness and social responsibility.

Okam (2011) observes that the main goal of social studies education is to generate and develop intelligent, responsible and self-directing citizens who are expected to explore opportunities to develop their potentials and contribute their own quota to the improvement of all groups living in the society. Babatunde (2013) adds that the main focus of social studies education is the transformation of citizens for national transmutation. It is an instrument for positive change in terms of knowledge, attitudes, values and skills required to be responsible members of the society. From the views of scholars above, it is deducible that social studies education may be seen as the kind of education designed to enable the students have the right form of citizenship education, values, aspirations, skills, norms, customs, attitudes, science and technological know-how that will enable them be functional members of the society.

Education is viewed as a prerequisite to good citizenship. It helps citizens make good decision and deal with demagogues who will delude them. Where the demands of good citizenship are placed upon all, only schools can provide to all the

education that all need (Soder, 2003). Science literacy is also routed as a key to good citizenship. Good citizenship is viewed as requiring both intellectual skills (such as critical thinking) and participatory skills (Roth, 2003)

Citizenship education involves preparing young people in the essential areas of knowledge, and values for an informed, responsible and participative citizen of their respective countries. It takes many forms and there is a growing trend across the world that is based upon the concepts, processes and values of education for democratic citizenship (Sim and Print, 2005). Education is a prerequisite for both individual and national development. It prepares students to play their future role effectively in an attempt to promote and sustain a country's socio-scientific development. It teaches one to think intensively and critically. In a democratic nation like Nigeria, citizenship education should be basic in order to involve the populace in governance. However in Nigeria, we still have a long way to go in achieving the objectives of citizenship education (Alulu and Ifedili 2012).

Objectives of the Study
1. To advocate for constructive teaching.
2. Use teaching strategies to challenge and develop students towards dynamic citizenship.
3. Provide learners with opportunities to develop new ideas.
4. Provide experiences to reinforce and strengthen students understanding.
5. Challenge and extend students conceptual understanding and skills.
6. To aid students transfer and apply understanding of concepts to different situations.
7. To increase students interest in things and phenomena of nature and develop the attitude to pursue the truth.
8. To aid students cultivate the ability to think and deal with problems that arises in their communities.
9. To deepen understanding of facts and principles of natural sciences that are the basis of life and industry, to develop the ability to use such facts and principles, to foster creative attitude.
10. To keep abreast of the rapid progress of modern science and its technological achievement around the world.

Methodology
1. Civic engagement and service learning.
2. Teaching with research based methods.
3. Utilizing field laboratories
4. Using indoor laboratories.
5. Teaching the process of science.

6.   Adopting guided discovery problem strategy.
7.   Applying project based method.
8.   Using group work method or cooperative learning.
9.   Practicing documented problem solving strategy.
10.   Employing Socratic questioning technique.
11.   Promoting based environmental projects.
12.   Adopting school science-working science continuum**.**

The Role of Social Studies Education for Citizenship
The role of a good and responsive citizen is important to nation building. A good citizen displays a sense of obligation and commitment to the customs, laws, traditions, and nationalistic ideas of his country. Students should be taught the qualities of a good citizen which include humility cooperation, honesty, and display of shared responsibility, diligence, obedience, trustworthiness and integrity. If citizens (students) imbibe these qualities of good citizenries at an early stage in life, by the time they assume responsibilities they will put all they've learnt in to practice because there qualities are already part and parcel of them. Adeyoyin (1995) is in agreement with the above ideal. She opines that social studies focus on developing the right values, attitudes and abilities of students.

Social studies inculcates in citizens the spirit of patriotism, national consciousness, unity in diversity, respect for fundamental human rights of citizens, and respect for democratic values. Ikem and Oghenemiderhi (2013) opine that social studies will help give fairness, equality and unity for national development. It enhances citizenship education through inculcation of respect for the rule of law, dignity of labour, hard work and dedication to duty as element of good citizenship for national transformation. Abdullahi (2007) supports the above function of social studies by maintaining that the philosophy of social studies education hinges in part on the idea that schools should not only train individuals to be just and competent but to function as contributing and participatory members of a free constitutional democratic nation. This implies that students must rely on the knowledge, skills and awareness of the right of minority and majority groups to co-exist and worship freely, respect for law and order and respect for the general public and also property of Nigerians and non-Nigerians.

Social studies education could help instill democratic values on the citizens. Mike (2013) observes that social studies education has the aim of promoting civic competences of the citizens. In support of this view Mbaba and Omabe (2012) observe that social studies is a vehicle through which desired cultures, values and norms of the society are inculcated to its young ones. Hence social studies as an agent of citizenship education could help impact on the youths' democratic values

like recognizing opposition, voting rationally and defending the nation, respect for the rule of law and constituted authority. When these are done, it could lead to national development. From the above discussions on the role of social studies education through citizenship, it is pertinent that social studies is slow at achieving the objectives of citizenship education this informs the need to mobilize strategies that will go a long way in achieving the objectives of citizenship education.

Social Studies Teaching Pedagogies as Mobilization Strategies for Citizenship
One of the ways of implementing the objectives of citizenship education through social studies is the mobilization of innovative teaching strategies, such as "Take a Stand", " Fish Bowl" and "Problem - Based Learning".

Take a Stand Strategy
An issue is chosen for example 'state police'. The class is divided into three groups, those who strongly support the issue, those who oppose the issue and those who have mixed feelings. The answers from the groups could be, for the strongly support groups. A strong argument in favour of state police could be that since state police will make policing more effective as seen in developed countries like the United States of America and Britain and since security of lives and properties are for the good of the society then it should be encouraged. Another argument from the opposing group could be that since Nigeria returned to civil rule in 1999, she has been facing enormous security challenges like ethno-religious riots, militancy, kidnapping and insurgency. Stabling state police at this time could aggravate the security situation which is multi-dimensional. For the mixed feeling group it would not be wise to encourage state police till the country becomes more advanced and laws more effective as is the case of developed countries where it s practiced. The strategy is inclusive and greatly involves the students and enables them hold opinions on national issues which can be effectively backed up by facts and existing realities to effectively contribute their quota as conscious and informed citizens.

Fish Bowl Strategy
To use this strategy a topic like "Revamping the agricultural sector in Nigeria' is selected. Five to seven chairs are arranged to form the inner circle for the 'fish' that is the chief discussant. Then other chairs for the outer circle for the observers in the inner circle, the 'fish' kick –start the discussion on problems of agriculture and possible solutions. Each 'fish' is given thirty seconds for the discussion. At the end of the discussion, the teacher asks the observers in the outer circle some questions to find out how attentive they were when the members of the inner circle discussed. Such questions include which are the most persuasive points made? What are the counter points that did not surface? Which conclusions merit support? And what were some of the most effective techniques employed by the inner circle? As the

members of the outer circle answer these questions, the teacher and the members of the inner circle give corrections where necessary. In this way all hands are on deck both teacher and students. Learning is internalized by students and they start implementing policies before they assure responsibilities.

Problem – Based Learning Strategy

In this strategy, a problem is selected for example "corruption in Nigeria". Students are asked to discuss the problem under stakeholders' groups which include the government, religious institutions, media programmes and average Nigerian individual. The students are then moved to jigsaw groups (smaller groups) which comprises of roles that will translate into an (government, media, religious institutions and average Nigeria individual) agreement or solution to the problem. At the end of the discussion students eventually agree that the average individual Nigerian should be the target as a solution to the problem of corruption. This is because it is the individuals that make institutions and societies. As a result if an Nigerian individual can make a conscious decision to be upright it will go a long way to rid Nigeria of corruption. Problem - Based learning helps students to put their heads together to solve endemic problems of the nation and proffering solutions themselves and help them make valuable contributions on citizenship even as students. It makes them agents of change even before they assume critical positions in the society. It develops a sense of patriotism in them which is a mark of a true citizen. Mobilization strategies through social studies education for citizenship, involves powerful social studies teachers who develop thoughtful teaching strategies for lessons that allow students to analyze content in a variety of learning modes. Students work individually and collaboratively using rich and varied sources to reach understandings, make decisions, discuss issues and solve problems.

Science Education for Citizenship

Willington (2003) argues very strongly in favour of the role of science in citizenship education. He emphasizes the need for scientific knowledge, skills and action. Citizen science also known as crowd science or civic science is defined as a scientist whose work is characterized by a sense of responsibility, to serve the best interest of the wider community.

Science education for citizenship is the minimal acceptable level of knowledge or skills required to function effectively in a society that is both increasingly complex, scientifically and technologically dependent (Kostas and Koulaidis, 2002). New discoveries and technological inventions are making the world increasingly complex, hence fostering students' scientific and technological literacy for citizenship should be the primary goal for science education (Ryder 2002). The rise

of citizen science should put schools on the frontline of research turning classrooms into laboratories and students into pioneers. It should all be part of an exciting new method of conducting scientific research by charting the surface of mars to move down to earth activities such as counting bugs. There is a myraid of valuable projects which science teachers can get their class involved with.

Science education for all aims at developing scientific literate citizens through problem solving and activities that can promote the development of competences relevant for a responsible and well informed citizen. By adopting functional pedagogic strategies to teach, science, students may develop conceptual, epistemological and procedural knowledge as well as interpersonal skills. The exponential growth of scientific knowledge together with the idea of science for all requires schools to develop a lifelong learning competency, so that after leaving school citizens (students) can continue not only to update their knowledge but also use new knowledge in their individual and professional lives towards good citizenry (Leite, Vieira, Slva and Neves, 2007). Every citizen plays a role in the development of the society to which he/she belongs to hence students should be taught in such a way that will enable them play in the evolution of their societies.

Biology Education to Promote Responsible Global Citizenship
The need for responsible global citizenship and sustainable development has been emphasized (Johnton, 2011). Biology teachers should promote the adoption of integrated and interdisciplinary approach toward citizenship education. A citizen science project enlists students to collect and analyze data for real-world research studies. This article suggests that bringing citizen science projects to the classroom can help students understand the relevance of the curriculum objectives. Some strategies are suggested.

Butter flies, tulip bulbs and other insects are all familiar to most young students and would serve as great initiations into the world of participatory science for good citizenship. Each of the highlighted learning projects addresses content, objectives through inquiry perspective. As such, the projects also provide students with a way to 'build scientific skills and habit of mind. All the projects highlighted rely heavily on observation, the basic foundation of scientific skills. In each project students observe and record data, then examine the data to look for trends and ask questions, which is critical to building a scientific frame of mind.

Open Air Laboratory Network (OALN)
It is high time to put the textbooks down and go foraging outside the classroom to help protect the local environment through the Open Air Laboratories. Surveys should be undertaking to run across the environments to learn more about their

state, explore the health of our soils, the quality of air and water, the distribution of animals and the way in which they affect our climate. The science capabilities help students practice the types of thinking, questioning, and actions needed to becom informed citizens.

Analyze Cancer Research Data: Click to Cure Cancer
Your class can contribute to the search to find a cure to the disease using Cancer Research interactive website cell slider. The research allows students to delve into real-life cancer data from research archives and spread up life saving research outside the laboratory. The website presents real images of turner samples to the world for analysis in the form of a simple game of snap. Users are guided through a tutorial that explains which cell to analyze and which one to ignore. Once cancer cells have been spotted by their irregular shapes, users are asked to record how many have been stained yellow and how bright that yellow is by simply clicking on another image that closely matches the sample they are viewing. This information is then fed back to the researcher to look for trends between types of cells and a patient's response to treatment. This strategy will translate into future scientist that will come up with solutions to life threatening diseases. This will exemplify good medical doctors for citizenry.

Project Feeder Watch (PEW)
The project feeder watch is very simple to participate. The teacher should set up a bird feeder and ask the students to observe the birds feeding at it. This project is particularly suited for students because the birds that tend to frequent feeders are easily identifiable. Give the students varied research questions to answer. The project can be used to address several essential content objectives in addition to developing the skills of a scientist. By observing and identifying birds, students will learn about the differences and similarities amongst bird species. They will come to understand some of the needs of living things, primarily food. Additionally, they may observe and understand birds behaviours and link to certain human behaviours, they will also learn about how the environment can affect animal behavior as they observe the feeders on days with varying environmental conditions. This knowledge may spur students as global citizens to go into agriculture towards providing food security.

Insect Hunt
Insects and specifically pollinating insects are the focus of discover life projects. Valuable research data will be collected and students will learn about pollination. Insect hunt enables students collect data in four ways; inventory pollination at a selected site using digital photographs, compare species, provide resting site bowls and soapy water to collect for a more thorough inventory species. The scope of this

research necessitates many data sets from a wide variety of habitat. Pollinators are a key component of global diversity providing vital ecosystem services to crops and wild plants. There is a mounting evidence of pollinators decline all over the world and consequences in many agricultural areas (Gallai, Salles & Vaissiere, 2009), students as citizens may use a bioeconomic approach through insect pollinators to sustain agriculture hence enhance the economic power of their communities and the wold at large.

Project Pigeon watch
In this project, the teacher will raise pigeons in the school and ask students to count the total number of pigeons and count the number of each small selection of color morphs and count any courtship colors. Participating in pigeon watch helps students to learn about hereditary and inheritance. Using pigeons as the basic, teachers could address many genetic concepts (monohybrid) crosses, incomplete dominance and genotypic ratios). As the students observe and classify actual pigeons, it will be like seeing the punnette squares life.

Observing phenotypic distribution in a real population and comparing them to their expectations from punnetic square will be a powerful and memorable lessons. Perhaps, who knows this may lead to solving some genetic issues in the society. Birds provide a door way into nature and scientific study, they are easy to see and study. They engage in fascinating behaviours and play important roles in the ecosystem that sustains life. Birds are excellent indicators of environmental health. Their changing population often provide clue to the overall health of their habitat. Ornithology may create avian enthusiasts who may venture into poultry farming towards citizen emancipation. Studies (Collar, Long, & Robles, 2007) show that birds provide biological control services worth millions of dollars in farmlands and forest. Growing these biological control agents is of great economic importance.

Water Analysis Projects
This project seeks to test water quality at diverse locations. Students should be asked to bring water from their surroundings. As they collect and alsyze water samples, students will learn how human can affect an ecosystem. They will also gain the experience of using equipment and reagents accurately and will learn about many parameters that can be measured to determine the health of an ecosystem. They will wonder why the pH of a river in a certain location is lower than the pH of a stream water or variations in the pH of well water from varying locations. Discussion of biodiversity, biological niche and animal adaptation to the environment could ensue. This awareness could lead to empowerment in environmental actions, skills, locus of control and intentions to act.

Conclusion

Empowering and educating people to participate as citizens in an evolving, social, scientific and political order is one of the most important and challenging tasks in human development. The provision of high quality education is the responsibility of the government, community and schools. Each of these three elements must be present and fulfilling their roles.

Schools should strive resolutely to pay special attention to improving curricula, the contents of textbooks, including new technologies with a view to educating caring and responsible citizens committed to peace, human rights, democracy and sustainable development, open to other cultures, respectful of human dignity and differences, and able to prevent conflicts or resolve them by non-violent means, understand what it means to belong to communities, to understand the language of morality, of rights and responsibility towards others.

Recommendations

1. Teaching should be based on constructivism.
2. Hands on science teaching strategy should be adopted.
3. Social studies and the science curricula should promote the idea of developing citizenship capabilities.

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