Improving Hygiene and Sanitation in Educational Institutions: A Public Health Intervention Approach

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Chapter I

The Problem and Its Scope

Introduction

Cleanliness and good sanitation in schools is a matter of high importance (Modi 2017). The pupils' ability to learn is influenced by the state and condition of the school where they spend most of their time. The children's health and well-being is partially determined by a healthy or unhealthy school environment. It follows therefore that the school sanitation and hygienic practices has a great bearing on the state and quality of education.

A growing body of researches suggests that school-age children are in the crucial period of growth. Programs in schools that improve health and nutritional status greatly help to bring about catch-up growth in the stunted children. The Millennium Development Goal (MDG 2015) projected to reduce by at least one-half of the proportion of people without access to basic sanitation. The United Nations Children's Fund in 2015 reported the increase of figures in Water Sanitation and Hygiene services in schools all over the world. The published monitoring package in 2011 provided indicators and parameters for waster sanitation and hygiene. A

functional water point is available at or near the school with sufficient quantity, quality and accessibility for children with disabilities. For sanitation, the quantity and functionality of toilets and urinals for girls, boys and teachers meet national standards and are accessible to children. The parameters for hygiene includes; functionality, availability of hygiene materials (soap) for girls and boys and the teaching of hygiene education in schools.

In the Philippines, the Basic Education Information System of the Department of Education (DepED-BEIS) reported that as of 2015, the toilet-pupil ratio was 1:36in the elementary level and 1:53 in high school. The figure islower than the World Health Organization (WHO) and United Nation Children's Fund (UNICEF) standards of 1:50 for males (if urinals were present) and 1:25 for females, and even lowers than the Philippine Sanitation Code standards of 1:50 for boys and 1:30 for girls. Although DepEd reduced the deficit by adding more facilities in the recent years, the problem remains acute.

Another important factor associated with school health and nutrition is food safety. It is especially important to school children as they are more prone to food borne illness than adults. School personnel involved in food handling and preparation must have the necessary knowledge and skills appropriate to the types of food they are handling. Understanding the necessary measures for food safety in the school canteen is a good way to improve school health.

Lack of sanitation also has an impact towards educational access and potential that eventually affects economic productivity. Inadequate facilities in schools such as toilet, urinals and hand washing create unhealthy and non-conducive learning

environment. In short, inaccessibility of sanitation and the means of good hygiene is a violation of human dignity. In connection to this, the author believes that schools as a direct institution mandated to develop learners holistically, plays a vital role in safeguarding the children's' health and well-being.

The study will explore the underrated areas of school sanitation and hygienic practices, specifically on the compliance, regulation and implementation of necessary measures concerning with food sanitation, environmental safety, waste segregation and the maintenance and use of school health facilities. These variables are crucial in influencing schools' personnel behaviour in the promotion of good health.

It is with this general background to which the concept of this study was established to seek and investigate the present condition(s) of the school sanitation and hygienic practices as an internalization process.

Theoretical Background of the Study

The study is anchored on the Social Cognitive Theory which was developed by Rotter, (1954) and Bandura, (1977). The theory focuses on how people learn from individual experiences; the action of others and their interaction with their environment. It provides social support through instilling expectations about environmental cues, the consequences of one's own actions and self- efficacy. The individual competence in carrying out sanitation and hygienic practices is confined within Efficacy expectations that lead to a certain behavior. The behavior is regulated by the incentives or reinforcement that increases likehood to action. As such behavior is translated into outcome expectations that bring about desirable

result.

Efficacy Expectations cover the areas of school sanitation and hygienic practices in food handling, personal hygiene, environmental safety, waste segregation and the maintenance and use of school health facilities. These practices serve as predictors on the social regard among school personnel on the identified areas. The efficacy expectation is a conviction that can produce specific behavior (Bandura, 1977). The behavior developed is determined by individual experiences and belief in performing tasks based on the existing practices as an interpretation of the consequences of school sanitation and hygienic practices. Incentive or reinforcement drives positive behavior. It can be seen in the school health programs such as School-Based Feeding Program, deworming and micronutrient fortification. The behavior regulated and acquired will finally determine the estimated or projected result as behavioral consequences. These consequences are confined within the outcome expectations. It includes opportunities for growth, increased responsibility, and recognition for accomplishment or achievement. The basic proposition of social cognitive theory (Rotter, 1954) is that the potential for a person to engage in a set of functionally related behaviors in a given psychological situation is a joint function of (1) the person's expectancy that the behaviors will lead to a particular outcome in that situation and (2) the value of the outcome to the person in that situation. The researcher believes that the Social Cognitive Theory is particularly connected with the study. The interactions among efficacy expectations, incentives or reinforcement significantly drive positive outlook and behavior for attainment of outcome expectations. Schools have the higher stake in ensuring good

sanitation and hygiene practices which will lead to greater access and better quality of Philippine education.

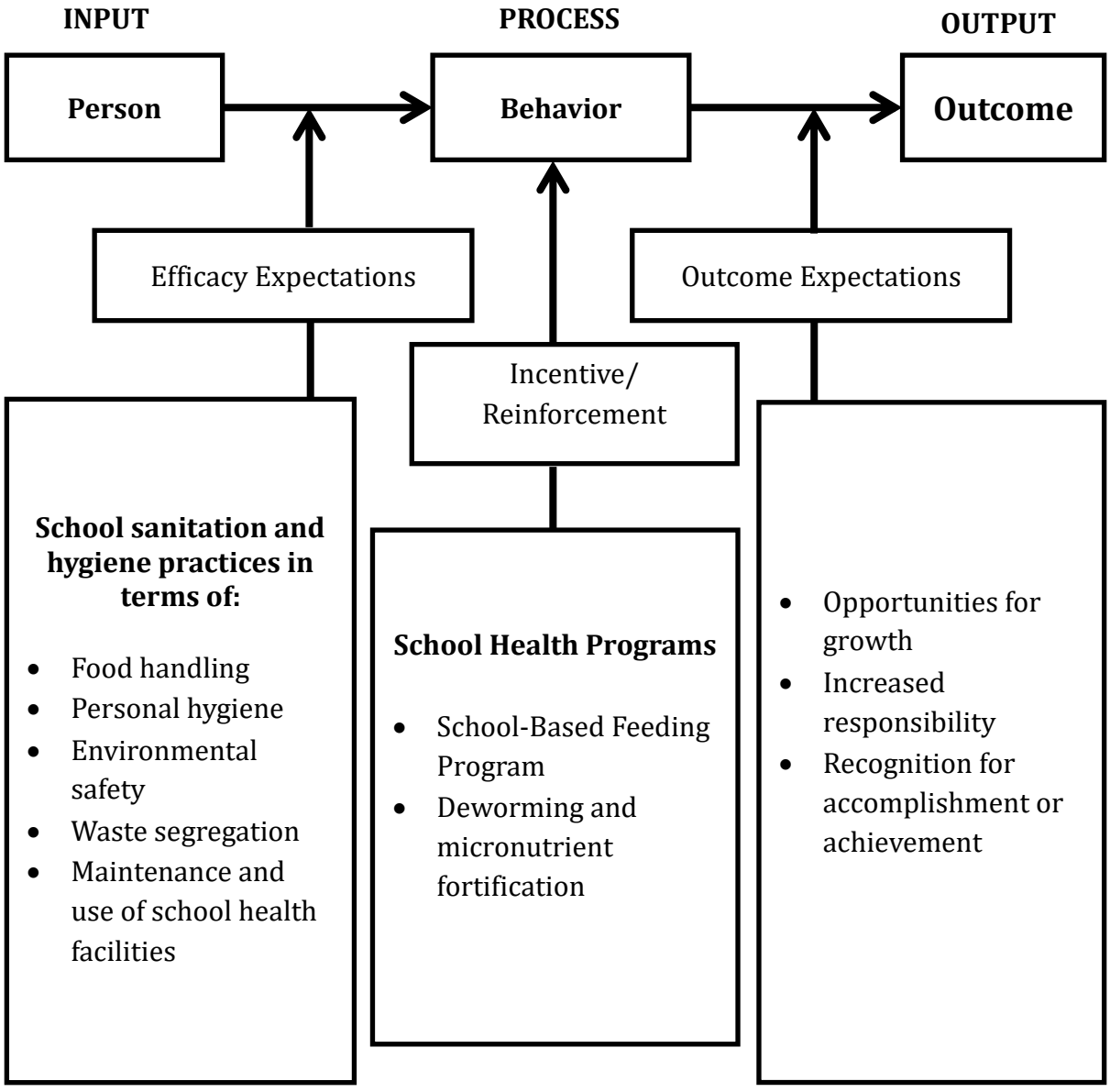

Figure 1. **Diagram of the Theoretical Framework of the study Based on the Social Cognitive Theory of Rotter and Bandura**

Review of Related Literature and Related Studies

The study incorporates relevant literature to broaden understanding in light with the study:

Importance of sanitation and hygiene in schools(WHO 2004). Many schools serve communities that have a high prevalence of diseases related to inadequate water supply, sanitation and hygiene (particularly lack of handwashing), and where child malnutrition and other underlying health problems are common. 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.

Children's ability to learn may be affected in several ways. Firstly, helminth infections, which affect hundreds of millions of school-age children, can impair children's physical development and reduce their cognitive development, through pain and discomfort, competition for nutrients, anaemia, 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 — impairing performance and increasing absenteeism — also has a direct impact on learning, and teachers' work is made harder by the learning difficulties faced by schoolchildren.

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. 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. The hygiene behaviours that children learn at school — made possible through a combination of hygiene education and suitable water,

sanitation and hygiene-enabling facilities — are skills that they are likely to maintain as adults and pass on to their own children.

Staff requirements and training to improve school sanitation and hygiene (WHO 2009)**.** Staff and schoolchildren routinely perform many of the activities that are important for creating healthy school environments; they do this as they use and care for classrooms,outdoor space, toilets and so on. One important decision that has to be made aboutmaintenance of facilities is whether or not schoolchildren should be responsible forcleaning toilets and other sanitary facilities. The benefits of involving schoolchildreninclude cost saving, encouraging schoolchildren to use facilities cleanly anddemonstrating important hygiene skills. However, great care must be taken to ensure thatsuch an arrangement works effectively in practice, without exposing schoolchildren todisease risk, placing an unfair burden on one group of children in particular or having thetask viewed as a punishment, which will cause negativity. Water supply, sanitation and hygiene should be given a central place in the training andsupervision of all teachers, because they provide role models for schoolchildren and arelargely responsible for encouraging the participation of schoolchildren in maintaining ahealthy school environment. In addition, the subject should be included in the curriculum for subjects such as biology and social science. Head teachers or school directors have an important role to play through their work with teachers and other staff, schoolchildren, parents and local authorities. They should be made aware of the importance of water, sanitation and hygiene in schools, and given guidance and

support so that they can promote the development and maintenance of a healthy school environment.

Factors to be addressed in achieving success in sanitation and hygiene

(UNICEF 1998)**.** Well-improved hygiene practices are important if we want to end the transfer of water sanitation and related diseases. Although relevant hygiene education can drive intention towards the development of good hygiene behaviour, facilities are of great importance in order to transform intention into the actual change.Schools are more than just an institution of learning where behavioural change takes place. If the school fail to provide or maintain necessary sanitation and hygiene facilities, it will post danger to its member making them prone for the transmission of diseases. Schools can also pollute or harm the natural environment in a way that the community at large, will be prompted with health challenges. Towards this end, it is so important that schools have proper facilities. However, improved facilities in themselves are not sufficient. If we desire to lower the occurrence of sanitation and hygiene-related diseases, change in human behaviour should take place; as such behaviour would lead to appropriate use of facilities. Three factors have to be addressed if continuous changes in hygiene behavior are to occur. These are; (1) predisposing factors – knowledge (sanitation and hygiene practices), attitude and belief;(2) enabling factors – utilization and availability of resources like toilets facilities and safe water supply that enable the students to put into practice their knowledge and self-actualization in order to drive positive behavior;(3) reinforcing factors - factors that influence, nourish and develop desirable behavior. It is attained through the strong support and cooperation from

the people around them like; their parents, guardians and peer groups.

Criteria for a child-friendly facilities (School Sanitation and Hygiene Education Strategy 2005).Facilities for children require different dimensions than those for adults. Nevertheless, 'adult-size' designs are all too often used for schools, and if adapted, the adaptations are minimal. This results in uncomfortable facilities with many unforeseen obstacles for children, and in turn leads to children using them in the wrong way or refusing to use them at all. In addition to the obvious differences in length, children of different ages also have different levels of physical strength and motor skills, requiring different solutions. In larger schools with a large age spread it is recommended to build separate facilities for the younger children, the older children and teachers. When the same facilities are used by different age groups, special provisions can be made to allow smaller children to make use of the facilities, such as a step in front of the seat or an additional seat cover with a smaller hole. Other special provisions for small children are handles for support while squatting, gently inclining paths and handrails for steep stairs to improve access to facilities. These provisions must not make cleaning more difficult and can sometimes have unexpected effects, therefore they can best tried out first. It is best to monitor the use of sanitary facilities periodically and try out and experiment with newideas.

Guidelines in food handling (SSHE 2005).Food handlers must wash their hands after using the toilet and whenever they start work, change tasks, or return after an interruption. Soap and water should be available at all times during food preparation and handling, to ensure that handwashing is convenient. Food handlers

should be trained in basic food safety. If kitchen staff and carers have colds, influenza, diarrhoea, vomiting or throat and skin infections, or have suffered from diarrhoea and vomiting within the last 48 hours, they should not handle food unless it is packaged. All infections should be reported, and sick staff should not be penalised for reporting infections.Eating utensils should be washed with hot water and detergent immediately after each use, and then air dried. The sooner utensilsare cleaned, the easier they are to wash. Drying cloths should not be used, as they can spread contamination. Food-preparation premises should be kept meticulously clean. Surfaces used for food preparation should be washed with detergent and safe water and then rinsed, or wiped with a clean cloth that is washed frequently. Scraps of food should be disposed of rapidly, because they are potential reservoirs for bacteria, and can attract insects and rodents. Food should be protected from insects, rodents and other animals, which frequently carry pathogenic organisms and are a potential source of contamination of food. In many situations, schoolchildren bring food with them from home to school. In thesecases, the school hygiene committee or equivalent should work with the families of theschoolchildren to ensure that food is prepared hygienically and that they avoid foods that carry a high risk if stored at ambient temperature. Food sold to children by street vendors or in cafes may be unsafe. School authorities should seek local solutions to protect schoolchildren from disease from this source.

Behaviour change communicationstrategies (Save the Children 2006). In cooperation with partner organization NGO Forum, Save the Children developed behaviour change communication activities to insure that water and sanitation

facilities were properly used:

Student brigades. Members conduct trainings on health and hygiene education both in the classroom settings and community level. Students convey relevantinformation on health and hygiene to the community through open space sessions, mothers' gatherings, and other community based activities. The student facilitators use PHASE materials to explain the key points and the best practices to families and friends.

Clean Week campaign. A week long campaign is organized and initiated by the schools in order to help the members of student brigades in preparing for the visit of health evaluator. All participating schools were categorized as clean based on the pre-set criteria. The collaboration of health inspector, community members, and local government authorities are present in the campaign to show support and encourage students.

Art competition on Personal Hygiene Practices. An art competition is organized for children to exhibit their knowledge, understanding and raise awareness on the importance of fundamental hygiene practices. The theme of the competition shall focus on "maintaining personal hygiene." The project received support and approval from the concerned government agency and offers a great help for students to intensify their knowledge, perception on hygiene through creative activity.

***Sporting events*.** Schools organized various sports activities to developthe consciousness on hygiene issues and encourage good health through physical fitness. Winners received school materials and all students will be given chances to

join in an organized sporting event.

Strategies to achieve success in sanitation.(Mara D, Lane J, Scott B, et al., 2010) Sanitation covers a broad and complex topic;it is multidimensional concern that is connected with the state of health, social and economic development. It affects manylives but given less emphasis. There are three (3)key strategies to attain success in sanitation. The foremost important among the three strategies ispolitical leadership, itis characterized by the formulation of direct institutional responsibility and apportion specific budget for sanitation, ensureseamless working relations from among public sectors and agencies in health, water resources, and in utility services. The second strategy is the shift from centralized supply-led infrastructure provision to decentralized, people-centered demand creation coupled with support to service providers to meet that demand. This strategy convert the little improvements of sanitation as human activity into a collective solutionto the problem confronting economic challenges and essentially addresses the problem of affordability, people gradually upgrade themselves with new sanitation system as their economic condition warrant their necessities. The final strategy is the direct and total engagement of health sector in sanitation. As the frontline service provider, they possess direct influence in introducingsystematic approach in addressing concerns with regards to sanitation and for the achievement of its goal.

Constraints to success in sanitation.(Mara D, Lane J, Scott B, et al., 2010) The most serious concern that hinders the successful implementation of sanitation in the community is the absence of national policies.The government through its health ministry unable to function as implementer and regulator of sanitation without

institutional policies and strong support mechanism in transforming national foundation into lead institutions for sanitation, increasing its concentration on the improvement of household behaviors, community activity and enable the health system to assimilate sanitation and hygiene. Other constraints in reaching success in sanitation are the abrupt population growth which has resulted to a high population density among urban and pre-urban areas of developing countries. Finally, in spite of the fact that sanitation can generate economic benefits to the entire nation at large, these benefitswere not felt by the person who invests in the good sanitation. So the sanitation practices at home remains poor—most people are unwilling to invest, considering all the other competing demands on their money.

The links between unsanitary conditions and malnutrition. (Bartlett 2003)Diarrhoea and intestinal parasites, along with the poor condition of water andsanitation that promotes them, have complex and reciprocallinks to malnutrition in children. Malnutrition weakens thebody's defences and makes children more prone to diseases. Atthe same time, intestinal parasites and diarrhoeas contribute to malnutrition by de-escalatingfood intake;prevent the absorption of nutrientsand causing direct nutrient losses. Even a relatively mild infestation of parasites can consume ten percent of a child's total energy intake as well as interfering with digestion and absorption. Unsanitary environments also contribute to malnutrition by challenging children's immune systems; nutrients that would otherwise support growth go instead towards supporting the immune response.Data from 84 countries indicate that the best predictor of nutritional status, next to sufficient funds for food, is the level of access to water. The case is

often made that the effects of diarrhoea on growth are transient and that children generally catch up quickly. This appears to be true if they have stretches of diarrhoea-free timebut, for many children, diarrhoea in the early years may be toosevere or too frequent to allow for catch-up growth, and it is associated with continued underweight or substantial shortfalls in growth when children are older. Poor provision also affects growth of the child; when water is at a distance, a child need to carry heavy workloadsespecially for older children;this has resulted to burn calories.Heavy containers can also cause deformities in bone growth.Malnutrition and stunting have

been found to be related to children's mental and social development,

in both the short and longer terms. Children who have suffered from early malnutrition have lower IQ and school achievement levels and more behavioural problems later on. Some of these studies have observed these effects independent of schooling or socioeconomic status; others have pointed to the fact that stunted children tend to receive less schooling than non-stunted children.Parasitic infestations continue to take their toll on children in school, in part as a result of the cognitive effects of anaemia associated with worms.

Deworming in schools(WHO 2002). The school-age children commonly have a higher exposure to worm infection compared to any age group. Through schools deworming tablets can be delivered in the most cost-effective way, considering its readily available infrastructure, skilled teachers with direct contact to the parents of school children. With the strong technical support from the local health system, teachers can dispense deworming tablets safely. These school

personnel can be trained easilyabout the rationale of deworming and eventually, theygain understanding on its dynamicsand keep records of their distribution.The conduct of deworming activities can helpinthe attainment of good health and nutrition for school children, this in return leads to increased participation rate and attendance,reduced class repetition, and increased educational attainment. Disadvantaged children with ill health and suffering malnutrition gain benefits from deworming activity.

The study of Aarnisalo, et al., (2006) entitled "The hygienic working practices of maintenance personnel and equipment hygiene in the Finnish food industry" Themaintenance personnel in food plants have to move between the production and non-production areas and touch food contact surfaces frequently. While they were conscious of this and they knew which surfaces come in contact with food, only about half of them reported to use gloves when working in food production area and even less washed their hands in situations where they should in order to work hygienically. One reason for not wearing the gloves was probably that they may hinder the performance of some work tasks. In situations like this the washing of hands should be highlighted. This study also showed that some of the maintenance personnel did not know where they could find the hygiene rules. It is most important that the rules are available for all.

Gomes-Neves et al., (2007) in their study entitled, "Food handling: A Comparative analysis of general knowledge and practice in three relevant groups in Portugal" found out that a significant proportion of food handlers lacked basic knowledge and understanding of microbiological hazards, hygiene and safety rules.

Food handlers did not take into account the importance of temperature control during cooking and storing food. The result indicates that there is a need to improve and increase awareness of the measures imposed by food safety laws.

The study on Ansari-Lari et al., (2010) entitled “Knowledge, attitudes and practices of workers on food hygienic practices in meat processing plants in Fars, Iran”, Almost all respondents had high level of knowledge concerning the general sanitary measures in the work place such as washing hands, using gloves, caps and aprons, and proper cleaning of the instruments, while majority of them failed in the identification of specific disease or pathogens which could be transmitted via foods. There was significant positive correlation between level of education with general knowledge and knowledge of microbiological food hazards, also between practices and length of employment.

In the study of Kendra (2009) entitled” Impact of Health Education Programme on the Knowledge and Practices of School Children Regarding Personal Hygiene in Rural Panipat” has shown that if a need based school health education programme is developed with consideration to age groups and classes, it definitely leads to improvement in the knowledge and practices of school children regarding personal hygiene. Health education should be treated as a compulsory component of school education at all levels. A much needed effort is needed to design nutrition and health education programmes and significant extra work should be made for its implementation. Moreover, such programmes should be regularly reinforced to sustain the desired results. The programmes can also be substantiated with community programmes on health education for teachers as well as parents.

In the study of Bosworth et al., (2011) entitled" School Climate Factors Contributing to Student and Faculty Perceptions of Safety in Select Arizona Schools", findings revealed that in accordance with Maslow's hierarchy of needs, students who are focused on meeting basic needs for safety and health cannot spare full attention to learning and academic success. Thus, ensuring students' physical and mental health is an important feature of safety. In part, this means providing school environment that ensures salient safety features including school fence and locked doors. Perceptions of safety do not appear to be clearly correlated with the school's location, neighborhood factors, or level of academic achievement.

Frumfkin (2005) in his book entitled, "Environmental Health from Global to Local" made emphasis that environmental health addresses the health safety of air, water, food, waste materials, transportation and safety measures such as fence, building design and many other aspects of places people live, work and play. Strengthening safety measures in schools help reduce risks among school children from the danger of physical hazards. Thus, increase participation and level of achievement.

Bartlett (2003) in her published journals entitled, "Neglecting Neglect No More: Increasing Awareness of Child Neglect from a Social Work Perspective" She cited that poor condition of school facilities have complex and reciprocal link to malnutrition. The presence of environmental protective factors, quality of the relationship between the child and school hygienic practices all influence its specific impact on a child's development. Child outcomes are diverse, ranging from serious psychopathology to resilient functioning, but multiple studies have documented the deleterious effects of neglect.

The study of Banga, M., (2013) entitled "Household Knowledge, Attitudes and Practices in Solid Waste Segregation and Recycling: The Case of Urban Kampala" revealed that, the awareness of recycling activities is important in household behaviour toward solid waste separation. It was found out that the awareness of recycling activities in the area significantly influences the separation of solid waste in a household. This could be because people know that they will be able to get a ready market for their sorted waste. The results of the study show that waste separation is significantly related to household income, the gender of the respondent, the level of awareness of recycling activities in the area and the educational level of the respondent. Furthermore, the results show that people are aware and have a positive attitude towards both separation and recycling of solid waste.

In the study of Omran et al., (2009) entitled "Investigating Households Attitude Toward Recycling of Solid Waste in Malaysia: A Case Study" Knowledge of the existence of recycling program and the knowledge required complying with the rules and regulations of this program are thought to be the basic issues that encourages individuals from participating. Researchers suggest that high rates of recycling participation appear mainly in areas where householders are better educated and financially secure and where the requirements of basic needs have been fulfilled.

Ehrampoush and Moghadam (2005) in their study entitled, "Survey of Knowledge, Attitude and Practice of Yazd University of Medical Sciences Students about Solid Wastes Disposal and Recycling" cited that environmental awareness can

increase their knowledge, which in turn results in improvement of students and parents' attitudes and behavior. Successful recycling programs should be designed in such a way as to increase society's environmental knowledge, its attitudes and behavior towards recycling.

The study of González-Torre and Adenso-Díaz (2005) entitled, " Influence of distance on the motivation and frequency of household recycling "have found out that when citizens who are environmentally concerned have bins near to their home, they appear to be willing to recycle more fractions than when they have to walk for a longer time to drop off the waste, due to the inconvenience of carrying the large volumes that this type of waste usually occupies. This means that when in the presence of others, the subjects were inclined to make more socially responsible decisions, especially when peers actually recycled. With respect to the factors that encourage selective collection, social influences and altruistic and regulatory factors are some of the reasons why certain communities develop strong recycling habits.

The study of Barnes and Maddocks (2002) entitled, "Standards in School Toilets-A Questionnaire Survey" revealed that students who refuse to use toilets, often citing poorly and unhygienic facilities. Such toilet-avoidance behavior could be of importance in the development of childhood constipation, defined as delay or difficulty in the passing of stool resulting in distress. Improving standards in the school toilets facilities could improve use and so contribute in the reduction in childhood constipation rates. Improve standards would at the very least provide children with the positive message regarding hygiene and reduce health risks.

In the study of Ngure et al., (2014) entitled, "Water, sanitation, and hygiene

(WASH), environmental enteropathy, nutrition, and early child development: making the links". Among children who were stuntedat baseline, those who came from households with water and sanitation had a greater chance ofreversing stunting than their peers from householdswithout either facility. The effects of water quality and sanitation on child growth are complex and theymay involve interaction between the two factors. Asynergistic effect of water and sanitation on growthwas reported among young children in Lesotho in aprospective studyand in the Esrey study describedabove,but a similar synergy was not found in Sudan. The findings of the study stressed out that functional consequences of poor sanitation practices is associated with the increasing risks and vulnerability to problems concerning to school health.

The study of Greene, Freeman, Akoko, Saboori, Moe, and Rheingans (2012) entitled "Impact of a School-Based Hygiene Promotion and Sanitation Intervention on Pupil Hand Contamination in Western Kenya: A Cluster Randomized Trial" shows that materials for handwashing were constantly available following the intervention. Therefore, most children in the intervention schools increased their tendency in washing their hands despite of the absence of handwashing materials during data collection, behavioural indicators also revealed that pupils less likely practice regular and thorough handwashing. During hand washing demonstration, no significant changesof percentage between girls or boys that use soap. Promoting hygiene education heavily depends on a simple curriculum and teachers' trainings andusesthis knowledge to pass on messages to pupils, which is insufficient to influence change in behavior. Health message-based hygiene promotion efforts are

not enough to drive behavioral change in adults in most developing countries, but it is stillunknown whether this strategy can help in improving hygienic practices among children. An evaluation conducted by Kenyan schools on hygiene intervention concluded that there is no evidence on teachers' trainings and health club activities in school improved handwashing behavior.

The study of Shrestha and Mubashir (2014) entitled "Impact of Health Education on the Knowledge and Practice Regarding Personal Hygiene among Primary School Children in Urban Area of Karnataka, India." Concluded, thatthe knowledge on personal hygiene and its constituent variables significantly increased after health education intervention. The practice of personal hygiene and related factors significantly increased after health education intervention. The increase in practice was statistically significant. It concluded that the change in behavior of school children was possible if the health education intervention is properly implemented to the children.

In the study of Aziz and (2013)entitled "Food handlers' attitude towards safe food handling in school canteens" revealed that, Attitude towards compliance is positively correlated to safe food handling especially in terms of adherence to school canteen management guidelines and food regulations in enhancing food handling practices. Findings in this study reported that adherence to school canteen rules and government regulations play a significant role in changing food handlers' attitude so found that awareness on existing barriers does not impede safe food handling. Although, small and confined working space, inconvenient kitchen equipment and the absence of food handling guidelines toward achieving safe food handling are

individual variables that receive higher score, showing respondents agreement to these are barriers to safe food handling. It is maintained that printed guidelines on canteen food handling and a separate manuals on good kitchen practices may resulted to significant impact towards safe food handling behavior.

In the study of Sia Su (2008) entitled “Environmental worldview and concern of college students in the Philippines.” Findings revealedthat gender and environmental attitudes of college students affects one’s environmental concern. Gender primarily affects one’s environmental concern. Such research supports the results of this study by confirming that women showed higher environmental concern than men. The students’ social regard towards the environment reflects their concerns and actions. These favorable attitudes help change people’s emotional reactions, and develop favorable attitudes bring about positive opinions or beliefs. In addition, their attitudes encompass affective behavioral, mental reactions including their concerns.

Tanner (2010) in his study focusing on “Shifting the narrative: A child-led responses to climate change, health practices and disasters in El Salvador and the Philippines”. The interlinking spectrum of risks perceived at community level among both adults and children suggests that interventions should expand its scope not only on climate-related risks to avoid unintended mal-adaptation. These practices otherwise suggests that there can be no single most effective mode of child involvement that is generally adaptable for teaching climate change and DDR (Lansdown, 2006; Shier, 2001). The essence and mode of participation is directly determined by the community and institutional processes, strategies and standards

of living, cultural factors, and also the hazard burden facing the communities. This study reflects on the participation of children through community-organized groups, which introduceanother ways that children might establish their own initiative to participate in development, school sanitation practices, climate change and disasters operations. While actions manifested by most children are participative in nature, often highlighting the advocacy for children-centered approaches for climate change, disaster risks and health awareness shall be administered at the equal level so that participation will meet the synergistic objectives of inclusion, empowerment, health stability and risk reduction.This includes children's ability to contextualize knowledge on both the physical and social environment, a process by which traditional approaches to curriculum are now being substantiated with necessary analytical tool to prioritize risks and vulnerabilities.

Uline and Tschannen-Moran (2008) in their study entitled "The walls speak: The interplay of quality facilities, school climate, and student achievement." It was found out thatthe school social environment and student achievement are interconnected. There is increasing evidence that shows significant connections between schools physical features and students achievement, noting that some influence are clearly physiological others are social factors.The state and conditions of school buildings has also been attributed to student attitudes, these includes violence or disciplinary incidents, absenteeism, suspensions, and smoking. (Schneider, 2002). Correlational studies have provided evidence that the school physical structure directly influence the attitude and behavior of building occupants.Schools with high regards on academic press are serious and orderly

places, always in search for excellence. In these schools, students with high academic achievementgain respect from their peers and honored by the school community. Teachers set high goals and the principal assists to ensure that these goals will be achieved. Students respond positively to the challenge of these goals and they work hard to achieve them.

In the study of Srivastava and Kumar (2012) entitled “Nutritional status of school-age children-A scenario of urban slums in India”, they found out that the respondents have shown a lower mean of height and weight both boys and girls compared to CDC (Centers for Disease Control and Prevention 2000) standards for all age groups. Based on the nutritional status, there is prevalence of stunting and underweight among school children aging 11 to 13 years oldand theprevalence of wasting that was found highest in age group 5 to 7 years old. There is a refractive error of all illness that is recorded common among girls. However, the difference is statistically significant for rickets and anemia. Children living in joint families have the higher risks of malnutrition. Moreover, school-aged children living in slum areas that were chosen as respondents had poor nutritional status. Recommended interventions includes; skills-based nutrition education, fortification of food items, effective infection control, training of public healthcare workers and delivery of integrated programs.

Conceptual Background of the Study

Figure 2 illustrates the schematic diagram of the conceptual framework which serves as outline to give direction to the researcher in his study. The conceptual

framework of the study consists of the independent and dependent variables. The independent variable consists of the problems encountered by the schools in maintaining sanitation and hygienic practices. The dependent variable on the other hand, comprises of school sanitation and hygienic practices in terms of; food sanitation, environmental safety, waste segregation and the maintenance and use of school health facilities and the school nutritional status.

The researcher is under the presumption that the independent variable might directly or indirectly influence the dependent variable. In the same manner, these two variables form part in the formulation of action plan to improve school sanitation and hygienic practices. The findings of this study will help the researcher analyse and assess the present practices in the identified schools. Likewise, the researcher would be able to identify the problems that influence that state condition of the school sanitation and hygiene.

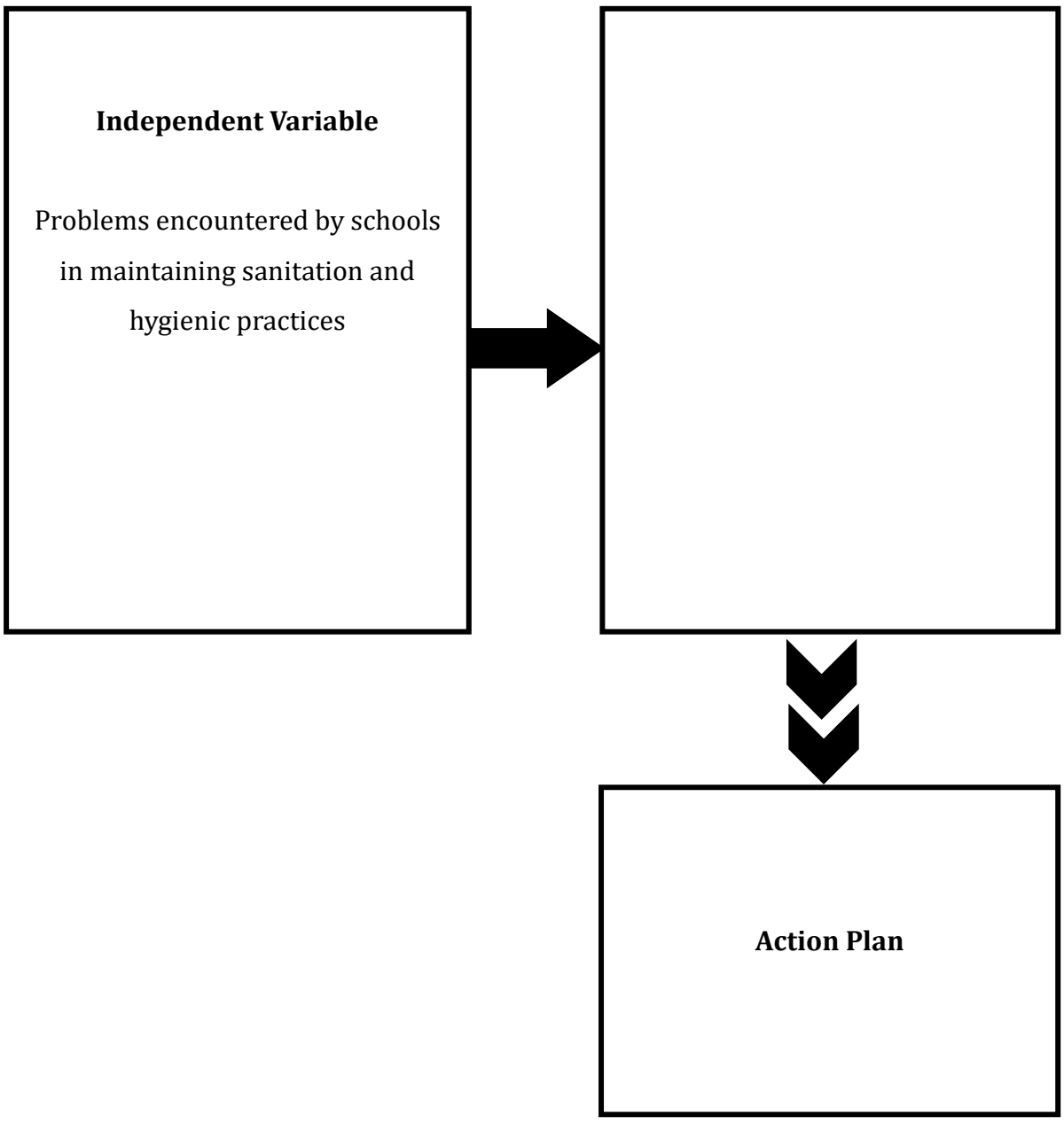
Independent Variable
Problems encountered by schools in maintaining sanitation and hygienic practices
Action Plan

***Figure 2*: Schematic Diagram of the Conceptual Framework of the study**

Statement of the Problem

This study attempts to determine the state of school sanitation and hygienic practices. The result served as basis in crafting policy recommendations and in identifying the needed projects and trainings for school health.

Specifically the study sought to answer the following questions:

1. To what extent do schools encounter problems in maintaining school sanitation and hygiene in the following areas:
    1.1 food sanitation;
        1.1.1 food handling practices;
        1.1.2 personal hygienic practices;
    1.2 environmental safety;
    1.3 waste segregation and
    1.4 maintenance and use of school health facilities?
2 To what extent do schools regard sanitation and hygienic practices on the same areas?
3 What is the school's nutritional status based on the number of wasted and severely wasted pupils?
4 Is there a relationship between the problems encountered by the schools in maintaining sanitation and hygienic practices and the extent of these practices on the same areas?
5 Is there adifference in the problems encountered by the schools in maintaining sanitation and hygienic practices when grouped according to their nutritional status?

Significance of the study

The researcher finds this study particularly beneficial to the following:

Department of Education, Bayawan City Division. The findings of the study provides clear picture on the state and condition of the school sanitation and hygienic practices among the identified schools thereby, addressing the need for infrastructure and trainings.

School Head/ Principal. This helps them gain understanding in the need to consider necessary facilities to augment the school sanitation and hygienic practices by including them in the Annual Improvement Plan of the School Improvement Plan.

Teachers. This helps them improve their teaching in all areas of school sanitation and hygienic practices.

Parents. The findings of this study are of great help to the parents of the school children. This helps them understand and develop strong support for the school programs and initiate necessary actions to improve school sanitation and hygienic practices.

Community. This helps them develop awareness on the impact of school sanitation and hygiene. Thus, ensure strong support for the school children.

Pupils. This helps them generate understanding about the importance of school sanitation and hygienic practices and develop positive behaviour towards self-role.

Scope and Limitations of the Study

Scope of the study. The study was conducted in the Division of Bayawan City. It focused on the existing problems encountered in sanitation and hygienic practices and the extent of these practices among public elementary schools. The identified

respondents are the teachers under the elementary schools of the 4th cluster of Bayawan City West District, namely; Manduaw Elementary School, Kalamtukan Elementary School, Villasol Elementary School and Bokaw Elementary School respectively.

Limitations of the study. The study observed several limitations. First, the distribution of the questionnaire to the teachers was administered under different conditions. Questionnaires were limited only to the problems encountered and existing sanitation and hygienic practices in their station. Second, the study determined the pre-existing programs and innovations to improve the state of school sanitation and hygiene. There are other factors associated with the child's sanitation and hygienic orientation including their home practices that are left unexplored. However, the study oversees the school sanitation and hygienic practices within the school setting and not on the external factors that could divert the focus of the study. Finally, the association of school's nutritional status in relation to the extent of problems in sanitation and hygiene were only limited to school practices. Other factors associated to children's nutritional status were not included in the study.

Research Methodology

Research design. The study utilized the descriptive survey in order to achieve the purpose which is to determine the Problems encountered in Maintaining Sanitation and Hygienic Practices and the Extent of Practices on the same areas. It is descriptive in the sense that the data obtained were analyzed and described. It was also correlational since it pointed out the relationship between the Problems

encountered in Maintaining Sanitation and Hygienic Practice and the Extent of Practices on the same areas.

Research environment. The study was conducted in four elementary schools of Bayawan City Division. These schools are administered by four (4) school headsthat belong to the same cluster. The division was headed by a Schools Division Superintendent, an Assistant Schools Division Superintendent, Education Program Supervisors and Public Schools District Supervisors. The four schools under the study are situated in the northern part of Bayawan City.

Research respondents. The study utilized all teachers of four elementary schools in the 4th cluster of Bayawan City Division, Bayawan City West District. There werefifty teacher respondents.

Bayawan City West District	No. of Teachers	No. of Wasted/ Severely Wasted pupils
Manduaw Elementary School	15	45
Bokaw Elementary School	8	13
Villasol Elementary School	13	37
Kalamtukan Elementary School	14	51
Total	50	146

Research instruments. The study utilized a researcher-made questionnaire gained by the researcher through readings in books, journals and online references. The questionnaire consists of two parts; Part I deal with the problems encountered by school in maintaining sanitation and hygiene in the areas of food sanitation, environmental safety, waste segregation and the maintenance and use of school

health facilities. Part II deals with the extent of practices on the same areas. In addition, the researcher also utilized interview to randomly selected teachers in order to verify the extent of problems and practices in school sanitation and hygiene.

The researcher asked permission that instrument would be used in this study. The whole questionnaire was presented to three experts in the field of school health for content validity and cross checking if the items are aligned with the specific problems of the study. The two of them are registered nurses presently connected with the Department of Education, Bayawan City Division, Bayawan City and the other one is a Doctor of Medicine from the City Health Office of the Local Government Unit of Bayawan City. These three experts validated all parts of the questionnaire. All suggestions from the three experts were taken into consideration in the final construction.

To ensure item reliability, a dry-run was made. There were 30 selected teachers who served as the respondents. The items were tested for its reliability using the Cronbach's alpha test. This test was regarded as the most suitable type for survey research where items were not scored right or wrong and where each item could have different answers (McMillan and Schumacher 246-247).This was calculated to verify the internal consistency reliability of the items. It is a measure of the extent to which all the variables in the scale are positively related to each other and its theoretical value varies from 0 to 1. Higher values of alpha are more desirable and a value of 0.70 is considered acceptable. The reliability coefficient yielded a value of 0.955, 0.932, 0.927, 0.964 and 0.961 for the extent of problems encountered by the school in maintaining sanitation and hygiene in food handling,

personal hygiene, environmental safety, waste segregation and the maintenance and use of school health facilities and a value of 0.950, 0.950, 0.842, 0.952 and 0.963 for the school sanitation and hygienic practices on the same areas, respectively. This means that the items were reliable. Then the final revision of the questionnaires was done.

Research procedure. After the design hearing, the researcher incorporated all the suggestions and corrections by the members of panel. A letter of request was sent to the Schools Division Superintendent of the Division of Bayawan City to ask permission to conduct the study. Upon the endorsement of the Dean of the Graduate School Foundation University, the signed and approved request was presented to the principals and the teacher respondents. The researcher explained the purpose on the conduct of the study and they were assured of the confidentiality of the study.

The retrieval of the questionnaire was done four days after the respondents answered the questions. Then, results were tabulated and tallied using the MS Excel, analysed and interpreted.

Statistical Treatment of Data

The following statistical tools were used in the study

Percent. This wasused to show a part related is related to a whole. It is used in presenting the profile of the respondents.

Weighted Mean. This was used to determine theproblem encountered by the schools in sanitation and hygienic practices.

Spearman rank correlation coefficient. This was used to identify the relationship between the problems encountered by the schools in maintaining

sanitation and hygienic practices and the extent of these practices on the same areas. This was also usedin identifying the relationship between the problems encountered by the schools in maintaining sanitation and hygienic practices and the schools' nutritional status.

The researcher applies the following interpretations to describe the level of internalization of school health and hygienic practices of Elementary School teachers.

Verbal Description	**Explanation**
5-Very High Extent (VHE)	The practices manifested by the school is 81-100% of the time.
4- High Extent (HE)	The practices manifested by the school is 61-80% of the time.
3- Moderate Extent (ME)	The practices manifested by the school is 41-60% of the time.
2-Low Extent (LE)	The practices manifested by the school is 21-40% of the time.
1-Very Low Extent (VLE)	The practices manifested by the school is 21-40% of the time.

To identify the degree of the relationship between two variables, the researcher applies the following descriptions (Statistical Correlation 2009):

	Value of r	**Strength of Relationship**
Between	±0.50 to ±1.00	-strong relationship
Between	±0.30 to ±0.49	-moderate relationship
Between	±0.10 to ±0.29	-weak relationship
Between	±0.01 to ±0.09	-very weak relationship

Operational Definition of Terms

The following terms are operationally defined to facilitate understanding of the study:

Environmental safety. Thisrefers to the practices, policies and procedures that ensure that a surrounding, school environment, classrooms and other facilities, is free of danger that could cause harm to the school children, teachers and other personnel.

Efficacy expectations. Thisrefers to individual competence in performing sanitation and hygiene practices to influence behavior.

Food handling. This refers to the appropriate food management, preparation, and storage in ways that prevent food-related diseases.

Hygiene education. This refers to the instruction aimed at improving behavior through useful practices connected to personal, water, food, domestic and public hygiene.

Incentive/ Reinforcement. This refer to the school health programs that help regulate positive behavior as a consequence of its proper implementation.

Internalization. Thisprocess by which teachers, school children and other stakeholders of the school take on (and make them their own) the attitudes, beliefs, perspectives, and values on the practices of good sanitation and hygiene held by other members of the same organization.

Outcome expectations. Thisrefers to the positive changes in human behavior that brings about desirable result on the school sanitation and hygiene practices.

Personal hygiene. This refers to the principle of maintaining cleanliness andgood grooming of the external body.

Sanitation. This refers to the ways and means of promoting hygiene through the prevention of human contact with hazards and wastes, through proper treatment and disposal.

School. This refers to different individuals with in an educational institution. Specifically it refers to (teachers, canteen personnel and the learners) who take part in the organizational operations.

School health facilities. This refers to all school health-enabling facilities which includes comfort rooms, school clinic, hand washing and tooth brushing facilities.

School hygiene. Is the study of school environment influence; it explores affection of school to mental and physical activities.

Severely wasted/ Wasted. This refers to pupils whosenutritional status and condition is characterized by substantial weight loss and stunting. It is calculated by comparing weight for age and the Body Mass Index (BMI).

Waste segregation. This refers toproper classification and disposal of solid waste into biodegradable, non-biodegradable and hazard wastes.

Chapter II

Presentation, Analysisand Interpretation of Data

This chapter presents data in tabular form. The data pertain to the determination of problems encountered by the schools in Sanitation and hygiene and extent of practices on the identified areas. The data are systematically arranged in accordance with the sequence of the problems.

Table 1
Extent of Problems Encountered by the School in Maintaining School Sanitation in Terms of Food Sanitation (Food Handling Practices)

To what extent do school encounter problems in food handling in terms of the ff:	wx̄	Verbal Description
1. Unavailability of food storage facilities.	3.66	High
2. Lack of training on proper food storage.	3.60	High
3. Lack of training for appropriate food handling.	3.54	High
4. Poor food storage and display practices.	3.50	High
5. Lack of effective cleaning routine (Sterilization of utensils).	3.48	High
6. Lack of guidelines for food preparation.	3.44	High
7. Poor maintenance of canteen utensils.	3.40	Moderate
8. Lack of knowledge on food borne diseases pest control and monitoring.	3.40	Moderate
9. Absence of cleaning agents and disinfectants in washing kitchen utensils.	3.28	Moderate
10. Unsafe water sources for food preparation.	3.26	Moderate
11. Improper disposal of left-over food.	3.12	Moderate
Composite	3.43	High

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

The schools encountered high extent of problems in following areas; unavailability of food storage facilities, (wx̄=3.66), lack of training on proper food storage (wx̄=3.60), lack of training on appropriate food handling, (wx̄=3.54), poor food storage and display practices, (wx̄=3.50), lack of effective cleaning routine in

the sterilization of utensils, (w$\bar{x}$=3.48), and lack of guidelines for food preparation, (w$\bar{x}$=3.44). It is important to note that the respondent schools' are situated in the hinterland and most of them do not have the access to electricity and food storage facilities which is deemed necessary in food handling. In addition, a randomly selected teachers verified in an interview that food handlers have not undergone proper trainings on food safety practices and were not able to follow guidelines in proper food preparation. The findings corroborates with the study of Aziz et al. (2013) which revealed that food handlers have agreed that they face barriers to carry out food safety behavior especially with unavailability of food handling guidelines, kitchen equipment, and inconvenient food storage facilities during food preparation. Aziz also cited that adherence to school canteen management guidelines and food regulations has resulted to significant impacts towards safe food handling. Furthermore, schools have encountered moderate extent of problems in poor maintenance of canteen utensils, and lack of knowledge on food borne diseases, pest control and monitoring, (w$\bar{x}$=3.40) respectively.

Moderate extent of problems is also encountered in the absence of cleaning agents and disinfectants in washing kitchen utensils, (w$\bar{x}$=3.28), unsafe water source for food preparation, (w$\bar{x}$=3.26) and improper disposal of left-over food, (w$\bar{x}$=3.12). These findings contradicts with the study of Danso et al. (2016) revealed thatsanitation and hygiene had become a way of life among food vendors and they developeda habit of keeping utensils, equipments, tools, working surfaces and kitchen clean most of the time.

Table 2
Extent of Problems Encountered by the School in Maintaining School Sanitation in Terms of Food Sanitation (Personal Hygienic Practices)

To what extent do school encounter problems in personal hygienic practices on food sanitation in terms of the ff:	wx̄	Verbal Description
1. Direct contact of food is done without using gloves.	3.68	High
2. Lack of personal hygiene materials(masks, hairnet, and apron).	3.50	High
3. Lack of clean water supply	3.30	Moderate
4. Lack of facilities for adequate collection and disposal of rubbish.	3.28	Moderate
5. Lack of awareness on the risks of transmission of helminthes through human contact.	3.06	Moderate
6. Lack of social regards on the dynamics of personal hygiene.	3.02	Moderate
7. Improper food preparation routines (washing hands before, during and after)	2.92	Moderate
8. Poor health condition while preparing food.	2.90	Moderate
9. Smoking while preparing food.	2.30	Moderate
Composite	3.11	Moderate

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

Table 2 shows the extent of problems in food sanitation personal hygienic practices. The schools encountered high extent of problems in terms of direct contact of food is done without using gloves, (wx̄=3.68). This finding is similar to the study of Aarnisalo et al. (2006), revealed that in some cases; hand hygiene is not properly observed in food handling. Thus food handlers ignore the risks in the transmission of microorganisms and intestinal parasites to food.There is also a high extent of problem encountered in lack of personal hygiene materials in terms of masks, hairnet and apron, (wx̄=3.50). These findings contradicts with the study of Bas et al. (2004), canteen staff should have a clean and proper appearance, work with gloves, masks, hairnet and apron and stick to good hygiene practices.

Moderate extent of problems is also encountered in the absence of clean water supply, ($w\bar{x}$=3.30), lack of facilities for adequate collection and disposal or rubbish, ($w\bar{x}$=3.28) lack of awareness on the risks of transmission of helminthes through human contact, ($w\bar{x}$=3.06), lack of social regards on the dynamics of personal hygiene, ($w\bar{x}$=3.02), improper food preparation routines in washing hands before, during and after, ($w\bar{x}$=2.92), poor health condition while preparing food, ($w\bar{x}$=2.90), and smoking while preparing food. This finding is in line with the study of Ali (2007) cited that the application of proper and systematic hygiene practices in food preparation including the use of clean water and ingredients in food preparation, proper disposal of kitchen wastes, eradicate number of food borne diseases.

Moreover, the study of Makombe et al. (2017) so found that food borne diseases have been associated with poor personal hygiene by food handlers. This entails that, food handlers in food service establishments should practice good hand washing practices; in good personal hygiene and maintain good health condition in order to prevent food contamination.

Table 3
Extent of Problems Encountered by the School in Maintaining School Sanitation in Terms of Environmental Safety

To what extent do school encounter problems on environmental safety in terms of:	wx̄	Verbal Description
1. Lack of trainings on the proper use of chemicals and gases in sciences laboratories (DepEd Order No. 48, s. 2006).	3.30	Moderate
2. Inadequate supply of medicines for emergency / survival kits.	3.22	Moderate
3. Lack of knowledge on indoor chemical and pollutant source control.	3.20	Moderate
4. Lack of operational guideline in school computer laboratories.	3.12	Moderate
5. Lack of road safety signage/s near the school.	3.08	Moderate
6. Lack of fencing of school area to maintain cleanliness in environment.	3.04	Moderate
7. Lack of training on Disaster Risk Management (Fire prevention, Earthquake and flood drills).	2.72	Moderate
8. Lack of precautionary measures in school premises	2.70	Moderate
9. Lack of school mapping.	2.64	Moderate
10. Lack of site development planning.	2.60	Low
Composite	2.96	Moderate

Legend:

Scale	**Verbal Description**
4.21 – 5.00	Very High
3.41 – 4.20	High
2.61 – 3.40	Moderate
1.81 – 2.60	Low
1.00 – 1.80	Very Low

Table 3 reflects the problems encountered in environmental safety. The schools encountered moderate extent of problems in environmental safety in following areas; lack of trainings on the proper use of chemicals and gases in sciences laboratories (DepEd Order No. 48, s. 2006), (wx̄=3.30), Inadequate supply of medicines in emergency/ survival kits, (wx̄=3.22), lack of knowledge on indoor chemical and pollutant source control, (wx̄=3.20), lack of operational guidelines in computer laboratories, (wx̄=3.12), lack of road safety signages near the school, (wx̄=3.08) and lack of fences in the school area to maintain cleanliness in the environment, (wx̄=3.04). These finding is in line with the study of Bosworth et al. (2011), cited that the perceived characteristics and safety features of a school

includes security in terms of fences and locked doors, free from direct exposure to environmental hazards and have established clear safety guidelines in the operation of various laboratories. In addition,Squelch (2001) propounds that a safe school is characterised by the presence of certain physical aspects such as a secure wall, fencing and gates, buildings that are in a good state of repair and well-maintained school grounds.

Moderate extent of problems is also encountered in the lack of trainings on disaster risk management in terms of fire prevention, earthquake and flood drills, ($w\bar{x}$=2.72), lack of precautionary measures in the school premises, ($w\bar{x}$=2.70) and lack of school mapping, ($w\bar{x}$=2.64). On the other hand, the schools encountered low extent of problem on poor school site development planning, ($w\bar{x}$=2.60).These findings run parallel with the study of Xaba (2006), equipments for emergencies and school safety like fire extinguishers were stored in offices;in some case they were non-existent, not working or faulty. In addition, school signages were dilapidated and poorly maintained.

Table 4
Extent of Problems Encountered by the School in Maintaining School Sanitation in Terms of Waste Segregation

To what extent do school encounter problems on waste segregation in terms of:	wx̄	Verbal Description
1. Lack of trainings on recycled-waste management initiative.	2.90	Moderate
2. Lack of training on solid waste management.	2.82	Moderate
3. Instructions on solid waste disposal are not carry out properly.	2.68	Moderate
4. Lack of supervision and guidance on waste segregation.	2.66	Moderate
5. Lack of monitoring on the state and use of sanitation and hygiene enabling facilities.	2.66	Moderate
6. Lack of designated areas for waste disposal.	2.60	Low
7. Lack of awareness campaign on the harmful effects of solid waste disposal.	2.58	Low
8. Poor support mechanism from the local community.	2.56	Low
9. Poor coordination with local government for waste disposal.	2.36	Low
10. Lack of trash bins and waste depository.	2.30	Low
Composite	2.61	Moderate

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

Table 4 presented the problems on waste segregation. The schools encountered moderate extent of problems in maintaining sanitation and hygienic practices in waste segregation on the following areas; lack of trainings on recycled-waste management initiative, (wx̄=2.90), lack of training on solid waste management, (wx̄=2.82), Inadequate instructions on solid waste disposal, (wx̄=2.68), lack of supervision and guidance on waste segregation, (wx̄=2.66), lack of monitoring on the state and use of hygiene enabling facilities, (wx̄=2.66).This finding is similar to the study of Aguwamba, (1998), the state of waste management and recycling programs is attributed to an inadequately formulated and poorly implemented environmental policy and inadequate trainings.

Low extent of problems is encountered inthe absence of designated areas for waste disposal, ($w\bar{x}$=2.60), lack of awareness campaign on the harmful effects of solid waste disposal, ($w\bar{x}$=2.58), poor support mechanism from the local community, ($w\bar{x}$=2.56), poor coordination with the local government for waste disposal, ($w\bar{x}$=2.36) and lack of trash bins and waste depository, ($w\bar{x}$=2.30). These results revealed that the schools take into serious account the harmful effects of improper waste disposal, so every person in the school community practiced solid waste segregation. The findings is similar to the study of Ehrampoush (2005), a successful recycling program is designed in such a way that increases environmental knowledge, positive attitudes and behavior towards appropriate waste management.

Table 5

Extent of Problems Encountered by the School in Maintaining School Sanitation in Terms of Maintenance and Use of School Health

To what extent do school encounter problems on the maintenance and use of school health facilities in terms of:	$w\bar{x}$	Verbal Description
1. Dysfunctional faucets.	3.64	High
2. Lack of water supply for latrines.	3.52	High
3. Dysfunctional handwashing facilities.	3.36	Moderate
4. Insufficient toilet-pupil ratio for both boys and girls.	3.32	Moderate
5. Poor repair and maintenance of school health facilities.	2.96	Moderate
6. Lack of cleaning disinfectants for toilets and urinals	2.94	Moderate
7. Lack of promotion on positive hygiene behavior in the use of school health facilities.	2.94	Moderate
8. Inaccessibility of toilets and urinals.	2.60	Low
9. Lack of handwashing facility.	2.46	Low
10. Lack of cleaning maintenance routine.	2.40	Low
Composite	3.01	Moderate

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low

1.00 – 1.80 Very Low

Table 5 illustrates the problems in the maintenance and use of school health facilities. The schools encountered high extent of problems in the maintenance and use of school health facilities in terms of; dysfunctional faucets, ($w\bar{x}$=3.64) and lack of water supply for latrines, ($w\bar{x}$=3.52). Respondents verified that the problems encountered were associated to poor water supply which hinders the access to faucets and handwashing facilities.

Moderate extent of problems is also encountered in dysfunctional handwashing facilities, ($w\bar{x}$=3.36), insufficient toilet ratio for both boys and girls, ($w\bar{x}$=3.32), poor repair maintenance of school health facilities, ($w\bar{x}$=2.96), lack of cleaning disinfectants for toilets and urinals, ($w\bar{x}$=2.94) lack of promotion on positive behavior in the use of school health facilities, ($w\bar{x}$=2.94), inaccessibility of toilets and urinals, ($w\bar{x}$=2.60), lack of handwashing facility, ($w\bar{x}$=2.46) and lack of cleaning maintenance routine, ($w\bar{x}$=2.40). These findings is in line with the study of Dube (2012), cited that toilets were often not very clean and had an odor with some toilets blocked. Toilets are not enough to serve the total number of pupils enrolled in the school. Approximately one water closet was serving up to 36 pupils in each grade level and most of these hygiene enabling facilities are also poorly maintained. In addition, Dube (2007) cited that hand washing facilities were available in the schools; however, there was no cleansing agent (soap). Moreover, these extents of problems was supported by Water Supply and Sanitation Collaborative Council (2004), the global health burden is staggering, with an increasing number of diseases associated with lack of access to safe drinking water, poor health facilities

and hygiene practices and inadequate sanitation.

Table 6
Extent of Sanitation and Hygienic Practices of the School in Terms of Food Sanitation (Food Handling Practices)

To what extent do school canteen vendors do the following practices:	wx̄	Verbal Description
1. Cooked food thoroughly.	3.94	High
2. Display cooked foods in a clean dry place.	3.76	High
3. Prepare ingredients in a clean area.	3.64	High
4. Wash vegetables separately.	3.56	High
5. Use clean and safe water in washing raw foods.	3.54	High
6. Put leftover foods in a separate container.	3.50	High
7. Clean and sanitize utensils after being used.	3.42	High
8. Separate raw food from cooked or ready-to-eat foods.	3.30	Moderate
9. Use cleaning agents and disinfectants of kitchen utensils.	3.30	Moderate
10. Bare hand contact with raw foodstuffs and cooked food is avoided.	3.28	Moderate
11. Use clean apron while serving the foods.	3.26	Moderate
12. Store cold holdings at 5°c and hot holdings at 57°c	3.16	Moderate
13. Use wiping clothes free from food debris and visible soil and shall be used for no other purposes.	3.16	Moderate
14. Separate raw animals foods and ready-to-eat foods during storage, preparation, holdings and display.	3.10	Moderate
15. Use color-coded cloths, buckets and mops for different cleaning area.	2.98	Moderate
16. Use mouth cover during food handling.	2.92	Moderate
17. Use gloves in serving food.	2.90	Moderate
Composite	3.34	Moderate

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

Table 6 present the extent of practices in food handling. The data revealed that there was a high extent of practices in food preparation particularly in cooking food thoroughly, (wx̄=3.94), display cooked food in clean dry place, (wx̄=3.76), prepare ingredients in clean area, (wx̄=3.64), wash vegetables separately, (wx̄=3.56), use clean and safe water in washing raw foods, (wx̄=3.54), put leftover food in a separate container, (wx̄=3.50) cleaning and sanitizing utensils after being used,

(w$\bar{x}$=3.42). These findings is similar to the study of Pritchard, (2002) many food handlers were aware of the basic temperature control requirements to cook food thoroughly, appropriate food preparation and proper food display practices. Moderate extent of practices is observed in the following; separate raw food from cooked or ready to eat foods, (w$\bar{x}$=3.30). This finding is similar to the study of Walker, Pritchard, and Forsythe (2003);found that, 97% of food handlers knew that raw and cooked foods should be separated in order to prevent bacterial transfer. In addition, moderate extent of practices was also observed in the use cleaning agents and disinfectants of kitchen utensils (w$\bar{x}$=3.30), bare hand contact with raw foodstuffs and cooked food is avoided, (w$\bar{x}$=3.528), use of clean apron in serving food, (w$\bar{x}$=3.26). Schools have moderate extent of practices in storing cold holdings at 5°c and hot holdings at 57°c temperate, (w$\bar{x}$=3.16), This finding is in line with the study of Walker et al., (2003), temperature treatment is frequently the critical control point in a production process that ensures bacterias are killed and food are properly cooked. Moderate practices was also observed in the use of wiping clothes free from food debris and visible soil, (w$\bar{x}$=3.16), the use of color coded cloths, buckets and mops for different cleaning area, (w$\bar{x}$=2.98), the use of mouth cover in food handling, (w$\bar{x}$=2.92), and gloves in serving food, (w$\bar{x}$=2.90). These findings corroborates with the study of Gilling et al. (2001), found that food handling practices is influenced by the access and conditions of kitchen utensils, sanitation and hygienic materials that significantly contributed to better food preparation.

Table 7
Extent of Sanitation and Hygienic Practices of the School in Terms of Food Sanitation (Personal Hygienic Practices)

To what extent do canteen vendors do the following practices:	$w\bar{x}$	Verbal Description
1. Maintain personal cleanliness.	3.94	High
2. Wear clean and appropriate clothes.	3.78	High
3. Wash hands after cleaning tables.	3.50	High
4. Use clean towel to wipe hands.	3.48	High
5. Ensuring that nails are clean, short trimmed and without polish or artificial nails.	3.46	High
6. Wash hands after handling the garbage.	3.46	High
7. Wash hands before touching raw or cooked foods.	3.46	High
8. Avoid blowing air into polythene bag before use.	3.44	High
9. Avoid wearing watches and jewelry during food production.	3.40	Moderate
10. Cough or sneeze on areas away from the food preparation site.	3.36	Moderate
11. Sell foods and collect money from consumers using barehand at the same time	3.34	Moderate
12. Foods are packaged in sealed wrapping or should have proper serving utensils such as tongs or spoons.	3.30	Moderate
13. Wash hands every after sneezing.	3.28	Moderate
14. Wear mask and hairnet.	3.26	Moderate
15. Wear clean uniform during preparation of food.	3.20	Moderate
16. Wear sterilized gloves in touching ready-to-eat foods.	3.08	Moderate
Composite	3.42	Moderate

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

Table 7 shows the extent of personal hygienic practices in food handling. The data indicates that schools have manifested high extent of practices in following; maintain personal cleanliness, ($w\bar{x}$=3.94), wear clean and appropriate clothes, ($w\bar{x}$=3.78), wash hands after cleaning tables, ($w\bar{x}$=3.50), use of clean towel to wipe hands, ($w\bar{x}$=3.48), nails are cleaned and trim without polish or artificial nails,

(w$\bar{x}$=3.46), wash hands after handling garbage, (w$\bar{x}$=3.46), before touching raw or cooked food, (w$\bar{x}$=3.46), and avoid blowing air into polythene bag before use, , (w$\bar{x}$=3.44). These findings corroborates with the study of Martins, Hogg, & Otero, (2012) found that food handlers in schools ensures excellent hygiene practices to reduce cross contamination and protect consumers from foodborne diseases.

In addition, moderate extent of practices is observed by food handlers; do not wear watches and jewelry during food production, (w$\bar{x}$=3.40), cough or sneeze on areas away from the food preparation site, (w$\bar{x}$=3.36), sell and collect money from consumers at same time using bare hand, (w$\bar{x}$=3.34), foods are packaged and sealed in sealed wrapping with proper serving utensils such as tongs or spoons, (w$\bar{x}$=3.30), wash hands after every sneezing, , (w$\bar{x}$=3.28), wear masks and hairnet, (w$\bar{x}$=3.26), wear clean uniform during food preparation, , (w$\bar{x}$=3.20) and wear sterilized gloves in touching ready to eat foods, (w$\bar{x}$=3.08).

These findings is similar to the study of ACT Government, (2015), food handlers in the school canteen observed strict compliance to basic food handling guidelines in the preparation and distribution of food with appropriate personal hygiene gears and observing personal hygienic standards.

Table 8
Extent of Sanitation and Hygienic Practices of the School in Terms of Environmental Safety

To what extent do schools implement Environmental Safety Measures in terms of the following practices:	$w\bar{x}$	Verbal Description
1. Ensure that the school environment is fresh and clean.	4.10	High
2. Ensure that tables and chairs in the classrooms are in good condition.	4.10	High
3. Ensure that the floor is mopped and kept clean.	3.98	High
4. School ground is free from sharp objects.	3.86	High
5. The school is fenced to avoid roaming animals from getting inside the premises.	3.82	High
6. Important school signages are seen in all areas within the school compound.	3.80	High
7. Ensure that electrical wirings are installed and secured properly.	3.62	High
8. Application of hazardous chemicals such as paints and sealants is done during weekends.	3.52	High
9. Restricted areas are secured for classrooms under construction.	3.50	High
10. Classrooms are equipped with emergency cabinets with complete medicines.	3.42	High
11. Pruning of tree brunches within the school compound is done regularly.	3.42	High
12. Classrooms are equipped with fire extinguisher.	2.66	Moderate
Composite	3.65	High

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

Table 8 presented the practices in environmental safety. As reflected in the table, schools have a high extent of practices in different areas of environmental safety. The results have indicated that great attention is given to the school environment giving due emphasis on significant environmental safety practices in ensuring that the school environment is fresh and clean, ($w\bar{x}$=4.10), tables and chairs in the classrooms are in good conditions, ($w\bar{x}$=4.10), the floor is mopped and

kept clean, (w$\bar{x}$=3.98), school ground is free from sharp objects, (w$\bar{x}$=3.86), the school is fenced to avoid roaming animals from getting inside the school premises, (w$\bar{x}$=3.82), utilization of important signages within the school compound, (w$\bar{x}$=3.80), ensure that electrical wirings are installed and secured properly, (w$\bar{x}$=3.62), application of hazardous chemicals such as paints and sealants is done in weekends, (w$\bar{x}$=3.52), secure restricted areas for classrooms under constructions, (w$\bar{x}$=3.50), classrooms are equipped with emergency cabinets with complete medicines, (w$\bar{x}$=3.42), pruning of trees branches in school is done regularly, (w$\bar{x}$=3.42). These findings is similar to the study of Schiffbauer (2000), advocates the general safety practices of schools with safe buidings, hazard-free school ground, well-cared facilities and equipments, safe electrical fittings and fences.

Moderate practices in securing fire extinguisher for classrooms use was also observed, (w$\bar{x}$=2.66).emergency and survival kits, (w$\bar{x}$=3.42), and cutting off tree brunches, (w$\bar{x}$=3.42). This data reveals that high extent practices were encountered on the above stated areas. The respondents have also noted the important features of individual classrooms as reflected in, (w$\bar{x}$=266) to address non-structural vulnerability.

These findings is similar to the study of Szuba & Young (2003), school's safety and security systems procedures relate to service systems for precautionary measures, proper handling of chemicals in school laboratories, disaster preparedness, access and critical control to all facilities.

Table 9
Extent of Sanitation and Hygienic Practices of the School in Terms of Waste Segregation

To what extent do schools implement waste segregation in terms of the following practices :	$w\bar{x}$	Verbal Description
1. Garbage bins are properly labelled as biodegradable and non-biodegradable and special wastes.	4.40	Very High
2. Segregation of waste is taught and practiced in the classroom.	4.30	Very High
3. Involve students/ pupil in the community clean-up drive.	4.22	Very High
4. Dispose non-biodegradable waste with proper coordination to the City Environment and Natural Resources Office (CENRO).	4.20	High
5. Integrate recycling initiative for school projects.	4.16	High
6. Discourage open burning as a mean of disposal for solid waste.	4.14	High
7. Ensure that the garbage bins are cleaned everyday.	4.08	High
8. Make use of composted waste as plant fertilizer.	4.08	High
9. Recycled wastes are utilized for school beautification.	4.06	High
10. Wastewater is disposed of quickly and safely.	3.94	High
11. Solid waste is collected from classrooms and offices daily and disposes of safely.	3.70	High
Composite	4.12	High

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

Table 9 shows the extent of practices in waste segregation. The results have showed that majority of the indicators are implemented in high extent and other indicators are implemented to a very high extent. These practices is observed in the utilization of garbage bins that were properly labeled as biodegradable, non-biodegradable and special wastes, ($w\bar{x}$=4.40), teaching of waste segregation in the classroom, ($w\bar{x}$=4.30) and involving student/ pupils in the community clean-up

drive, ($w\bar{x}$=4.22). This finding is in line with the study of Sharholy et al. (2008), the operational efficiency of solid waste management depends upon the active participation of both municipal agency and the citizens, therefore socio-cultural aspects mentioned by some scholars include people participating in decision making, community awareness and societal apathy for contributing solutions. Thedata also revealed that schools have high extent of practices in the disposal of biodegradable waste with proper coordination to the City Environment and Natural Resources Office, ($w\bar{x}$=4.20), integration of recycling initiative for school projects, ($w\bar{x}$=4.16), discourage open burning as a means of disposal for solid waste, ($w\bar{x}$=4.14), ensure that the garbage bins are cleaned everyday, ($w\bar{x}$=4.08), making use of composted waste as plant fertilizer, ($w\bar{x}$=4.08), recycled wastes are utilized for school beautification, ($w\bar{x}$=4.06), wastewater is disposed of quickly and safely, ($w\bar{x}$=3.94) and solid waste is collected from classrooms and offices daily and disposes of safely, ($w\bar{x}$=3.70).

These practices observed by the schools is in line with the findings of Ehrampoush and Moghadam (2005), environmental awareness on waste management can increase their knowledge, which in turn results in improvement of students and parents' attitudes and behavior. Moreover the above-stated extent of practices is similar with the findings of Guerrero et al. (2013)stated that waste management is affected by the aspects or enabling factors that facilitate proper waste disposal, encourages strong recycling initiative and make productive use of solid wastes.

Table 10
Extent of Sanitation and Hygienic Practices of the School in Terms of School Health Facilities

To what extent do schools maintain and utilize school health and sanitation facilities in terms of the following practices:	wx̄	Verbal Description
1. Toilets provide privacy and security.	3.82	High
2. Toilets are child-friendly and appropriate to the local cultural, social and environmental conditions.	3.74	High
3. Toilets are hygienic to use and easy to clean.	3.74	High
4. Toilets are easily accessible from all users.	3.72	High
5. There is a cleaning and maintenance routine in operation that ensures clean and functioning toilets , handwashing and tooth brushing facilities are available at all times.	3.64	High
6. Hand washing and cleaning material like soap, mug, and brush must be always available in the toilet.	3.48	High
7. Cleaning maintenance of the school canteen is properly implemented.	3.48	High
8. Toilet have a Leach Pit for disposing of wastewater.	3.42	High
9. Ensure functional hand washing and tooth brushing facilities for the pupils.	3.42	High
10. Ensure adequate supply of water for flushing and hand washing.	3.22	Moderate
11. Toilets have convenient hand-washing facilities close by.	3.16	Moderate
12. Follows Philippine Sanitation Code standards for Toilet-Pupil Ratio of 1:50 for boys and 1:30 for girls.	3.08	Moderate
13. School clinic is functional and equipped with necessary medicines.	2.78	Moderate
14. Comfort rooms are equip with separate urinals for male and female and users.	2.56	Low
Composite	3.38	Moderate

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

Thepractices in the maintenance and use of school health facilities are reflected in Table 10. The schools have high extent of practices in ensuring that toilets provides the following features; privacy and security, (wx̄=3.82), child-friendly and appropriate to the local cultural and environmental conditions,

(w$\bar{x}$=3.74), hygienic to use and easy to clean, (w$\bar{x}$=3.74), and are easily accessible from all users, (w$\bar{x}$=3.72). High extent of practices is also observed in the cleaning maintenance routine that ensures clean and functioning toilets, handwashing and tooth brushing facilities that are made available at all times, (w$\bar{x}$=3.64). In addition, high extent of practices is also reflected in handwashing and cleaning material like soap, mug and brush that are always available in the toilet, (w$\bar{x}$=3.48). This finding is similar with the study of Green et al., (2012), children have increased their practices in regular handwashing more frequently following the availability of cleaning materials.

Schools also observed high extent of practices in the proper implementation of cleaning maintenance in the school canteen, (w$\bar{x}$=3.48), toilets have a leach pit for disposing of wastewater, (w$\bar{x}$=3.42) and in ensuring functional hand washing and tooth brushing facilities. The findings corroborates with the study of Moe et al. (2006), with respect to sanitation, a well-maintained, shared facilities can be provided in key settings such as schools, which would promote awareness and demand for improved sanitation among young people as well as promoting school attendance for school children.The schools have moderate extent of practices in ensuring adequate supply of water for flushing and washing (w$\bar{x}$=3.16), toilets have convenient hand-washing facilities close by, (w$\bar{x}$=3.08) and school clinic is functional and equipped with necessary medicines, (w$\bar{x}$=2.78). These finding is similar to the study of Cairncross, (2014), improved sanitation practices is related to access in water supply that enables hygiene facilities to function well. In addition, Costillo (2004) revealed that provision of medicines in the school clinic addresses the need

for immediate medication and treatment to children with illness.

Table 11
School's Nutritional Status Based on the Number of Wasted and Severely Wasted Pupils

School	No. of Wasted Pupils	Percent	No. of Severely Wasted Pupils	Percent	Overall Percent
School A (N = 541)	34	6.28	11	2.03	8.31
School B (N = 448)	38	8.48	13	2.90	11.38
School C (N = 468)	7	1.50	30	6.41	7.91
School D (N =206)	9	4.37	4	1.94	6.31

Table 11 illustrates the nutritional status of four (4) respondent schools. The table shows the school's nutritional status in terms of the body mass index (BMI) of the school children in the beginning of the school year (BOSY) and end of the school year (EOSY) 2017-2018. The percentage of wasted and severely wasted pupils was gained based on the school's total enrolment. School B got the highest percentage of wasted and severely wasted pupils with 11.38%, followed by school A with 8.31%, school C with 7.91% and school D with the lowest percentage of 6.31%. Although the data indicated that the number of wasted and severely wasted pupils constitute a smaller percentage of the school population, it should not be ignored since the school age children are in the crucial stage of growth. Thus, good health is very important. Srivastava and Kumar (2012) revealed that there is a prevalence of stunting and underweight among school children aging 11 to 13 years old and the prevalence of wasting was found highest in age group 5 to 7 years old. Interventions that will help address this problem includes; skills-based nutrition education,

fortification of food items, effective infection control, training of public healthcare workers and delivery of integrated programs. Schools play significant role in ensuring that necessary measure were properly implemented to improve children's state of health. Bartlett (2003), further explained that poor condition of school sanitation facilities, have complex and reciprocal links to malnutrition.Children's nutritional status is affected by the quality of sanitation facilities. Many schools in urban and rural areas have inadequate and poorly maintained facilities, in some case. Even where facilities are technically present, they may not be available to school children. Unsanitary environments also contributed to malnutrition by challenging children's immune systems; nutrients that would otherwise support growth go instead towards supporting the immune response.

Table 12

Relationship between the Problems Encountered by the Schools in Maintaining Sanitation and Hygienic Practices and the Extent of These Practices

School's Problems and Practices in…	Computed r_s	Degree of Relationship
1. Food Sanitation (Food Handling)	-0.179	Weak
2. Food Sanitation (Personal Hygiene)	-0.243	Weak
3. Environmental Safety	-0.114	Weak
4. Waste Segregation	-0.217	Weak
5. Maintenance and Use of School Health Facilities	-0450	Moderate **Problems** **Practices** Very High: wx̄= 2.92 (moderate) High: wx̄= 3.23 (moderate) Moderate: wx̄= 3.25 (moderate) Low: wx̄= 3.46 (high) Very Low: wx̄= 4.31 (very high)
Overall	-0.251	Weak **Problems** **Practices** High: wx̄= 3.50 (high) Moderate: wx̄= 3.49 (high) Low: wx̄= 3.74 (high)

Legend: **Value of r** **Strength of Relationship** (Statistical Correlation, 2009)

Between ± 0.50 to ± 1.00 ± strong relationship
Between ± 0.30 to ± 0.49 ± moderate relationship
Between ± 0.10 to ± 0.29 ± weak relationship

Between ± 0.01 to ± 0.09 ± very weak relationship

The data in Table 12 indicate that the schools' problems and practices in terms of maintenance and use of school health facilities are indirectly related. The degree of relationship is moderate. As reflected by the weighted means, the teachers experiencing lower problems on the mentioned area tend to have higher practices on the same area and and vise versa. The result suggests that the higher the practices in school sanitation and hygiene, the lower the occurrence of these problems encountered on the same areas. This finding is similar with the study of Curtis, (2011), hygiene behaviors and sanitation practices were perceived differently by most people due to certain factors including the psychological factors, determining hygiene are related to factors in the environment. In some cases, social norms and environmental conditions are the source of poor handwashing and unhygienic comfort rooms. These habits people commonly practise what they perceive everyone else to be doing, which reinforces the norm of not using soap and unhygienic comfort rooms. Lack of water, the perception that soap is too expensive and the absence ofcleaning disinfectants in toilet facilities were among the constraints.

The data also reflect that the problems and practices considering the other variables (food sanitation, environmental safety, waste segregation) have weak and inverse relationship. This means that the schools who encountered problems to a high or low level have more or less the same degree of practices. As reflected, the weighted means differ numerically, but they fall in the same verbal description of high.

Table 13
Difference in the Problems Encountered by the Schools in Maintaining Sanitation and Hygienic Practices when Grouped According to Their Nutritional Status

School's Problems in…	Less than 8% Wasted/Severely Wasted Pupils	Verbal Description	More than 8% Wasted/Severely Wasted Pupils	Verbal Description
1. Food Sanitation (Food Handling)	3.29	Moderate	3.53	High
2. Food Sanitation (Personal Hygiene)	3.09	Moderate	3.12	Moderate
3. Environmental Safety	2.69	Moderate	3.16	Moderate
4. Waste Segregation	2.40	Low	2.77	Moderate
5. Maintenance and Use of School Health Facilities	2.71	Moderate	3.23	Moderate
Overall	2.84	Moderate	3.16	Moderate

Legend:	**Scale**	**Verbal Description**
	4.21 – 5.00	Very High
	3.41 – 4.20	High
	2.61 – 3.40	Moderate
	1.81 – 2.60	Low
	1.00 – 1.80	Very Low

The data in Table 13 reflect that the schools with less than 8% of wasted/severely wasted pupils encountered moderate problem in food handling while those with more than 8% of wasted/severely wasted pupils encountered high problems. This mean that schools with less than 8% of wasted/ severely wasted pupils have higher regards in food handling practices were able to reduce the problems encountered on the same area. The finding runs parallel with the study of Ansari-Lari et al. (2010) cited that a high level of knowledge on general sanitary measures among food handlers was given primary consideration in handling

food.Schools with more than 8% of wasted and severely wasted pupils tend to have a low practices thus experiencing higher risk to problem exposure.

Similarly, the schools with less than 8% of wasted/severely wasted pupils encountered low problem in waste segregation while those with more than 8% of wasted/severely wasted pupils encountered moderate problems. The date revealed that the two groups of schools were able to address concerns pertaining to waste segregation. The finding is similar to the study of Gonzalez-Torre and Adenso-Diaz (2005), social influences, altruistic and regulatory factors are some of the reasons why certain communities developed strong recycling habits.

Further, the data connote that the two groups of schools encountered the same level of problems which is moderate in the following areas: personal hygiene, environmental safety, and maintenance and use of school health facilities. This implies that the two groups of schools experience more or less the same problems. These findings is similar to the study of Theofilos et al. (2017), cited that problems associated to personal hygiene relates to the application of Good Hygiene Practices (GHP)in food handling and the extent of awareness towards these practices. Moreover, it was found out by the researcher that the respondent schools shared the same problemsin school environmental safety and maintenance and use of school health facilities.

Chapter III

Summary of findings, Conclusions and Recommendations

Restatement of the Problem

This study attempts to determine the state of school sanitation and hygienic practices. The result will serve as basis in crafting policy recommendation and in identifying the needed projects and trainings for school health.

Specifically the study sought to answer the following questions:

1. To what extent do schools encounter problems in maintaining school sanitation and hygiene in the following areas:
    1.1 food sanitation;
        1.1.1 food handling practices;
        1.1.2 personal hygienic practices;
    1.2 environmental safety;
    1.3 waste segregation and
    1.4 maintenance and use of school health facilities?
2 To what extent do schools regard sanitation and hygienic practices on the same areas?
3 What is the school's nutritional status based on the number of wasted and severely wasted pupils?
4 Is there a relationship between the problems encountered by the schools in maintaining sanitation and hygienic practices and the extent of these practices

on the same areas?

5 Is there a difference in the problems encountered by the schools in maintainingsanitation and hygienic practices when grouped according to their nutritional status?

Summary of Findings

From the data gathered in the study, the following salient findings are hereby presented.

1. **Extent of Problems Encountered by the Schools in Maintaining Sanitation and Hygienic Practices**:

   The study revealed that the school encountered high extent of problems in food handling ($w\bar{x}$=3.94) due to the deficiency of storage facilities and proper trainings in food handling. The extent of other problems were moderate; maintaining personal hygiene ($w\bar{x}$=3.11), ensuring school environmental safety measures, ($w\bar{x}$=2.96) managing school waste, ($w\bar{x}$=2.61) and the utilization of school health enabling facilities.

2. **Extent of Practices in Maintaining Sanitation and Hygiene**:

   The data disclosed that the schools have high level of practices in managing their wastes ($w\bar{x}$=4.12) and in ensuring safety in the school environment ($w\bar{x}$=3.65). The data further showed that practice were moderate in the areas of food sanitation; food handling practices ($w\bar{x}$=3.34), personal hygiene ($w\bar{x}$=3.42)), and moderate practices in the maintenance and utilization of school health facilities ($w\bar{x}$=3.38).

3. **The School's Nutritional Status based on the Number of Wasted and**

Severely Wasted Pupils:

The data indicated that although the percentage of wasted and severely wasted constitutes a smaller percentage of school's total enrolment. They still have a significant impact to the school children and should not be neglected. School B got the highest percentage of 11.38% while school percentage of school's total enrolment. They still have a significant impact to the school children and should not be neglected. School B got the highest percentage of 11.38% while school D got the lowest percentage of 6.31%.

4. **Relationship between the Problems encountered in School Sanitation and Hygienic Practices and the Extent of These Practices on the same areas**:

   The r value of -0.251 is depicted between the problems encountered by schools in maintaining sanitation and hygienic practices and the extent of practices on the same areas. Thus moderate relationship between the two variables is evident.

5. **The Difference in the Problem Encountered by the Schools in Maintaining Sanitation and Hygienic Practices when Grouped According to their Nutritional Status**:

   The data indicated that there is a difference on the problems encountered by the schools. High extent of practices in food handling ($w\bar{x}$=3.53) is manifested by schools with less than 8% of wasted and severely wasted pupils. Similarly these two group of schools experience the same level of problems which is moderate in food sanitation; personal hygiene, environmental safety and maintenance and use of school health facilities.

Conclusions

Based on the findings cited above, the following conclusions were hereby drawn:

1. The schools encountered a high extent of problems in food handling practices while moderate in the following areas; personal hygienic practices, waste segregation, environmental safety and maintenance and use of school health facilities.
2. The schools have high extent of practices in environmental safety and waste segregation while moderate in the following areas; food handling practices, personal hygienic practices and maintenance and use of school health facilities.
3. Generally, the schools nutritional status has an average of 8% wasted and severely wasted pupils.
4. There is a moderate relationship between the problems encountered in the maintenance and use of school health facilities and the extent of their practices. The higher the practices of the school, the lower are the extent of the problem encountered.
5. There is a difference in the problems encountered by the schools in maintaining sanitation and hygienic practices in food sanitation (food handling practices) when the school is grouped according to their nutritional status. Those who have more than 8% wasted and severely wasted pupils have high extent of problems than those with less than 8% wasted and severely wasted pupils.

Recommendations

On the bases of the findings and conclusions drawn, the following measures are recommended:

1. Provide comprehensive food handling guidelines to ensure food safety in the school canteen. Food handlers will be given appropriate trainings to increase their level of awareness on food safety measures.
2. Integrate good sanitation and hygienic practices in the delivery of instructions and in the implementation of various school programs.
3. Strengthen school-based feeding programs and provide close monitoring and health interventions to improve school's nutritional status.
4. The Department of Education through its health bureau provides operational manual for the school sanitation and hygiene programs.
5. Finally, intensive training will be provided to increase awareness among teachers, canteen personnel and school children on appropriate practices on food handling, environmental safety, waste segregation and maintenance and use of school health facilities.

Action Plan

Action Plan for Improving School Sanitation and Hygienic Practices

I. Program Title: School Sanitation and Hygiene Intervention Program

II. Proponent: Barry Jay A. Graciadas

III. Target Users: Teachers, Canteen vendors

IV. Background and Rationale

It was found out that schools have experience high to moderate extent of problems in School Sanitation and Hygienic Practices in the following areas: Food handling Practices, Personal Hygienic Practices, Environmental Safety, Waste Segregation and the maintenance and use of school health facilities. The extent of sanitation and hygienic practices on the other hand showed that only two areas have high level practices while the remaining three areas are moderate.It was also revealed that there was a difference in the extent of problems encountered when schools are grouped based on their nutritional status.Thus, the researcher thought of this action plan to improve the school sanitation and hygienic practices in different areas.

Specific Objectives:

1. To identify the needed trainings that will raise the level of awareness andincrease knowledge in school sanitation and hygienic practices;
2. To improve practices in food handling, environmental safety measures, waste management and the maintenance of school health enabling facilities;

A Proposed Action Plan

Areas of Concern	Objectives	Activities	People Involved	Time Frame	Success Indicators
1. Food Handling/ Personal Hygienic Practices	To raise awareness and increase knowledge on proper food handling andgood hygiene practices (GHP)	Trainings/ Seminars on Food Handling	CHO Personnel, canteen vendors and teachers	April-May	Improved Food handling practices and improved school's nutritional status
2. School Environmental Safety	To ensure safety and conducive school environment	Trainings on School Environmental Safety Measures	DRRM Coordinators	June	Improved school environmental safety
3. School Waste Management	To manage proper disposal of wastes and raise awareness on recycling initiative	Trainings/ Seminar on Solid Waste Management	CENRO Personnel, teachers, pupils	July-September	Improve waste management practices
4. School Health Facilities	To manage the operation of school clinics and the cleaning maintenance of school health facilities	Seminar-Workshop on the maintenance and Use of school heath facilities	CHO personnel, Division Nurse, teachers and pupils	October-November	Improve access, functionality of school clinics and other health-enabling facilities

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Appendices

APPENDIX A

Letter to the Superintendent

Graduate School
FOUNDATION UNIVERSITY
Dumaguete City

December 18, 2017

MA. THERESA V. AVANZADO, CESE
Schools Division Superintendent
Bayawan City Division

Dear Madam:

I am Barry Jay A. Graciadas, a graduate school student of Foundation University taking up Master of Arts in Education Major in Administration and Supervision.

Currently, I am undergoing a study entitled "Addressing School Sanitation and Hygienic Problems." This is in partial fulfillment of the requirements for the degree of Master of Arts in Education Major in Administration and Supervision.

In line with this, I would like to ask permission from your good office to allow me to distribute questionnaires to the teacher of cluster 4, Bayawan City West District, Bayawan City Division

Attached herewith is my questionnaire for your reference. All results and findings shall be held confidential.

Thank you very much and I am hoping for your full support in this regard.

Very truly yours,

BARRY JAY A. GRACIADAS
T-I, Manduaw Elementary School

Noted:

MARIA CHONA Z. FUTALAN, Ph.D .
Adviser

JASPER ERIC C. CATAN, MAED
OIC, MAED & EDD Programs

APPENDIX B

Letter to the Public School District Supervisor

Graduate School
FOUNDATION UNIVERSITY
Dumaguete City

January 2, 2018

ELENLY B. CADUNGGAN
Head Teacher-II
Manduaw Elementary School
Bayawan City Division

Madam:

I would like to ask permission from your good office to distribute questionnaire to all your teachers in Cluster 4. This is in relation to my study on "Addressing School Sanitation and Hygienic Problems". This is in partial fulfillment of the requirements for the degree of Master of Arts in Education Major in Administration and Supervision.

It is anticipated that the findings of this study will contribute to the improvement of the school sanitation and hygiene programs of the Division of Bayawan City.

Enclosed herewith is the letter of approval from the Schools Division Superintendent.

Thank you very much for your favorable response and support in this endeavor.

Very truly yours,

BARRY JAY A. GRACIADAS
T-I, Manduaw Elementary School

APPENDIX C

Interview Guide

Food Handling

1. What are the food storage facilities available in your school canteen?
2. How do food handlers prepare food?
3. What are the trainings provided to school canteen vendors?

Personal Hygiene

1. What is the health condition of food handlers while preparing food?
2. What are the personal hygiene materials used by food handlers?
3. What are the personal hygienic practices observed by canteen vendors/ food handlers**?**

Environmental Safety

1. What are the environmental safety practices in your school?
2. What are the existing environmental safety measures observed by your school?
3. How do you ensure safety of school environment**?**

Waste Segregation

1. What are the waste management practices in your school?
2. What are the initiatives/ programs you have undertaken to manage school wastes?
3. How do you dispose different kinds of wastes**?**

School Health Facilities

1. What are the health facilities available in your school?
2. Are these facilities accessible to school children?
3. How do you maintain the cleanliness of the school health facilities**?**

APPENDIX D

Questionnaire

(for teachers)

Addressing School Sanitation and Hygienic Problems

This questionnaire tends to identify and assess the School Sanitation and Hygienic Practices. Specifically, it aims to determine the sanitation and hygienic regards among school teachers and other school personnel. Please answer the following questions by filling in the blanks and by putting a check in the boxes provided. Please be assured that all responses shall be treated with confidentiality. Thank you very much.

School : _____

PART I. Schools' Extent ofProblems encountered in Maintaining Sanitation and Hygienic practices

Directions:
1. Read each statement. Please respond as truthfully as you can.
2. Place a check mark (√) on the column of your choice. Be guided with the following scale.

Verbal Description	**Scale**	**Explanation**
5-Very High Extent (VHE)	(4.21-5.00)	The problem encountered by the school is 81-100% of the time.
4- High Extent (HE)	(3.41-4.20)	The problem encountered by the school is 61-80% of the time.
3- Moderate Extent (ME)	(2.61-3.40)	The problem encountered by the school is 41-60% of the time.
2-Low Extent (LE)	(1.81-2.60)	The problem encountered by the school is 21-40% of the time
1-Very Low Extent (VLE)	(1.00-1.80)	The problem encountered by the school is 1-20% of the time

(Note: "Time" refers to the entire school year)

Food Sanitation *(Food handling Practices)*	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do school encounter problems in food handling in terms of the following:					
1. Lack of training for appropriate food handling.					
2. Lack of training on proper food storage.					
3. Lack of guidelines for food preparation					
4. Unavailability of food storage facilities.					
5. Lack of effective cleaning routine (Sterilization of utensils).					
6. Unsafe water sources for food preparation.					
7. Poor food storage and display practices.					
8. Absence of cleaning agents and disinfectants in washing kitchen utensils.					
9. Improper disposal of left-over food.					
10. Poor maintenance of canteen utensils.					
11. Poor pest control and monitoring.					

Food Sanitation *(Personal Hygienic Practices)*	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do school encounter problems in personal hygienic practices on food sanitation in terms of the following:					
1. Lack of personal hygiene materials (masks, hairnet, and apron).					
2. Lack of clean water supply					
3. Poor health condition while preparing food.					
4. Direct contact of food is done without using gloves.					
5. Smoke during food preparation.					
6. Lack of awareness on the risks of transmission of helminthes through human contact.					
7. Lack of social regards on the dynamics of personal hygiene.					
8. Lack of knowledge on foodborne diseases.					
9. Lack of facilities for adequate collection and disposal of rubbish.					
10. Improper food preparation routines (washing hands before, during and after)					

Environmental Safety	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do school encounter problems on environmental safety in terms of:					
1. Lack of training on Disaster Risk Management (Fire prevention, Earthquake and flood drills).					
2. Lack of precautionary measures in school premises					
3. Inadequate supply of medicines for emergency / survival kits.					
4. Lack of school mapping.					
5. Lack of site development planning.					
6. Lack of operational guideline in school computer laboratories.					
7. Lack of trainings on the proper use of chemicals and gases in sciences laboratories (DepEd Order No. 48, s. 2006).					
8. Lack of road safety signage/s near the school.					
9. Lack of knowledge on indoor chemical and pollutant source control.					
10. Lack of fencing of school area to maintain cleanliness in environment.					

Waste Segregation	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do school encounter problems on waste segregation in terms of:					
1. Lack of training on solid waste management.					
2. Lack of supervision and guidance on waste segregation.					
3. Instructions on solid waste disposal are not carry out properly.					
4. Lack of designated areas for waste disposal.					
5. Lack of trainings on recycle-waste management initiative.					
6. Lack of monitoring on the state and use of sanitation and hygiene enabling facilities.					
7. Poor coordination with local government for waste disposal.					
8. Poor support mechanism from the local community.					
9. Lack of awareness campaign on the harmful effects of solid waste disposal.					
10. Lack of trash bins and waste depository.					

Maintenance and use of school health facilities	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do school encounter problems on the maintenance and use of school health facilities in terms of:					
1. Lack of food for handwashing.					
2. Lack of cleaning maintenance routine.					
3. Lack of cleaning disinfectants for toilets and urinals					
4. Inaccessibility of toilets and urinals.					
5. Poor repair and maintenance of school health facilities.					
6. Lack of water supply for latrines.					
7. Lack of promotion on positive hygiene behavior in the use of school health facilities.					
8. Insufficient toilet-pupil ratio for both boys and girls.					
9. Dysfunctional faucets.					
10. Dysfunctional handwashing facilities.					

PART II. The Extent of Schools' Sanitation and Hygienic Practices in terms of Food handling, Environmental Safety, Waste Segregation and the utilization and availability of School health facilities

Directions:
1. Read each statement. Please respond as truthfully as you can.
2. Place a check mark (√) on the column of your choice. Be guided with the following scale.

Verbal Description	Scale	Explanation
5-Very High Extent (VHE) school is 81-100% of the time.	(4.21-5.00)	The practices manifested by the
4- High Extent(HE) school is 61-80% of the time.	(3.41-4.20)	The practices manifested by the
3- Moderate Extent (ME) school is 41-60% of the time.	(2.61-3.40)	The practices manifested by the
2-Low Extent (LE) school is 21-40% of the time	(1.81-2.60)	The practices manifested by the
1-Very Low Extent (VLE) school is 1-20% of the time	(1.00-1.80)	The practices manifested by the

(Note: "Time" refers to the entire school year)

Food Sanitation *(Food handling Practices)*	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do school canteen vendors do the following practices:					
1. Bare hand contact with raw foodstuffs and cooked food is avoided.					
2. Separate raw food from cooked or ready-to-eat foods.					
3. Cooked food thoroughly.					
4. Prepare ingredients in a clean area.					
5. Wash vegetables separately.					
6. Display cooked foods in a clean dry place.					
7. Put leftover foods in a separate container.					
8. Use clean apron while serving the foods.					
9. Use clean and safe water in washing raw foods.					
10. Store cold holdings at 5°c and hot holdings at 57°c					
10. Clean and sanitize utensils after being used.					
11. Use cleaning agents and disinfectants of kitchen utensils.					
12. Use color-coded cloths, buckets and mops for different cleaning area.					
13. Use mouth cover during food handling.					
14. Use gloves in serving food.					
15. Separate raw animals foods and ready-to-eat foods during storage, preparation, holdings and display.					
16. Use wiping clothes free from food debris and visible soil and shall be used for no other purposes.					

Food Sanitation *(Personal Hygienic Practices)*	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do canteen vendors do the following practices:					
1. Maintain personal cleanliness.					
2. Wear clean and appropriate clothes.					
3. Wear mask and hairnet.					
4. Ensuring that nails are clean, short trimmed and without polish or artificial nails.					
5. Wear sterilized gloves in touching ready-to-eat foods.					
6. Wear clean uniform during preparation of food.					
7. Cough or sneeze on areas away from the food preparation site.					
8. Wash hands every after sneezing.					
9. Foods are packaged in sealed wrapping or should have proper serving utensils such as tongs or spoons.					
10. Sell foods and collect money from consumers using barehand at the same time					
11. Use clean towel to wipe hands.					
12. Wash hands after handling the garbage.					
13. Wash hands after cleaning tables.					
14. Avoid wearing watches and jewelry during food production.					
15. Avoid blowing air into polythene bag before use.					
16. Wash hands before touching raw or cooked foods.					

Environmental Safety	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do schools implement Environmental Safety Measures in terms of the following practices:					
1. Important school signages are seen in all areas within the school compound.					
2. Application of hazardous chemicals such as paints and sealants is done during weekends.					
3. The school is fenced to avoid roaming animals from getting inside the premises.					
4. Classrooms are equipped with fire extinguisher.					
5. Classrooms are equipped with emergency cabinets with complete medicines.					
6. Pruning of tree brunches within the school compound is done regularly.					
7. Restricted areas are secured for classrooms under construction.					
8. School ground is free from sharp objects.					
9. Ensure that the school environment is fresh and clean.					
10. Ensure that tables and chairs in the classrooms are in good condition.					
11. Ensure that the floor is mopped and kept clean.					
12. Ensure that electrical wirings are installed and secured properly.					

Waste Segregation	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do schools implement waste segregation in terms of the following practices :					
1. Solid waste is collected from classrooms and offices daily and dispose of safely.					
2. Segregation of waste is taught and practiced in the classroom.					
3. Garbage bins are properly labelled as biodegradable and non-biodegradable and special wastes.					
4. Ensure that the garbage bins are cleaned everyday.					
5. Wastewater is disposed of quickly and safely.					
6. Recycled wastes are utilized for school beautification.					
7. Integrate recycling initiative for school projects.					
8. Dispose non-biodegradable waste with proper coordination to the City Environment and Natural Resources Office (CENRO).					
9. Discourage open burning as a mean of disposal for solid waste.					
10. Make use of composted waste as plant fertilizer.					
11. Involve students/ pupil in the community clean-up drive.					

School health facilities	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
To what extent do schools maintain and utilize school health and sanitation facilities in terms of the following practices :					
1. Toilets are easily accessible from all users.					
2. Toilets provide privacy and security.					
3. Toilets are child-friendly and appropriate to the local cultural, social and environmental conditions.					
4. Toilets are hygienic to use and easy to clean.					
5. There is a cleaning and maintenance routine in operation that ensures clean and functioning toilets , handwashing and tooth brushing facilities are available at all times.					
6. Toilets have convenient hand-washing facilities close by.					
7. Toilet have a Leach Pit for disposing of wastewater.					
8. Hand washing and cleaning material like soap, mug, and brush must be always available in the toilet.					
9. Comfort rooms are equip with separate urinals for male and female and users.					
10. Ensure adequate supply of water for flushing and hand washing.					
11. Follows Philippine Sanitation Code standards for Toilet-Pupil Ratio of 1:50 for boys and 1:30 for girls.					
12. Ensure functional hand washing and tooth brushing facilities for the pupils.					
13. School clinic is functional and equipped with necessary medicines.					
14. Cleaning maintenance of the school canteen is properly implemented.					

Curriculum Vitae

Personal Profile

Name:	Barry Jay A. Graciadas
Date of Birth:	July 8, 1994
Place of Birth:	Bayawan City
Status:	Single
Home Address:	San Ramon, Poblacion, Bayawan City

Educational Background

Graduate Studies:	Master of Arts in Education Major in Administration and Supervision Foundation University, Dumaguete City March 2018
Tertiary:	Bachelor of Elementary Education Negros Oriental State University, Bayawan-Sta. Catalina Campus Presidential Academic Awardee March 2014
Secondary:	Bayawan College Inc. Ubos, Bayawan City Salutatorian March 2010
Elementary:	Kasla Elementary School Sitio Kasla, Nangka, Bayawan City Negros Oriental March 2006

WorkExperience:

Elementary School Teacher-I
Manduaw Elementary School
Barangay Manduao, Bayawan City
Negros Oriental

School Paper Adviser
LRMDS Coordinator
2015-Present

Examinations Passed:

Licensure Examination for Teachers
2014