

CREATING WATER, SANITATION AND HYGIENE (WASH) PROGRAM AWARENESS IN SCHOOLS: A TOOL TOWARDS THE SUCCESS OF COMMUNITY WASH PROGRAM

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Abstract

The provision of safe water, sanitation and hygiene (WaSH) in schools has been established to improve health, boost educational achievement, and promote gender equity which has a positive impact on the society. However, in an earlier study conducted, with public secondary schools as the focus group, it was discovered that students' knowledge and perceptions about the importance of WaSH are very low. Moreover, there is wide disparity between the WaSH programs being instituted at these schools and the schools' facilities, thus making it difficult to impress the importance of this program in students. The previous study provides background data and insights on the practice levels and the need to apply suitable strategies to increase the effectiveness and success of the WaSH program in the future. One way to increase the effectiveness of the WaSH program is to stimulate students' interest in science and technology that could build their capacity in combating WaSH challenges. The main goal of this paper is to propose an idea on how to motivate students about WaSH issues while increasing their interest in Science Technology Engineering and Math (STEM). The presentation will propose STEM educational tools that can motivate and educate young men and women about water and sanitation. In addition, the presentation will show how to create awareness that would help integrate WaSH global standards into Nigeria's national programs and set specific targets at local level in order to ensure sustainability. The aftermath of the implementation of this idea is expected to create increased awareness of students in secondary schools and other higher levels on WaSH services. This would engender access to, and practice of safe drinking water, sanitation, and hygiene knowledge to all the people in the community and key-stakeholders for long-term sustainability.

Keywords: WaSH, STEM, Educational tools, Awareness, Schools, Community, Sustainability.

1 INTRODUCTION

The challenges of water supply, sanitation, and hygiene (WaSH) practices in communities of developing countries are becoming alarming due to incessant reported cases of water related illnesses, which continues to be one of the major health challenges in many communities of these nations [1, 2, 3, 4]. According to a report by UNICEF and WHO, inadequate water, sanitation, and hygiene issues account for a large part of the burden of illness and death in developing countries [5]. With incessant reported cases of water related diseases in the hospitals and primary health care centers, which is a clear indication of drinking water contamination, poor sanitation, and abysmal hygiene practices, it was imperative to find an alternative on how the communities could be reached to proffer solution to the looming danger on public health. The teacher-student-parent-community approach on WaSH practices has been stressed to be a route by which the message of good and acceptable hygiene and sustainable practices can be entrenched [6, 7]. This is because; schools occupy the pride of place in the total community sanitation campaign. It has also been established that safe WaSH in schools can improve health, boost education accomplishment, promote gender fairness and have a constructive influence on communities [1, 8, 9]. Schools are recognized to be the principal place of education for students who have a central place in the community. School sanitation and hygiene education have been given prominence and the effective implementation of plans on physical infrastructure, hygiene education and monitoring at school will result in a change in schools children's behavior that will afterward impact on the community [1, 9, 10]. Total Sanitation Campaign identifies the position of children in comprehending and popularizing novel ideas which could be useful to the community [8].

2 PRESENT CHALLENGES WITH THE SCHOOLS VISITED IN A PILOT STUDY ASSESSMENT

The result of a pilot study conducted on WaSH program in Southwestern Nigerian public schools, shows that the knowledge and perceptions of students were inconsistent with the program of WaSH. The schools are not provided with any hygiene and sanitation learning materials which could enhance students' understanding on the intricacies of WaSH program. The available WaSH facilities are not well maintained and most of them are in deplorable state with no provision for urinals. Most of the schools visited have high population which range between 576 – 3800 students [11]. 20% of the schools visited had no other source of water supply than borehole and a significant proportion of the schools do not have toilets that is gender accommodating. These schools are within neighboring States and could be a reflection of what is obtainable in other public schools. Majority of the schools do not have washing facilities not to talk of soap to clean hands after using the toilets. Many of the schools have over shot their enrollment capacity and this has put much pressure on the limited sanitation facility of which the consequence is having more than 200 pupils per drop-hole [11]. In addition, the enlightenment on the need for regular practices concerning WaSH is not entrenched in the students. This was so glaring by the non availability of information, education and communication (IEC) materials or posters that incorporate WaSH knowledge and practices in both the classrooms and the teachers' offices. There exists a potential of high prevalence of water and sanitation related diseases, which could cause many students to fall ill. These challenges have a way of replication in the community at large.

However, if sanitation and hygiene related issues are to be reduced and to protect the natural environment, schools would have to be provided with enough and adequate facilities. Though, facilities in themselves are not sufficient, behavioral changes are also required. This will lead to proper use of the facilities. For any desirable changes to happen in the community through the schools, knowledge must be supported with enabling and reinforcing factors. This stresses the importance of combining hygiene education with the construction of water and environmental sanitation facilities and involving the community and health institutions [10]. It is very important to include hygiene education in the school curriculum to instill good hygiene, sanitation, and water handling practices. This is why the place of Science Technology Engineering and Mathematics (STEM) education cannot be undermined.

STEM education consists of activities that cover all levels of education in teaching and learning in the fields of science, technology, engineering and mathematics. The shortcoming in student interest in mathematics and science, and achievement is traceable to teaching quality and non-availability of educators who are passionate about the subject [12]. This has consequently affected the number of students who are interested in enrolling for courses that are science and engineering related: courses like environmental engineering, public health and environmental sustainability, which takes care of the basic knowledge of water supply, sanitation and hygiene practices. Therefore, the main goal of this paper is to propose an idea on how to motivate students about WaSH issues while increasing their interest in Science Technology Engineering and Math (STEM). The paper proposes STEM educational tools that can motivate and educate young men and women about water and sanitation. In addition, the paper intends to show how to create awareness that would help integrate WaSH global standards into national programs and set specific targets at local level in order to ensure sustainability. The aftermath of the implementation of this idea is expected to create increased awareness of students in secondary schools and other higher levels on WaSH services. This would engender access to, and practice of safe drinking water, sanitation and hygiene knowledge to all the people in the community and key-stakeholders for long-term sustainability.

2.1 Components of the WaSH program

There are two components that would make the desired results achievable. Each component has specific activities to be employed, both at the planning and implementation level.

2.1.1 Hardware Component

This is the total package of physical amenities for the supply of drinking water, sanitation and availability of hygiene facilities in the school premises. Most schools do not have access to basic sanitation systems; therefore it is essential to concentrate on simple efforts, like disposal facilities, which have the highest health implications. Reports from some study have shown that those without easy access to latrines will often resort to open defecation methods. Schools may be the first encounter with working toilet, running water, well structured sanitation facilities and a clean

environment [7]. This will facilitate their thoughts on what they presumed possible for their communities. There will be an increase in students' enrollment in public secondary schools and visitors from the community to the schools to learn on sanitary and public water management systems. There would be a replication of the project deliverables alike in nearby communities since the visitors to the schools would have seen it working.

2.1.2 Software components

Software components include education on health and hygiene practices that is aimed at promoting conditions at school that prevent water, sanitation and hygiene related illnesses [7]. There exists a challenge with funding of the software component of WaSH which is supposed to support the hardware facilities in place. This includes: community mobilization, sanitation and hygiene promotion, operation and maintenance activities. It is important to understand the mechanisms that work, and how much investment is required to achieve expected outcomes both at short- and long-term, in promoting WaSH practices. The youth of today becomes future adult. It is therefore necessary to concentrate on them by giving those tools and knowledge that will change their behaviour so that the future generation can be better for it. Young people in schools are open to new information and can be easily motivated. Providing adequate level of water supply, sanitation and hygiene in schools is of direct relevance to the Millennium Development Goals [5]. It is good to educate students in schools on water saving techniques and on the best way of installing WaSH facilities. There should also be a detailed instruction on water treatment techniques with the use of disinfectants such as boiling, chlorination, and filtration, as well as educating people on proper storage and handling methods that will forestall potential water recontamination. The student should be provided with detailed instructions on keeping themselves and their immediate environment clean. What they see or learn in school, they try to apply in their various homes. At their leisure, they can play an effective role in motivating their parents, relatives and neighbors towards water, sanitation and hygiene practices. This would bring about increased and intensive community sensitization campaigns around improved water supply, sanitation initiatives, personal hygiene and community waste management. This would ultimately result to reduced cases of diseases such as: dysentery, cholera, diarrhea and malaria at the community primary health care units.

2.2 STEM Educational Approach

STEM education is an integrated curricular approach to studying grand challenges such as: energy efficiency, resource use, environmental quality, and hazard mitigation. The competency that is required in order to understand and address these issues is clearly related to the STEM disciplines [13, 14, 15]. One of the purposes of a STEM education is to develop, recruit, and retain top students, scientists, and engineers. Several functions of a STEM education that is geared towards solving problems, innovation, invention, self reliant, logical thinking, and technologically literate have been outlined [13] in [16]. These factors point to the fact that students should be able gather, organize and process data in order to draw meaningful conclusion. This conclusion should be applicable to new situations. Students should also be able to use STEM creatively by applying them in implementing solutions. The knowledge of STEM will boost the ability of students to apply rational and logical thought to develop and process ideas to fruition. The technology component allows for a deeper understanding of the three other components of STEM education which allows students to apply what they have learned, utilizing computers with specialized and professional applications [16, 17].

Bybee also expresses that, STEM literacy involves the integration of STEM disciplines and four interrelated and complementary components. These are: Acquiring scientific, technological, engineering, and mathematical knowledge and using that knowledge to identify issues; Understanding the characteristic features of STEM disciplines as forms of human endeavors that include the processes of inquiry, design, and analysis; Recognizing how STEM disciplines shape our material, intellectual and cultural world; and Engaging in STEM-related issues and with the ideas of science, technology, engineering, and mathematics as concerned [18].

Transforming STEM literacy into school programs requires a way of organizing education so that the respective disciplines can be developed, integrated and implemented in all the schools which ultimately have a way to reaching the community.

3 REACHING OUT TO THE COMMUNITY (AWARENESS)

Since some project stakeholders may hardly have access to social media platform, planning could be to hold awareness meetings, particularly with district, wards and local units in target communities where people would be informed of the program objectives. There is need for school and village committees to meet regularly in order to better integrate the various activities related to WaSH education, thus increasing its effectiveness. This idea would also be publicized through Twitter, Facebook, LinkedIn, and other social media outlets. The use of weekly jingle/drama series on radio and TV, local news papers and community bulletin, and distribution of mentoring magazines in every school term to create awareness and developments on the project goals and objectives is also a laudable approach. Local and State government authorities and ministries (Education, Health, Water Resources and Environment) should be contacted for intervention and aid. Ministry of Education Department of Curriculum administrators should also support in the communication of the project activities.

The steps of the program should be in phases to map out strategies to realizing the program's overall goals. Meetings with stake holders should be held to determine the most effective by which the schools can be reached on how to provide an integrated package that will help the community. There should be deliberations on appropriate design/technologies for piped water, boreholes, and improved latrine technology. Working effectively with parents-teachers association (PTA), and school management board (SMB) to integrate water-sanitation-hygiene into the curriculum is also key. The schools in the program area should be visited at intervals during the academic session by the team working on this program and conduct sensitization meetings with all project stakeholders. This study should be done in liaison with heads and principals of schools, community leaders, and development partners who have good knowledge of the target areas. Once the areas have been identified, the team should then generate project designs and drawings of the facilities to be constructed. The school representatives should be involved in project implementation to enhance project ownership and sustainability. The next stage should be to mobilize resources. All beneficiaries in target communities could be asked to contribute locally available construction materials like sand, gravels, and blocks which can be used in construction of the water supply and sanitary facilities. It is advisable to use local craft men in building facilities for schools inclusive of boreholes and gender friendly sanitary toilets. The idea is that, when the community is involved in the installation of facilities, it helps in promoting sanitation in schools. Personnel within the community can even volunteer to render service and persons may be willing to make cash contributions which is organized through parent-teacher associations, local chiefs and councilors. People have pride in what they have constructed themselves, and in many cases reducing the rate of vandalism [19]. The standards for WaSH in schools by UNICEF should be used as the guideline to appraise the adequacy of the various WaSH components. It is also expedient to provide IEC materials to the schools. There should be a provision for the development of long term comprehensive approach to ensure sustainability and extension of the project to all parts of the communities.

3.1 National Guidelines and Policy Context

Nigeria has a population of over 151 million people, of which an estimated 41% do not have access to basic sanitation and 53% are not using an improved source of water [20]. It is expedient that National program managers put in place the essential WaSH actions that are required in disseminating adequate information and to determine what types of water, sanitation, and hygiene approaches that is required in the country's program. It is also important to examine the types of potential WASH approaches, the cost of these approaches, and which programs might fit. These activities should be prioritized for appropriate integration into a national plan. School hygiene education is primarily the task of school teachers and coordinators but experience has also shown that for bringing about changes in hygiene behaviour, traditional class room teaching is not totally effective and alternative ways of bringing about the necessary changes would be determined. Existing literature have also stressed the importance of involving outside educators whose roles are limited to special activities and campaigns. This involves staff of water supply and sanitation programmes, public health staff and environmental sanitation officers etc, who have the practical and day-to-day experience on the challenges in WaSH sector. The impact of the health practices and messages brought home by students can be increased if there is close collaboration between the school and health workers. However, the teachers should have a coordinating and stimulating role [19].

4 EXPECTED RESULTS

The results of this program will be: 1. Detailed information about the condition of facilities would be made available to determine the need for repair of water sources such as ponds, repair of existing water supplies such as bore-holes and pumps, implementation of new deep tube wells, small piped water schemes from bore holes and provision of toilet and sanitary facilities; 2. Document of the increased awareness of students in schools on WaSH services through the use of tools that simulate environmental processes for cleaning water will be performed; 3. There would be capacity building of all key-stakeholders (students, teachers and the community people) for long-term sustainability and scaling up of successful models; 4. There would be increased access to facilities for the public schools which would provide a good learning environment for students; 5. There would be additional and complementary efforts from the government and other stakeholders as a support to achieving 100% sanitation in the entire community.

5 CONCLUSION AND RECOMMENDATION

Generally, the present water, sanitation, and hygiene condition in many of the schools are not satisfactory. The WaSH sector has weak monitoring and evaluation systems, with limited evidence based data collection, poor analysis and documentation which are important for improved sector advocacy. Capacity building to evaluate and advocate equity issues also requires attention. Transforming STEM literacy into school programs requires a way of organizing education so that the respective disciplines can be designed, developed, integrated and implemented in all the schools which ultimately have a way to reaching the community about important WaSH issues. Thus, helping student to utilize computers with specialized and professional applications of technology in greater detail and hopefully, increased awareness of both STEM and WaSH related issues. Therefore, to maximize the potential of students as the most persuasive advocates of good WaSH practices in the society, it is necessary to integrate WaSH program into national education policy and schools should be provided with adequate WaSH facilities.

REFERENCES

- [1] UNICEF/IRC, (1998). A Manual on School Sanitation and Hygiene, Water, Environment and Sanitation Technical Guidelines Series - No. 5
- [2] WHO and UNICEF (2010). Progress on sanitation and drinking water: 2010 update. Geneva: World Health Organization and United Nations Children's Fund; 2010.
- [3] Banerjee, S. G. and Morella, E. (2011). Africa's Water and Sanitation Infrastructure: Access, Affordability and Alternatives. International Bank for Reconstruction and Development/World Bank, Washington DC, U. S. A
- [4] Olukanni, D. O. (2014). The South-West Experience of Water, Sanitation and Hygiene (WaSH) Program in Educational Institutions in Nigeria: The Need for Policy Implementation. Oral Presentation at the International Conference on Technology, Education and Development (INTED 2014), Valencia, Spain, 10-12 March 2014.
- [5] UNICEF and WHO (2012). Progress on Drinking Water and Sanitation. Joint Monitoring Programme for Water Supply and Sanitation. ISBN: 978-92-806-4632-0
- [6] School Sanitation and Hygiene Education (2003). The way forward, workshop report, IRC, Delft, The Netherlands.
- [7] Mohandas, P. (2004). Technical Note Series: School Water Supply, Sanitation and Hygiene Education, Department of Drinking Water Supply, Ministry of Rural Development, Government of India.
- [8] Majra, J. P. and Gur, A. (2010). School environment and sanitation in rural India. J Global Infect Dis. 2 (2). 109-111. Available from: <http://www.jgid.org/text.asp?2010/2/2/109/62882> Accessed 03/01/2013.
- [9] African Development Bank in Action (2012). Activities in the Water and Sanitation Sector In the Federal Republic of Nigeria – February 2012.

- [10]] UNICEF/IRC (2007). Towards Effective Programming for WASH in Schools: A manual on scaling up programmes for water, sanitation and hygiene in schools. http://www.unicef.org/wash/files/TP_48_WASH_Schools_07.pdf. Accessed 05/03/2012
- [11] Olukanni, D. O. (2013). Assessment of WASH Program in Public Secondary Schools in South-Western Nigeria. *ARPJ Journal of Engineering and Applied Sciences* Vol. 8 (3).
- [12] Sanders, M. (2009). Integrative STEM education primer *The Technology Teacher*, 68(4). Pp.20-26.
- [13] Morrison, J. (2006). TIES STEM education monograph series, attributes of STEM education.
- [14] Tsupros, N., R. Kohler, and J. Hallinen, (2009). STEM education: A project to identify the missing components, Intermediate Unit 1 and Carnegie Mellon, Pennsylvania.
- [15] National Research Council (NRC) (2010). Exploring the intersection of science education and 21st century skills: A workshop summary. Washington, DC: National Academies Press.
- [16] Lantz, H. B. (2009). Science, Technology, Engineering, and Mathematics (STEM) Education. What Form? What Function? STEM Education article. Accessed 17/05/2014.
- [17] Keefe, B. (2010). The perception of STEM: Analysis, issues, and future directions. Survey, Entertainment and Media Communication Institute.
- [18] Bybee, R. W. (2010). Technology and Engineering Teacher, *Advancing STEM Education: A 2020 Vision*.
- [19] United Nations Children's Fund (1998). A Manual on School Sanitation and Hygiene. Water, Environment and Sanitation Technical Guidelines Series No. 5. New York, NY Available at www.irc.nl/. Accessed 15/01/2012.
- [20] Water Aid, (2009). Nigeria Country Program Evaluation Briefing Note. Access 22/08/2012