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Level of awareness, perception and attitude of senior secondary school students towards water in Chanchanga Local Government Area, Niger state

S. C. Onukogu^{1,*}, P. N. Ugwuanyi² and M. S. Adiaha¹

¹Directorate of Continuing Education, Federal Capital Territory (FCT) College of Education, Zuba-Abuja / Department of Agronomy, Cross River University of Technology, Nigeria

²Chemistry Department, FCT College of Education, Zuba-Abuja, Nigeria

*E-mail address: stella.onukogu@gmail.com

ABSTRACT

This Study examined the level of awareness, perception and attitude of senior secondary school students towards water in Chanchanga Local Government Area of Niger state. Three research questions were formulated for this study. The research questions addressed three parameters which are awareness, perception and attitude. Questionnaires were shared among senior secondary school students, which were used to assess the level of awareness, perception and awareness towards water. The results obtained from this study, were subjected to statistical analysis. The analysis revealed that, there is a significant level of awareness, perception and attitude towards water among senior secondary school students in Chanchanga Local Government Area of Niger State.

Keywords: Perception, Water uses, Awareness, Chanchanga, Attitude

1. INTRODUCTION

1. 1. Background of the Study

One of the most alarming problems in today's world is environmental problems (Günindi, 2010). Although climate change has been attributed to various reasons during the

period from the Industrial Revolution until today, scientists have reached a consensus as to the fact that environmental problems with regard to climate have emerged due to human activities (Leggett, 2007). Humans continuously change the environment, thereby creating threats to natural resources. One of the most important resources that face the threat of being exhausted is water resources.

After thousands of years of human development in which water has been a plentiful resource in most areas, amounting virtually to a free good, the situation is now abruptly changing. Particularly in the more arid regions of the world, water scarcity has become the single greatest threat to food security, human health and natural ecosystem. Based on a recent International Water Management Institute (IWM1) (Seckler et al., 1998) projection of water supply and demand for 118 countries for the period 1990 to 2025, it is estimated that nearly 1.4 billion people, amounting to a quarter of the world's population, or a third of the population in developing countries, live in regions that will experience severe water scarcity within the first quarter of this century.

Water is a critical resource. It supports human life and culture, ecological functions and economic activities. As demand for fresh water increases, demand management strategies are becoming increasingly important. The benefits of water demand management include cost savings through deferring the need for investment in new infrastructure, savings in the treatment and supply of water to schools and households, and savings in wastewater management through reduced flows. There are a range of possible approaches to water demand management, including but not limited to (Musa, 2004): water loss control and asset maintenance, water-efficient technologies, regulation, non-regulatory policy (eg, education and outreach), economic instruments. Because the introduction of demand management interventions is likely to impact on public, an understanding of students' attitudes, behaviours, and perceptions of water use is important for effective usage successfully communicating with the public.

In addition to the reduction of the amount of water per capita, water worldwide is getting more contaminated at a fast rate and the distribution of water across the world is changing (Ergin, Akpınar, Küçükçankurtaran and Ünal-Çoban, 2009). Therefore, it is important that people should be aware of the circumstances affecting local water resources (Suvedi, Krueger, Shrestha & Bettinghouse, 2000). Water in sufficient amounts and of required quality is the foremost requirements that are needed to healthy individuals and quality production. Consequently, it is an obligation general public not to cause any trouble with regard to water depletion for future generations and to find solutions to increase the amount of usable water today and to use water sparingly. (Ergin, 2008).

For this reason, there is a great deal of responsibility to be assumed by schools that undertake the task of raising responsible, conscious and qualified generations and in turn by the educators in these schools within this context. This is because the most effective way for individuals to become responsible for the environment is considered to be through education (Çabuk & Karacaoğlu, 2003).

The demand for potable water, sanitation, safe food – is often presumed to be low in developing countries because of poverty and this is considered to be efficient since it reflects choices made by individuals in their own best interests. This presumption (common in the economics literature although not in public health) overlooks the fact that the poor are less likely to be aware of health risks than the rich, and low awareness may be just as important as

poverty in suppressing the demand for environmental quality. Since awareness about a public good like environmental quality is itself a public good, it will be under-supplied.

With respect to the above discussion attempt has been made to increase students' awareness and attitude towards their water. In secondary schools for instance, relevant curriculum content such as environmental pollution, sanitation, effects of industrial concentration, composition of atmospheric gases, weather and climate, classification of climate among others were infused into some subjects such as Chemistry, Physics, Biology, Geography, Agriculture and social studies (Jimoh and Ifabiyi, 2000). These subjects are used to promote students awareness towards water and at the same time develop in students the environmental friendly attitude that will enable them live and interact with their environment in a friendly manner.

In relation to the above, Ishaya and Abaje (2008) noted that secondary school teachers have been inculcating environmental contents infused into their various subjects to students in order to increase the knowledge of the water as well as influence their attitude positively towards the water. Againde (2006) noted that schools through classroom instructions are making effort to create awareness of major water management problems. Chinedu (2008) is in agreement with the view that the curriculum contents of most secondary school subjects could be effectively used to promote awareness of environmental problems as well as develop positive attitudes towards solving environmental problems.

One of the main purpose of environmental education in schools is to acquaint and sensitize the young minds to the water conservation and appropriate usage, to inculcate in them healthy personal and social attitude and behaviour towards environment (Iyang-Abia and Umoren 2005). Thus, students must have awareness about water and the problems associated with it so that they can play their role very effectively. The teacher should be aware of the water and environment education aspects only then he can make the future generation aware of the water challenges and their solutions. Nothing affects the quality of our lives quite like the sustainability of natural resources, and no future can be quite so bleak as one in which the natural resources such as water, which are essential for human survival and development are not attended to.

In Niger State, Chanchaga Local Government Area has a good number of secondary schools. In these secondary schools, there are subjects covering water awareness and management. The students were engaged in practical water conservation, treatment and consumption processes through subjects such as physics, primary healthcare, nutrition, water and sanitation and rural development among others in the various communities (Chinedu 2008). However, discharge of pollutants from agriculture, industry, household wastes and others has contributed to the deterioration of water quality. Hence, this has been an ironic reality that we have water everywhere but not a drop to drink. In addition, most residents have been careless with water and believing that the tap will never run dry. An estimated 20 million litres of water a year were used and abused. This amount, contributes to massive drain to reservoir and leading to inconvenience water rationing (Ofoebe 2009). Consequently, people were left to queue up every day for a few buckets of water to satisfy their cooking, bathing and washing needs.

Unarguably, one of the main problems facing Chanchaga LGA is water management which has become an intractable concern from its source to purification, conservation and consumption. In most schools, apart from careless usage, source of water were exposed to nuisance of open and indiscriminate dumping of refuse, human and animal faeces (Anikweze

2008). Piles of decaying garbage which are substantially domestic in nature dominate strategic locations with access to source of water in the communities of Chanchaga. Wastes in such dump sites obviously are sources of water pollution (Okonkwo, A. 2010). Regrettably, this condition characterises environmental culture in Chanchaga. It is important to note that endangered public health situation can exert excessive pressure on the health budget, curtails productivity and worsens rural condition of health. This ugly situation persisted for decades because of the high rate of illiteracy, ignorance, uncivil culture of indiscriminate waste littering and other factors. Keeping all this in view, the present study was designed to assess the awareness, perception and attitude of secondary school students towards water in Chanchaga LGA.

1. 2. Statement of the Problem

The importance of water knowledge is now well recognized and this fact is underscored by the involvement of the Federal Government, State Agencies, NGO and private individuals on environmental awareness creation. In Nigeria, the consequences of water misuse and contamination amongst others have started manifesting in form of depletion, low agricultural yield, drying up of water bodies, pollution etc. To curtail these environmental problems, environment related contents are infused into most secondary school curriculum.

Furthermore, it also appears that such crucial and contemporary study has not been done in Chanchaga LGA, of which this study intends to fill this gap.

Based on the above gap, the problem of the study put in question form is, what is the senior secondary school students' awareness level, perception and attitudes towards water conservation in Chanchaga LGA of Niger State.

1. 3. Objective of this Study

The main objective of this study is to appraise secondary student based on their level of awareness, perception and attitude. However, the following research questions guided the study:

- 1) Are the students aware of the importance of water?
- 2) What is the level of Secondary School students' perception of water in Chanchaga LGA?
- 3) What is the level of Secondary School students' attitude towards their water resources in Chanchaga LGA?

1. 4. Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

H₀: There is no significant difference between the awareness, perception and attitude of Senior Secondary School Student towards water

H₁: There is a significant difference between the awareness, perception and attitude of Senior Secondary School Student towards water

1. 5. Purpose of the Study

The general purpose of the study is to ascertain the level of water awareness, perception and attitudes of senior secondary school students towards sustainability of water in Chanchaga LGA of the Niger State.

Specifically, the study intends to;

- 1) Ascertain the water awareness level of senior Secondary School students in Chanchaga LGA.
- 2) Establish the level of Secondary School students' perception of water in Chanchaga LGA.
- 3) Determine the level of Secondary School students' attitude towards their water resources in Chanchaga LGA.

1. 6. Significance of the Study

The outcome of this study would serve as veritable policy guide for the FGN, Niger State Government and Ministry of environmental and Water resource on conserving water for further generation. Specifically, the policy area would include conservation policies, water supply policy, waste discharge and water education in Niger state. These policies could be improved upon by the recommendations of this study. The results will serve as a base on which both government and other environmentally concerned organizations will either choose to intensify their awareness and attitudinal change campaign strategies towards protecting and conserving the water.

The finding of the study will be significant to the students, teachers, implementers of environmental protection and conservation projects and curriculum planners. The students would be afforded the opportunity to benefit from the study as it will give them the chance to appraise themselves particularly on their level of awareness, perception and attitude towards water and environmental problems. This will be possible since the students will be actively involved in the study as they respond to the item of the research instruments, they will understand (i.e through interactive questions and answers on the items from both students and researcher respectively). Finally, the study will encourage further researches and knowledge on the subject matter.

1. 7. Scope / Delimitation of the Study

Population of the present study consists of senior secondary schools students of Chanchaga LGA. The study has been conducted on 100 students only. The study focuses on the awareness, perception and attitude of students towards water.

1. 8. Definition of Terms

Climate Change. This is a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.

Water Pollution. This is a form of environmental degradation occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds.

Natural Resources. These are materials or substances occurring in nature which can be exploited for economic gain.

Portable Water. This is water that is considered safe to drink. It has been either treated, cleaned or filtered and meets your local established drinking water standards. Or, it is assumed to be reasonably free of harmful bacteria and contaminants and also considered safe to use in cooking and baking.

Recycled Water. This is reusing treated wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, toilet flushing, and replenishing a groundwater basin (referred to as ground water recharge).

Water Conservation. This includes all the policies, strategies and activities to sustainably manage the natural resource of fresh water, to protect the hydrosphere, and to meet the current and future human demand.

Water Resources: These are sources of water that are useful or potentially useful to humans.

1. 9. Concept of Awareness, Perception and Attitude

For us to have a better understanding of this research work we need to define some of the basic concepts which include, awareness, perception and attitude. We also need to know the nature of the target language as well as that of the native language. Hence, we shall discuss the following: the origin of Ikwerre people, the culture of the people, the geographical location, and the Ikwerre language, the origin of the target language, English language in Nigeria and the origin of English language in Ikwerre land

1. 10. Concept of Awareness

Awareness and consciousness are in some respect synonymous. The Longman Dictionary of contemporary English (2009) defines awareness as the knowledge or understanding of a particular subject or situation, the ability to notice something using sense and also refers to someone's idea, feelings or opinions about life, while consciousness is also defined by the above source as the condition of being awake and able to understand what is happening around you, the state of knowing that something exists or is true, and also implies someone's ideas, feelings or opinions about life politics, environment, water etc.

Chinedu (2008) viewed awareness as the conditions of being aware and able to understand what is happening around one. In agreement with the above views, Wikipedia (2009) equates awareness with perception of, conscious of, acquaintance with, enlightenment with, mindfulness of, cognizance of something. In the context of this study and in agreement with the above views, awareness implies understanding and knowledge of the activities and events (such as water conservation, usage, purification etc.) going on around one's environment.

1. 11. Concept of Perception

Perception is closely related to attitudes. Perception is the process by which organisms interpret and organize sensation to produce a meaningful experience of the world (Lindsay & Norman, 1977). In other words, a person is confronted with a situation or stimuli. The person interprets the stimuli into something meaningful to him or her based on prior experiences.

However, what an individual interprets or perceives may be substantially different from reality. A person's awareness and acceptance of the stimuli play an important role in the perception process. Receptiveness to the stimuli is highly selective and may be limited by a person's existing beliefs, attitude, motivation, and personality (Assael, 1995). Individuals will select the stimuli that satisfy their immediate needs (perceptual vigilance) and may disregard stimuli that may cause psychological anxiety (perceptual defense).

Broadbent (1958) addressed the concept of perceptual vigilance with his filter model. Broadbent argued that, on the one hand, due to limited capacity, a person must process information selectively and, therefore, when presented with information from two different channels (i.e., methods of delivery such as visual and auditory), an individual's perceptual system processes only that which it believes to be most relevant. However, perceptual defence creates an internal barrier that limits the external stimuli passing through the perception process when it is not congruent with the person's current beliefs, attitudes, motivation, etc. This is referred to as selective perception. Selective perception occurs when an individual limits the processing of external stimuli by selectively interpreting what he or she sees based on beliefs, experience, or attitudes (Sherif & Cantril, 1945).

Vander (1992) have defined perception as "the process of information extraction". Van der based his description of perception on cognitive structures and according to them, "perceptions are the processes that determine how humans interpret their surroundings". The Perceptions was also analyzed by Walsh, V., & Kulikowski in their book titled "Perceptual constancy: Why things look as they do" published by Cambridge University Press. They have tried to clarify perceptions as personal perceptions and general perceptions. They felt that the behavior of individuals is determined by the way they perceive each other and this behavior gets affected by the general perceptions which may be direct or which may be indirect.

1. 12. Concept of Attitude

Attitude according to Abini (2006) is an acquisitioned tendency, Abini further explained that pupils form attitude through either like or dislike, favourable or unfavourable towards event(s) in the environment. Good (2001) defined attitude as a state of mental and emotional readiness to respond to previously conditioned or associated stimuli. Williams (2000) described attitude as readiness to act in a certain way expressed by person's words, gesture or facial expressions. The above view is upheld as action at times speaks louder than voice. Kent (2002) noted that attitudes is a mental and natural state of readiness organized through experience exerting a directive or dynamic influence upon the individual's responses to all object and situation with which it is related. Therefore water attitude means the way of thinking and acting by individual towards good quality of water. It shows the feeling and concern an individual could have with respect to such phenomena as mentioned above.

A fairly easy to understand definition is that attitudes represent what one likes and dislikes (Blackwell et. al, 2001), or the amount of positive and negative feelings one has towards an object. (Schlenker, 1978) A consistent number of authors (Schlenker, 1978; Fishbein & Ajzen, 1975; Insko & Schopler, 1967; Peabody, 1967) expand and define attitudes as learned tendencies when responding to an object in a 28 consistently favorable or unfavorable manner. Ajzen & Fishbein (1977), Peter & Olson (1999) add to the main idea behind attitudes by defining the notion as a person's overall evaluation of a concept. Recent studies of Ajzen (2008) place the evaluation at the core of a person's attitude. In a more scientific manner, Thurstone (1928) affirms that attitude denotes "the total sum of a man's

inclinations and feelings, prejudice or bias, pre-conceived notions, ideas, fears, threats, and convictions about any specified topic." One of the most extensive researches made on the specific concept of attitude is done by Doob (1947), who takes defining attitude seriously, especially for the fact that so few do in their papers - as he acknowledges. He defines attitude in a more complex way, "as an implicit, drive-producing response considered socially significant in the individual's society." It can be seen that the attitude is not a stand-alone concept, as it is directly connected and dependant on other concepts.

1. 13. Effects of Water on Living things

From a biological standpoint, water has many distinct properties that are critical for the proliferation of life. It carries out this role by allowing organic compounds to react in ways that ultimately allow replication. All known forms of life depend on water. Water is vital both as a solvent in which many of the body's solutes dissolve and as an essential part of many metabolic processes within the body. Metabolism is the sum total of anabolism and catabolism. In anabolism, water is removed from molecules (through energy requiring enzymatic chemical reactions) in order to grow larger molecules (e.g. starches, triglycerides and proteins for storage of fuels and information). In catabolism, water is used to break bonds in order to generate smaller molecules (e.g. glucose, fatty acids and amino acids to be used for fuels for energy use or other purposes). Without water, these particular metabolic processes could not exist.

Water is fundamental to photosynthesis and respiration. Photosynthetic cells use the sun's energy to split off water's hydrogen from oxygen. Hydrogen is combined with CO₂ (absorbed from air or water) to form glucose and release oxygen. All living cells use such fuels and oxidize the hydrogen and carbon to capture the sun's energy and reform water and CO₂ in the process (cellular respiration).

Water is also central to acid-base neutrality and enzyme function. An acid, a hydrogen ion (H⁺, that is, a proton) donor, can be neutralized by a base, a proton acceptor such as a hydroxide ion (OH⁻) to form water. Water is considered to be neutral, with a pH (the negative log of the hydrogen ion concentration) of 7. Acids have pH values less than 7 while bases have values greater than 7.

2. WATER SALINIZATION, POLLUTION AND RELATED DISEASE

This study also considered water related issues such as water salinization, pollution and disease. This are discussed in subsequent paragraphs.

2. 1. Water Salinization

When freshwater resources become saline, they can no longer be used for irrigation or drinking. Saline water is toxic to plants, and high sodium levels cause dry soils to become hard and compact and reduce their ability to absorb water. Irrigation water becomes toxic to most plants at concentrations above 1,300 milligrams/liter; for comparison, the salinity of seawater is about 35,000 mg/l (University of California Cooperative Extension, 2007). Salinity is not dangerous to humans, but water becomes non-potable for human consumption at about 250 mg/l. Groundwater extraction and irrigation can increase salt concentrations in

water and soils in several ways. First, irrigation increases the salinity of soil water when evaporation removes water but leaves salt behind. This occurs when irrigation water contains some salt and irrigation rates are not high enough to flush the salt away. Saline water in the vadose zone can then contaminate surface water and soils.

Irrigation can also cause salinization by raising the water table and lifting saline groundwater near the surface into the root zone. This occurs when irrigation efficiency is poor, so a large fraction of irrigation water infiltrates into the soil, and groundwater flow is slow. A similar problem occurs in some regions when trees are cut down, reducing transpiration and increasing the rate at which water flushes through the vadose zone. The increased infiltration flushes high concentrations of salt to the water table and lifts the water table toward the surface. This process has severely affected the Murray-Darling Basin in Australia. A third type of salinization occurs in coastal areas, where excessive groundwater pumping draws seawater into aquifers and contaminates wells. In coastal aquifers freshwater floats on top of denser seawater. When this lens of freshwater is diminished by withdrawals, seawater rises up from below. Because world populations are increasing particularly rapidly in coastal regions, seawater intrusion is a threat in many coastal aquifers.

2. 2. Water Pollution

Many different types of contaminants can pollute water and render it unusable. Pollutants regulated in the United States under national primary drinking water standards (legally enforceable limits for public water systems to protect public health) include (Leonard and Eloise, 2005):

- ✓ **Microorganisms** such as cryptosporidium, giardia, and fecal coliform bacteria
- ✓ **Disinfectants and water disinfection by-products** including chlorine, bromate, and chlorite
- ✓ **Inorganic chemicals** such as arsenic, cadmium, lead, and mercury
- ✓ **Organic chemicals** such as benzene, dioxin, and vinyl chloride
- ✓ **Radionuclides** including uranium and radium

These pollutants come from a wide range of sources. Microorganisms are typically found in human and animal waste. Some inorganic contaminants such as arsenic and radionuclides such as uranium occur naturally in geologic deposits, but many inorganic and most major organic pollutants are emitted from industrial facilities, mining, and agricultural activities such as fertilizer and pesticide application. Sediments (soil particles) from erosion and activities such as excavation and construction also pollute rivers, lakes, and coastal waters. Sujay et al, (2005) posits that, water supplies often become polluted because contaminants are introduced into the vadose zone or are present there naturally and penetrate to the water table or to groundwater, where they move into wells, lakes, and streams. Many dissolved compounds can be toxic and carcinogenic, so keeping them out of water supplies is a central public-health goal.

Non-aqueous phased liquids (NAPLs) form a separate phase that does not mix with water and can reside as small blobs within the pore structure of aquifers and soils. Some, such as gasoline and diesel fuel, are lighter than water and will float on top (Leonard and Eloise, 2005). Others, including chlorinated hydrocarbons and carbon tetrachloride, are denser and will sink. Water pollution is relatively easier to control when it comes from a point source—a

distinct, limited discharge source such as a factory, which can be required to clean up or reduce its effluent. Nonpoint source pollution consists of diffuse, non-bounded discharges from many contributors, such as runoff from city streets or agricultural fields, so it is more challenging to control. Approaches for controlling nonpoint source pollution include improving urban storm water management systems; regulating land uses; limiting broad application of pesticides, herbicides, and fertilizer; and restoring wetlands to help absorb and filter runoff.

2. 3. Water Related Disease

More than 2 million people die each year from diseases such as cholera, typhoid, and dysentery that are spread by contaminated water or by a lack of water for hygiene. These illnesses have largely been eradicated in developed nations, although outbreaks can still occur. Water-related illnesses fall into four major categories:

- ✓ **Waterborne diseases**, including cholera, typhoid, and dysentery, are caused by drinking water containing infectious viruses or bacteria, which often come from human or animal waste.
- ✓ **Water-washed diseases**, such as skin and eye infections, are caused by lack of clean water for washing.
- ✓ **Water-based diseases**, such as schistosomiasis, are spread by organisms that develop in water and then become human parasites. They are spread by contaminated water and by eating insufficiently cooked fish.
- ✓ **Water-related insect vectors**, such as mosquitoes, breed in or near water and spread diseases, including dengue and malaria. This category is not directly related to water supply or quality.

Scientists are still learning how many water-related diseases spread and how infectious agents behave. A 2003 World Health Organization report on water-related infectious diseases warned that "the spectrum of disease is altering and the incidence of many water related microbial diseases is increasing." Processes such as urbanization and dam construction can spread water-related diseases by creating new environments for infectious agents, and global climate change is expanding the range of mosquitoes and other disease vectors. However, advances in microbiology are enabling researchers to detect pathogens in water more quickly and to identify and characterize new infectious agents (WHO, 2003).

2. 4. Impacts of Water to Students in Schools

The impact of water to student includes disease, learning, gender and disability, the wider community and life-long skills. These are further discussed in subsequent paragraphs.

Disease Prevention

Diseases related to inadequate water, sanitation and hygiene are a huge burden in Nigeria. It is estimated that 88% of diarrhoeal disease is caused by unsafe water supply, and inadequate sanitation and hygiene (WHO, 2004). Many schools serve communities that have a high prevalence of diseases related to inadequate water supply, sanitation and hygiene (particularly lack of hand washing), and where child malnutrition and other underlying health problems are common. If everyone in the world had access to a regulated piped water supply

and sewage connection in their houses, 1863 million days of school attendance would be gained due to less diarrhoeal illness (WHO, 2004).

Secondary Schools, particularly those in rural areas, often completely lack drinking-water and sanitation facilities, or have facilities that are inadequate in both quality and quantity. Schools with poor water, sanitation and hygiene conditions, and intense levels of person to-person contact are high-risk environments for children and staff, and exacerbate children's particular susceptibility to environmental health hazards.

Learning

Children's ability to learn may be affected in several ways. Firstly, helminth infections, which affect hundreds of millions of secondary school students, can impair children's physical development and reduce their cognitive development, through pain and discomfort, competition for nutrients, anemia, and damage to tissues and organs. Long-term exposure to chemical contaminants in water (e.g. lead and arsenic) may impair learning ability. Diarrhoeal diseases, malaria and helminth infections force many schoolchildren to be absent from school. Poor environmental conditions in the classroom can also make both teaching and learning very difficult. The effect of disease in teachers includes impairing performance and increasing absenteeism. It also has a direct impact on learning, and teachers' work is made harder by the learning difficulties faced by student.

Gender and Disability

Girls and boys, including those with disabilities, are likely to be affected in different ways by inadequate water, sanitation and hygiene conditions in schools, and this may contribute to unequal learning opportunities. For example, lack of adequate, separate private and secure toilets and washing facilities may discourage parents from sending girls to school. In addition, lack of adequate facilities for menstrual hygiene can contribute to girls missing days at school; this can even lead girls to drop out of education altogether at puberty. Toilets that are inaccessible often mean that a disabled child does not eat or drink all day to avoid needing the toilet, leading to health problems and eventually to their dropping out of school altogether.

The Wider Community

Children who have adequate water, sanitation and hygiene conditions at school are more able to integrate hygiene education into their daily lives, and can be effective messengers and agents for change in their families and the wider community. Conversely, communities in which schoolchildren are exposed to disease risk because of inadequate water supply, sanitation and hygiene at school are themselves more at risk. Families bear the burden of their children's illness due to bad conditions at school.

Life-Long Skills

The hygiene behaviours that children learn at school are made possible through a combination of hygiene education and suitable water, sanitation and hygiene-enabling facilities which are skills that they are likely to maintain as adults and pass on to their own children.

Surface and Ground Water Resources of Nigeria

Surface sources include the River Niger, the third largest river in Africa. The country spans the greater section of the river, with the River Benue dividing the country into three geographical regions. In addition to these two rivers, Cross River, Imo, Sokoto, Ogun, Anambra, Kaduna rivers, together with several streams, channels, lakes and ponds, that provide a national web of drainage basins.

Major ground water reserves exist in numerous localities all over the country. These have been estimated as 30 times the quantity of surface flows (Orjiakor, 1985). The quantity stored varies according to geology and climate, from one locality to another. Geologically, Nigeria lies on two main rock formations — the basement complex (which is mainly precambrian and postcambrian rocks and lignite of the Jos area) and Sedimentary strata which are postcambrian deposits (Offodile, 2000). Both of these rock formations are widely distributed all over the country. The sedimentary strata have both surface water and ground water of immense economic interest.

There are many quantitative records to enable studies of the extent of underground water reserves and availability, including the performance of aquifers under pumping conditions in all the states. In the Chad basin, in the Northern part of the country, the regular seasonal rainfall replenishment ensures that on an area scale average there is no depletion of the aquifer resources. But in the more arid northern parts of the country where the seasonal rainfall and therefore the annual replenishment to ground water is more variable, the availability of ground water follows the irregular pattern like droughts. Ground water in Nigeria has the advantages of being generally free from biological contamination, free of sediments, of constant quality and temperature. It is thus normally satisfactory for domestic, agricultural and most industrial uses.

Present organization of water management authority in Nigeria

There are Federal and State Governments' agencies independently undertaking various activities in water resources development and utilization (Orjiakor, 2000). Recently the private sector initiative has increased in financing and technical involvement. The Federal agencies principally involved are: Federal Ministry of Water Resources (FMWR), River Basin Development Authorities (RBDAs).

Federal Ministry of Transport, Federal Ministry of Aviation (FMA), National Electric Power Authority (NEPA), Mining Organizations including Oil Companies. Each state government of the 36 states in the Federal has created its own agencies that compete in water resources development. These agencies include State Ministries of Works and Housing and of Agriculture, State water Boards, and Rural Electrification Boards.

Most water resources development activities undertaken by the Federal Government besides power productions are carried out through the eleven (11) RBDAs under the direct surveillance of the Federal Ministry of Water Resources which coordinates their activities. But the Ministry often directly undertakes the resource development such as erosion control, development of underground water and other hydrological activities. For effective control, the Ministry is organized in five main sections or sub-departments planning: Water Resources and Irrigation, Hydrology and Hydrogeology, dams, water supply and sanitation.

2. 5. Planning of Sustainable Water Supply Systems for Nigeria

Sustainable development has been defined as that kind of development that meets the needs of the present without compromising the ability of the future generations to meet their own needs. Sustainable development of water resources encompasses those patterns of water resources utilization that will enhance social and economic benefits for the present and the future generation, without impairing the hydrological processes.

It is now widely realized that mitigation methodologies developed on the basis of biophysical studies alone have very little chance of success, unless they have been drawn up in consultation with the stakeholders' right from the beginning.

The high rate of population growth with associated changes in land use, extreme variability of precipitation, both in time and space, and high potential evapotranspiration in dry lands — these issues can only be addressed by an imaginative integration of biophysical approaches with socioeconomic approaches as Vogel (1999) puts it elegantly.

The poor people in Nigeria have to cope not only with socio economic realities (such as HIV/AIDS, armed conflict and armed robbery, population dislocation and problems of economic reform), but also environmental degradation and extreme weather events (such as floods in North and South, and drought in the North).

Research is needed to find out how these socio-economic factors are contributing to the global change, and how the global change is feeding back to the system and affecting the communities. There is little doubt that these improper land-use practices exacerbated the devastating floods. Thus, with each disaster, the people become less able to cope with extreme weather events. This vicious cycle would only stop when mitigation measures are taken and preparedness systems are put in place for Nigeria.

2. 6. Theoretical Framework

The following theories are discussed below for the purpose of the study. They include Functionalist Theory and Neo-Malthusian Theory, supported by Push-Pull Theory.

The Functionalist Theory

The functionalist theory or functionalist, perspective originally propounded by Emile Durkheim (1951) was found to be relevant to this study. The functionalist perspective achieved its greatest popularity among American sociologists in the 1940s and 1950s, among these American functionalist sociologist is Robert K. Merton. The functionalists see the society as a system composed of different parts, which interact, extract and exchange materials in order to maintain the system. Human beings are maintained by the functions performed by the various components and when the components stop functioning, growth is hindered. The functionalist perspective is based around a number of key conflicts. Firstly, society is viewed as a system, a collection of interdependent part with a tendency towards equilibrium; secondly there are functional requirements that must be met in a society for its survival. Thirdly, phenomenon is seen to exist because they serve a function (Murdock, 2000).

This theory has also claimed to be based on solidarity, integration and equilibrium. There must be commitment to these norms and some sort of consensus on societal values to which all function maintain and promote social solidarity. Functionalism is the infusion of cultural items in a society for society's maintenance at equilibrium. Parts of the society are

functional in so far they maintain the system and contributed to its survival (Haradlambos & Holborn, 2004).

Environments are maintained by the various functions carried out by various components or parts in a system. Environmental problems depletion and contamination of water arise as people engage themselves in many activities in order to meet their daily needs. These activities are sometimes unfriendly to our water quality and availability, but because people have needs and demands which must be met, the consequences of some actions are not considered. In addition people are sometimes ignorant of their actions because they are struggling for survival thereby causing water issues that affect them in future and also hinder the progress of their endeavours. Since problems in one part of the system affects the other parts, solutions to such water problems must be done collectively by everybody in the society. Every member of the society has a role to play by co-operating and collaborating in ensuring environmental security in the society. Such member of the society include students.

To adapt this theory, calls for a massive involvement of all the sub-parts to bring about change in our business with water. This implies that various components such as secondary school students, sub-systems or parts should work in collaboration in maintaining complexity and diversity, diminish suffering and pollution reduction in this way, we can also to some extent overcome the issues confronting water problems (i.e. pollution, contamination, disease and depletion among others) which we encounter on earth.

Neo-Malthusian Theory Supported by Push-Pull Theory

This study will also be anchored on Neo-Malthusian Theory and supported by Push-Pull Theory. Thomas Malthus postulated the theory of water resources and its relationship with the availability of resources (Kouba V et al, 2012). The theory states that, the world's population tends to increase at a faster rate than its natural resources. It further associated the resources in this theory with the environment and availability of scarce resource such as land.

Scholars like Cavanagh and Lonergan, et al, speculate that nature and human unpleasant activities, deepen water problems and subsequently endanger availability, portability and quality. This informed survival strategy through migration. Extension of neo-Malthusian approach is the Push and Pull Theory (Kouba V et al, 2012). Push-Pull Theory is a neoclassical theory that emphasized the movement of people from densely (push) to sparsely (pull) populated areas. The advocates and supporters of Malthusian Theory include Broad, Cavanagh and Dixon-Homer. Wolpert posited that water problems affects human security, which lead to scarcity usually depriving people of their livelihood and brings about diseases and malnutrition (Broad, Robin and Cavanagh, 1993). When water problems puts a population or an individual's wellbeing at risk, it decreases personal income and lowers opportunity for future wellbeing. Push factor often becomes an option especially if the water concern is overwhelming on the sustainability.

In its report on state of the world's refugees in 1993, the United Nations High Commission for Human Refugees' (UNCHR) identified water one of reason behind poverty, disease and migration due to scarcity. Water problems finds its place as a contextual or appropriate variable that affects populace, conveying destitution to the population. The effect may be felt at the level of the individual, the community or conceivably, an entire nation.

Review of Empirical Studies

Water is one of the market goods used to produce household commodities and it is also consumed as a final commodity. Agiande (2006) carried out water awareness and attitudes of secondary school students. The study was conducted in Ogoja Education zone of Cross River state. Five hundred and forty-four (544) senior secondary school students were randomly sampled. Structural questionnaires developed by the researcher was used for data collection and the data collected were analyzed using mean score and standard deviation. The major finding of the study was that the students has no significant knowledge of water related activities in their community. Such activity includes water conservation, purification and effective management. The study further reveal that water related diseases is constant their community as a result inadequate awareness and their attitude towards their environment. The study recommended among other the community school should intensify teaching of sanitation and water conservation among secondary school students. The relationship between the study of Agiade and the current study is that both studies considered secondary school student as major source of data, and they share same view on water conservation.

Madu (2007) carried out a study on the relationship between home water factors and secondary school students' academic achievement in management. The study was conducted in Umuahia education zone of Abia state. The study randomly sampled four hundred and sixty (460) senior secondary school students. The design of the study was descriptive survey research. Questionnaire was used for data collection and the data collected were analyzed using mean score and standard deviation. The major finding of the study was that home water factors (urban or rural) affects the students' academic achievement. This result, however appears to suggest that students' location may not have a significant influence on people's awareness of water factors and their performance on academic tasks. Based on the findings, they recommended among other things, community should ensure that the source of water should adequately provided in communities and regular hygienic should be observed. The students should be thought proper management of ware resource to avoid waste and shortage.

In the same vein, Chinedu (2008) studied on the water perception and attitude of secondary school students towards sustainability and sanitation in Owerri education zone of Imo state. Using a descriptive survey research design, the study randomly sampled five hundred and thirteen (513) senior secondary school students. 4-point lickert-type structured questionnaire was used for the collection of data from respondents, while percentages and weighted mean were used as the statistical tools for data analysis. The result of the study indicated that the perception and attitude of secondary school student towards water is low and limited. Majority of the students regarded water as unlimited commodity, believing that water cannot be exhausted. Based on this understanding, water wastage was high and careless among students. The study further proffer strategy and recommendation on how to manage water by increasing community sensitization campaign. In addition, the age bracket of secondary school students which constitute the major category of water-waster in community, should be involved in practical approach in water management. Chinedu's research work is in accordance with water perception and attitude of students with the main objectives of this study. Thus, Chinedu's work is a relevant literature.

In another related review, Omemu and Aderoju (2008) carried out a study on the attitude and awareness of water quality in respect of contamination and disease related consequences in Southern Local Government Area of Kaduna State. The study was conducted using descriptive survey design. Accordingly, 500 secondary school students were sampled

out of a population of 1800 using proportionate random sampling technique. The instrument used for data collection was questionnaire that contained 30-structured questions. Percentages and weighted mean were the major tools used for statistical analysis. The study showed that less than 35% of the students' population has access to safe sources of drinking water while about 65% of the students' population depends mainly on unsafe sources such as open wells, rivers and streams for portable and domestic water. Consequently, water related disease has been a major challenge among the student. Based on this discoveries, the Omemu and Aderoju (2008) recommended that state government should provide portable water facilities in affected communities. Additionally, community healthcare facilities should be provided, while community campaign on water management and sanitation should be encouraged. The present study of Omemu and Aderoju (2008) is related to this study, such that both cantered consequential effects of water disease.

On water facility, Ohaka, Ozor and Ohaka (2013), carried out a study on the household waste disposal practices and water pollution in Imo State. Stratified proportionate sampling technique was used to obtain a sample of 650 out of a population of 3,835 students from 30 secondary schools in 10 local government of Imo State. The design of the study was descriptive survey research. The data were collected using a structured questionnaire, and analyzed using weighted mean and standard deviation. The findings of the study revealed that the greatest problem to water safety is indiscriminate disposal of waste along source of water such as river. This practice, has adverse effect availability of domestic water due to pollution. This is coupled with issues of water supply facilities to the urban and rural population of in the state has been inadequate and water in poor quality and inadequate quantity have continued to pose a major threat to environmental sanitation and public health. In respect of this findings, the researcher recommended that, the government should constitute a special authority for the purpose of imposing punishment to culprits disposing such waste.

Gaps in Literature

From the review of the extant literature pertaining to students awareness, perception and attitude towards water in various states in Nigeria, many factors were accounted by scholars. The factors among other things include, lack of water management knowledge among secondary school student. In term of sanitation and hygienic in respect of water facilities, high rate pollution were noticed among students in their communities. In most cases, students lack basic knowledge on how to manage water. This has adversely exposed portable water to forms of diseases that affects health. This phenomenon is in addition to indiscriminate waste disposal and open defecation that constitute a lot of nuisance to water. Notwithstanding these efforts, none of the scholars considered Chanchaga LGA being the location of this study. Therefore, this study is set out to fill the noticeable lacuna which the scholars have not adequately filled.

3. RESEARCH METHODOLOGY

This chapter focuses on the methods employed in carrying out this research. The outline of this section includes research design, population for the study, sample and sampling techniques, instrument for data collection, validation for instrument, procedure for data collection, data analysis.

3. 1. Research design

A research design is a plan or blue print, which specifies how data relating to a given problem should be collected and analysed. It provides a procedure for the conduct of any given investigation (Nworgu 1967).

The type of research design adopted for this study is the descriptive survey, which involves eliciting information from the respondents. According to Ali 2006, when a survey centres on descriptive variables in relation to a given population, the descriptive survey is the most appropriate. The descriptive research design is able to ascertain, the level of awareness, perception and attitude of students in the senior secondary schools towards water.

3. 2. Population for the study

Population refers to a group of people living in a particular geographical area. The population for study comprises of those in the senior secondary school of Chanchanga local government area in Niger state. Chanchanga local government is located in the state capital of Niger state, which is Minna. It consist of over fifteen(15) secondary schools.

3. 3. Simple and sampling techniques

Through simple random sampling, five schools from the local government area were selected for this study. Students in the senior secondary are used for this study. The total population for this study is 100 students, comprising of twenty randomly selected senior students from each of the five schools.

3. 4. Instrument for data collection

The instrument used for the data collection is questionnaire. A questionnaire is an instrument of data collection, which contain sets of items, questions which are used to elicit information from respondents. The questionnaire contains information which focuses on the level of awareness of students towards water, level of perception of students towards water, and on the attitude of students towards water. The instrument is structured on a 4-point likert type scale, which the respondents are made to react to. The items are weighted as follows: strongly agreed- 4 points, agreed- 3 points, disagree-2 points, strongly disagree-1 point.

3. 5. Validation of the instrument

The instrument was face-validated by two experts from the department of chemistry education, Directorate of Continuing Education Zuba. The experts were requested to include other related items, which the researcher might have left out and unrelated items are being deleted.

The reliability of the instrument is also being tested by administering 20 copies of the questionnaire to senior secondary school students in Abuja, although Abuja is not part of the area of study but it is also in the North central zone of Nigeria justlike Niger state. This was done to obtain an internal consistency.

3. 6. Procedure for data collection

The questionnaires are being administered to the students, directly by the researcher and are also being retrieved directly from the students, by the researcher for data analysis.

3. 7. Data analysis

The data collected were analysed using r-statistical package to determine percentages, Mean and t-test was used to make comparism. Independent sample analysis was conducted on each of the questionnaire, using r- statistical package to answer each research questions.

4. RESULT AND DISCUSSION

This section focuses on the results that were obtained from the data analysis, and the discussions on the results. This study was made to address the research questions.

Hypotheses

The following hypothesis were tested at 0.05 level of significance:

H0: There is no significant difference between the awareness, perception and attitude of Senior Secondary School Student towards water

H1: There is a significant difference between the awareness, perception and attitude of Senior Secondary School Student towards water

Research Question 1: Are the students aware of the importance of water?

Table 1. Awareness of Student towards importance of Water

S/N	Student Awareness towards importance of water	SA	A	D	SD
1	Do you know that water is part of the Natural resources	80.9%	16.1%	3.0	0.0%
2	Our body is made up of 70% water	78.6%	20.0%	1.4%	0.0%
3	Water is important for the normal function of your body	81.8%	16.1%	2.1%	0.0%
4	Water is very essential in our day to day lives activities	95.3%	4.7%	0.0%	0.0%
5	Water is very important for the survival of every living	78.5%	21.0%	0.5%	0.0%
6	Water aids digestion in the body	82.5%	17.5%	0.0%	0.0%

Mean score = 82.93, N = 6

Analysis of respondent viewpoint presents (80.9%) of the participants accepting that water is part the natural resources. 78.6% of the respondents confirm that 70% of the human body is composed of water. Result presented in (Table 1) indicated that water is important for the normal functioning of the body, this was agreed by 81.8% of the research participants. The importance of water in our day-to-day activities was also confirmed by 95.3% of the respondents, presenting a view that water plays a major role for human survival. It was observed that 78.5% of the participants viewed water as being crucial for existence or survival of living things. 82.5% of the respondents strongly agreed that water aids digestion in the body system. This views confirms the research of Adiaha (2016); Oku (2015), where their research stated water as being essential for human nutrition and survival.

The result presented in (Table 1) showed that students awareness towards importance of water was significant ($p = 0.05$), indicating that the students have an understanding of the uses of water, and its role in human existence.

Research Question 2: What is the level of Secondary School students’ perception of water in Chanchaga LGA?

Table 2. Perception of Student towards Water.

S/N	Perception of students towards the importance of water	SA	A	D	SD
1	Do you think that not drinking water after meal is good?	82.35%	16.7%	1.0%	0.0%
2	Lack of good water facilities in our school can pose a threat to our health	83.5%	15.5%	1.0%	0.0%
3	Do you think that the water sources in our area are meant to be kept clean	78.4%	21.6%	0.0%	0.0%
4	Lack of water in the body causes dehydration	90.0%	8.0%	1.9%	0.1%
5	I often forget to turn-off the tap after use	89.0%	0.0%	11.0%	0.0%

Mean score = 84.64, N = 5

Result of the survey in (Table 2) presented the perception of the participants towards the importance of water. 82.3% of the respondents viewed drinking water after meal as being good. Lack of good water facilities, and its ill health threat to students was viewed by 83.5%

of the participants as a factor towards their perception on the importance of water. 78.4% of the respondent strongly agreed that water sources are meant to be kept clean. Dehydration of the body as a result of lack of water was identified by the respondents (90.0%) as one of the necessity for water in the biological system. However 89.0% of the respondents presented a view they often forget to turn-off the tap after usage. The view of this finding confirms the research of Oku (2015), where the researcher stated water as being crucial for human health. Finding of this study further confirm the work of Oku (2015) which also stated the negative behavior of teenagers and adolescents students towards water handling. Result obtained in (Table 2) on perception of students towards water is highly significant at ($p = 0.05$), hence, we reject the null hypothesis and accept the alternative hypothesis.

Research Question 3: What is the level of Secondary School students’ attitude towards their water resources in Chanchaga LGA?

Table 3. Attitude of Student towards Water

S/N	Attitude of Senior Secondary School Student towards water usage	SA	A	D	SD
1.	Drinking water after meal is not important	0.0%	1.0%	25.6%	73.4%
2.	Throwing waste into water bodies does not matter	0.0%	0.2%	36.4%	63.4%
3.	I defecate sometimes close to a water body	0.0%	0.1%	43.6%	56.3%
4.	Boiling water before drinking is a waste of time	0.0%	0.2%	49.3%	50.5%
5.	Every water is drinkable	0.2%	0.2%	39.0%	60.6%

Mean score = 60.84, N = 5

Data presented in (Table 3) indicated that the attitude of student towards water usage is positive, with 73.4% of the participants strongly disagreeing that drinking water after meal is not important. 63.4% of the respondents also disagreed that throwing waste into water bodies does not matter. It was observed that 56.3% of the respondents was of the opinion that they do not defecate close to water bodies. 50.5% of the participants showed a positive view that boiling water before drinking is a waste of time. 60.6% was observed for the item in the questionnaire “every water is drinkable”. However, result obtain was significant at ($p = 0.05$)

and confirms the study of Oku (2015) which stated the attitude of adolescent and adult towards water usage and protection as positive.

Table 4: T-test Comparison to Test the Hypothesis

FACTORS	CRITICAL VALUES	SIGNIFICANCE
Students Awareness towards importance of Water	82.93	2.26
Perception of Students towards the importance of Water	84.64	
Attitude of Senior Secondary School Students towards water Usage	60.84	

Significant Level = 0.05

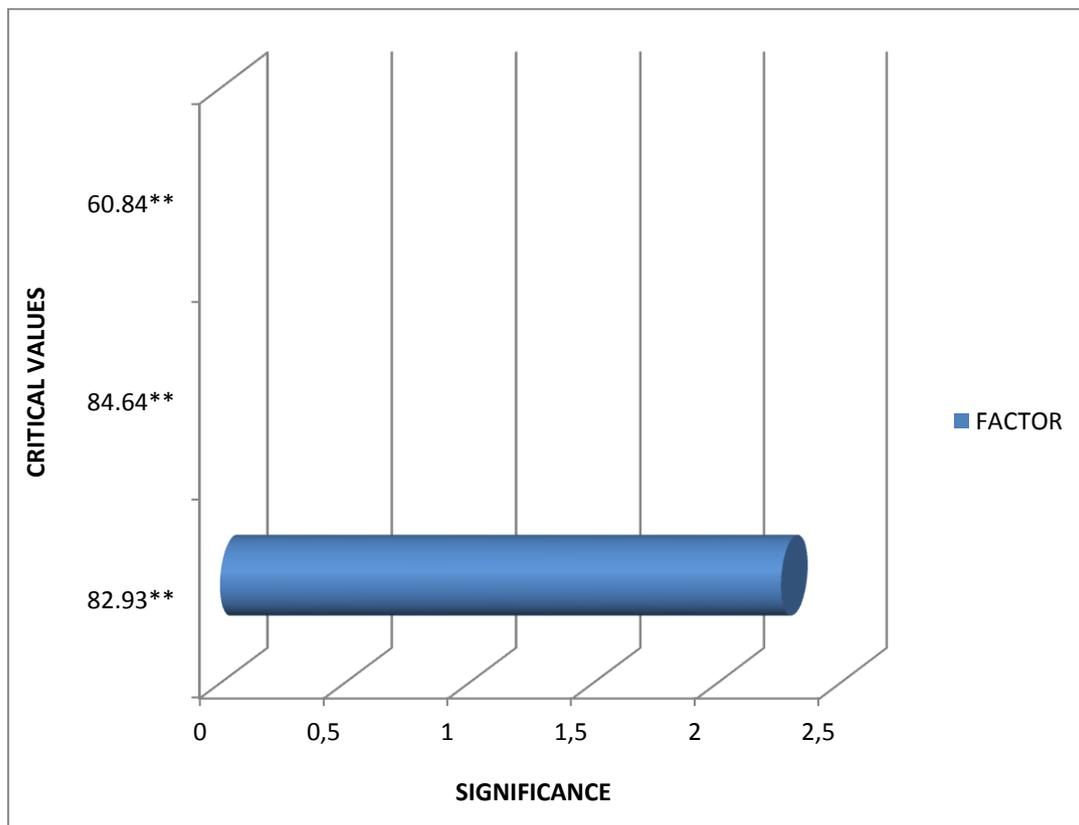


Figure 5. Graphical Representation of T-test Comparison to Test the Hypothesis

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5. 1. Summary

The above study was carried out in Chanchanga Local Government Area of Niger state. it was aimed at determining the awareness, attitude and perception of secondary school students towards water. The study was done in senior secondary schools, senior students were given questionnaires which were made to assess their level of their awareness, perception and attitude towards water. This study revealed that the student has a significant level of awareness, perception and attitude towards water.

5. 2. Conclusion

The research shows that most of the students have sufficient knowledge about the importance of water to human survival. Adolescent student need to be provided with accurate and correct information about water usage and protection in order to form good attitude and approach towards water usage.

5. 3. Recommendation

- 1) Water bodies should be properly protected from pollution by adolescent and misinformed or uninformed adults.
- 2) Information about water usage should be wide spread to inform the youngsters about the effect of water pollution on human survival and health.
- 3) Campaign should be made on the rising cases of water shortages especially as climate change is hitting the globe.
- 4) Water facilities should enhance proper water utilization, especially in public places.

5. 4. Limitation of the Study

The study was limited to two secondary schools in Chanchanga Local Government Area Minna, Niger state, Nigeria.

5. 5. Suggestion for further Studies

There is need for more research work on the importance of healthy water for human health development and survival in Chanchanga Local Government Area Minna, Niger state, Nigeria.

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