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An Experimental Study: Impact of Hands-On Activities in Improving Students' Sanitation Knowledge

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I. INTRODUCTION

A. Background of the Study

According to the World Health Organization, sanitation generally refers to the provision of facilities and services for the safe disposal of human urine and faeces. Inadequate sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant beneficial impact on health both in households and across communities. The word sanitation also refers to the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal. In the Philippine context, sanitation also includes managing waste and wastewater, keeping environments hygienic, and ensuring that services are in place so that people can maintain good health.

Sanitation education is recognized as a fundamental component of public health initiatives in school settings. According to the Centers for Disease Control and Prevention (CDC, 2024), teaching children proper hand-hygiene and sanitation practices in early educational environments helps reduce both gastrointestinal and respiratory illnesses and decreases school absence. However, despite such formal instruction, many students remain unaware of or fail to consistently practice adequate sanitation behavior. This means that learning about sanitation is not enough to change students' attitudes and behavior, so they need more engaging and hands-on ways to learn.

Sustainable access to Water, Sanitation and Hygiene (WASH) services in schools is essential to promote health and positive educational outcomes of children. In Southeast Asia, including the Philippines, many children suffer from a high burden of preventable diseases with inadequate sanitation, limited access to water and lack of personal hygiene as a common cause. These diseases, such as diarrhea, respiratory infections and soil-transmitted helminth (STH) infections, negatively affect children's overall development through their adverse impact on school attendance, educational achievement and quality of life. Children spend a substantial amount of their time at school where they benefit from a safe and healthy learning environment with adequate WASH facilities and routine activities fostering positive hygiene habits. However, many schools are facing challenges with providing and maintaining even basic service levels as defined in the Sustainable Development Goals (SDGs).

Using learning activities where students do things (rather than just listen) may help bridge this gap. When students get hands-on experience such as practicing washing hands properly, cleaning their environment, or fixing a sanitation facility, they are more likely to remember and use what they've learned. A Philippine school study showed that improving toilet usability and cleanliness in public schools significantly helped these schools move toward better sanitation status. This suggests that active involvement might change more than just what students know, it might change how they act.

Many existing studies focus on general hygiene education or infrastructure provision rather than isolating the effects of hands-on, student-centered activities on sanitation knowledge, attitudes, and behavior. Moreover, few studies have systematically assessed students' subjective experiences of learning sanitation through active tasks. In addition, although knowledge-attitude-practice frameworks are frequently used, the role of direct experiential engagement rather than conventional classroom instruction remains under-explored in the specific context of sanitation education among school-aged students. This study therefore addresses these gaps by experimentally implementing hands-on activities and measuring not just outcomes but also student perceptions and experiences.

B. Objectives of the Study

The main objective of this study is to determine the effectiveness of hands-on activities in improving students' sanitation knowledge, attitudes, and practices.

Specifically, this study aimed to:

1) Assess the students' awareness of proper sanitation practices.

2) Determine how hands-on activities influence students' sanitation practices in terms of:

- Attitude
- Behavior

3) Explore the students' experiences in learning sanitation through hands-on activities.

C. Significance of the Study

This study aimed to give meaningful insights to the following:

- Students. This study emphasizes the importance of active engagement in sanitation knowledge, which encourages students to take greater responsibility for their personal and environmental hygiene. During this study, students will obtain sanitation knowledge through hands-on activities.
- School and policymakers. This study helped schools create a healthier learning environment by encouraging students to apply what they've learned in this study. Furthermore, this ensures that students not only learn about sanitation but also apply it properly.
- Teachers. This study gave teachers an effective teaching technique to improve students' sanitation knowledge through hands-on activities. This serves as a guide for teachers for developing student activities that encourage learning and good hygiene practices.
- Future researchers. This study enables the students to serve as a source of literature for future academics interested in similar topics of investigations. Different arguments on hands-on activities and sanitation knowledge could serve as starting and/or turning points.

D. Scope and Delimitation

This study focuses on the integration of hands-on activities to enhance students' understanding and application of sanitation practices in Dr. Juan A. Pastor Integrated National High School. It covers senior high school students, particularly the Pastorian Marshal Guild members, who participate in various interactive learning activities such as demonstrations, experiments, and practical exercises related to personal hygiene, waste management, and environmental sanitation. The study primarily assessed the effectiveness of these hands-on activities in improving students' knowledge, attitudes, and behaviors toward sanitation. The study is conducted within the school premises during the school year 2025–2026.

This research does not include other schools or institutions and not cover sanitation issues beyond the school environment, such as those related to community or industrial settings. This study is limited only to the Pastorian Marshal Guild members of Dr. Juan A. Pastor Integrated National High School during the school year 2025–2026. It focuses on how hands-on activities can help improve their sanitation knowledge and practices within the school setting. The research does not include students who are not part of the guild or sanitation activities outside the school. Other factors such as community sanitation, household hygiene, and health-related issues beyond the school's control are also not covered in this study.

E. Definition of Terms

- Sanitation - conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.
- Inadequate sanitation - the lack of or poor functioning of systems for safely disposing of human waste, leading to public health issues like disease spread and environmental contamination.
- Hygiene - conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness.
- Water Waste Disposal - the controlled and regulated management of used or unwanted water, including sewage and industrial effluent, to prevent harm to public health and the environment.
- Sanitation Education - the process of teaching people how to manage waste and maintain hygiene to prevent the spread of disease.

- Sustainable access - the consistent and equitable availability of resources, services, and opportunities needed for well-being, without compromising the ability of future generations to meet their own needs.
- Preventable Disease - an illness that can be avoided through specific actions, such as vaccination, healthy lifestyle choices, or early detection through screening.
- Sustainable Development Goals - a set of 17 global goals adopted by the United Nations in 2015 to create a more peaceful and prosperous world by 2030. These goals are a universal call to action to end poverty, protect the planet, and ensure that everyone can enjoy health, justice, and prosperity, with a key principle being that "no one is left behind".

II. REVIEW RELATED LITERATURE AND STUDIES

A. Related Literature

1) Students Awareness of Proper Sanitation Practices

Recent literature on school-based personal hygiene and sanitation reflects both persistent gaps in awareness among students and promising avenues for education-based improvement. A descriptive research proposal related to personal hygiene and sanitation practices among rural schoolchildren has highlighted the problem: most rural children do not have appropriate awareness of personal hygiene, suffer from various water- and sanitation-borne diseases frequently, and manifest insufficient hygienic practices that will adversely impact their health and learning outcomes. According to the paper, schools have immense relevance for interventions, and systematic health education programs are urged to inculcate personal responsibility for hygiene, which can bring improvement in individual and institutional sanitation practices.

Complementing these contextual and programmatic concerns, an empirical study of Qatari primary pupils provides contemporary, quantitative evidence on students' health awareness pertaining to hygiene and dietary behaviors. Mansour (2025) conducted a survey among pupils in grades 4-6 to analyze knowledge and awareness on various hygiene domains and showed specific knowledge gaps and variation by demographic factors. The Qatari study demonstrates that even in relatively well-resourced contexts, awareness and correct practices are not uniform among children, and that targeted school interventions remain necessary to raise baseline hygiene competence and health literacy.

These two sources together present complementary insights that are useful for the thesis-level argument. The Scribd proposal focuses on contextual need, above all in rural and resource-limited contexts, through documenting high prevalence of hygiene-related morbidity, limited access to sanitation infrastructure, and limited awareness among students; it frames schools as strategic sites of promotive and preventive interventions. In contrast, Mansour's empirical study provides evidence of persistent knowledge gaps and heterogeneity in awareness even where infrastructure may be stronger, suggesting that provision is an insufficient strategy and that education and awareness strategies must be culturally and developmentally tailored.

Methodologically, the two works also suggest complementary approaches for RRL synthesis and for designing an empirical study of hands-on sanitation education. The Scribd proposal, though not peer-reviewed, has programmatic and operational detail useful in the design of instruments and contextualizing rural needs: objectives, proposed data collection, and KAP-style questioning. Mansour (2025), as a peer-reviewed empirical contribution, illustrates the value of rigorous sampling and quantitative assessment of awareness indicators among primary pupils, providing a replicable model for measuring change in knowledge and self-reported behaviours pre- and post-intervention. These together justify combining qualitative/contextual work-to capture barriers, norms, and infrastructure constraints-with quantitative measurement-to establish baseline prevalence and measure intervention effects.

Substantively, these sources converge on several points relevant to experimental research on hands-on sanitation education. First, there are widespread and context-specific knowledge deficits: rural children lack basic knowledge of hygiene and face infrastructural barriers to practice, while pupils in urban or better-resourced settings still show uneven awareness that calls for targeted instruction. Second, schools are a logical and pragmatic locus for intervention, with children spending substantial time there; school programs are able to reach broad cohorts, influence routines, and engage caregivers and administrators. Third, measurement must extend beyond knowledge into attitudes, observed or reported practices, and health outcomes to fully capture the effect of hands-on activities in forming durable hygiene behaviors. Mansour's work supports the use of structured awareness scales and demographic analysis; the Scribd proposal supports the use of locally relevant practice indicators and the linking of sanitation education to disease reduction goals. Finally, these RRLs give some propositions for thesis framing and hypothesis generation: (1) hands-on, practice-based sanitation instruction will realize larger gains in procedural hygiene knowledge than lecture-based teaching alone, as justified by the programmatic emphasis in the Scribd proposal; (2) improvements in knowledge will be moderated by contextual factors such as school infrastructure and household socioeconomics, as supported by Mansour's demographic findings;

and finally, (3) durable behaviour change will require both information and opportunity-i.e., education plus accessible, well-maintained WASH facilities.

2) Impact of Hands-on Activities on students Sanitation Practices Attitude and Behavior

A growing body of literature underscores the role of participatory and experiential learning strategies in improving sanitation-related knowledge and behaviors among students. The Metro Manila School WASH Intervention conducted in 2022 and the Health Education Intervention among adolescent girls in Nigeria carried out in 2021 provide strong evidence of the effectiveness of educational interventions that integrate hands-on activities into sanitation instruction. When examined together, these two studies illuminate how active engagement, practice-based learning, and structured hygiene routines contribute to meaningful improvements in student sanitation outcomes.

The Metro Manila WASH Intervention (2022) employed a cluster-randomized design to examine the impact of varying levels of health education intensity on students' sanitation behaviors. The intervention included practical demonstrations, guided handwashing routines, the provision of hygiene materials, and improvements to school WASH facilities. Higher-intensity educational activities involved repeated opportunities for students to physically perform sanitation practices, especially handwashing with soap. Importantly, the study used direct observation of handwashing after toilet use, providing strong empirical evidence that experiential learning can translate into actual hygiene behavior. Students who participated in hands-on activities exhibited significantly higher compliance with proper sanitation behaviors than those receiving standard instruction. These findings suggest that sanitation learning is most effective when students actively and repeatedly engage in performing the behaviors being taught.

Similarly, the Health Education Intervention among adolescent girls in Nigeria (2021) demonstrated the effectiveness of structured sanitation education delivered through participatory methods. The intervention incorporated demonstrations, guided practice, peer learning, and interactive discussions on hygiene and sanitation. Although the study relied primarily on self-reported data, results showed substantial improvements in participants' WASH behaviors, including increased handwashing, improved toilet hygiene, and greater awareness of sanitation practices. This reinforces the idea that hands-on, practice-based learning leads to improved sanitation outcomes, even across different cultural and demographic settings.

A key point of convergence between these two studies is the understanding that knowledge alone is insufficient to produce lasting sanitation behavior change. Both interventions demonstrate that when sanitation education is combined with supervised practice and real-life application in school environments, the likelihood of sustained behavior improvement increases. This aligns with experiential learning theory, which posits that students internalize behaviors more effectively when they physically engage with the learning process. Through repeated hands-on practice, students develop not only cognitive understanding but also the procedural skills needed to perform sanitation behaviors consistently and independently.

Furthermore, both studies emphasize the importance of intensity, repetition, and continuity in sanitation education. In the Metro Manila study, schools receiving higher-intensity education exhibited more substantial improvements in handwashing behavior, suggesting that reinforcement and continued exposure are crucial for habit formation. The Nigerian intervention similarly relied on structured, recurring educational sessions that incorporated demonstrations and participatory activities to strengthen students' understanding and application of sanitation concepts. Together, these findings indicate that hands-on sanitation activities must be frequent, structured, and integrated into school routines to create sustainable behavioral change.

Despite methodological differences between the two studies—such as observational data versus self-reported data—the convergence in outcomes strengthens the argument that hands-on sanitation education is universally beneficial. Both studies contribute to growing evidence that experiential and participatory learning approaches are essential components of effective hygiene promotion in schools. They highlight that sanitation learning is not solely cognitive but inherently behavioral, requiring practice, reinforcement, and engagement with sanitation materials and facilities.

Taken together, these studies provide strong empirical grounding for research examining the impact of hands-on activities on students' sanitation knowledge and practices. Their findings demonstrate that experiential learning environments enhance knowledge retention and encourage routine hygiene behavior. As such, an experimental study exploring the effectiveness of hands-on sanitation activities—such as the one you are developing—is.

According to the Centers for Disease Control and Prevention (CDC), sanitation and hygiene education is most effective when it goes beyond classroom lectures and includes active student participation in real-life hygiene tasks. Studies on school sanitation education show that effective hygiene learning happens when instruction is integrated into the curriculum and supported by a strong school environment.

International and national guidelines from organizations such as the CDC, UNICEF, and WinS recommend that sanitation lessons be part of regular classroom activities so students can learn and practice proper hygiene consistently. The literature also highlights the importance of providing enough time, functional handwashing stations, clean water, and available soap. Without these basic facilities, students cannot apply what they learn in class, which reduces the impact of sanitation programs. Creating an environment that supports regular hygiene practice is therefore essential. A key finding across many studies is the strong effectiveness of hands-on activities. Practical methods such as handwashing demonstrations, guided practice, and simple hygiene experiments help students understand sanitation more deeply and remember the correct behaviors. These hands-on approaches are shown to be more engaging and more effective than lectures alone because students experience the actions directly. Researchers also emphasize the use of visual reminders and simple prompts around the school to reinforce hygiene habits. These cues help students remember to wash their hands at important times and support the formation of long term habits.

Overall, the literature shows that sanitation education works best when classroom lessons, hands-on practice, supportive facilities, and daily reminders are combined. This approach leads to stronger hygiene habits and healthier school environments.

Holstermann, Grube, and Bögeholz (2010) investigate whether students' direct experience with hands-on biology activities influences their interest in those activities, and further examine how the quality of those experiences correlates with interest. They surveyed 141 eleventh-grade students in German grammar schools (mean age = 16.4 years) about 28 typical biology hands-on tasks (e.g., experiments, dissections, microscope work, classification). The study found that for seven specific tasks, students who had performed the activity reported higher interest than those who had not; but for most tasks (20 out of 28), no significant difference in interest emerged (Holstermann, Grube, &Bögeholz, 2010). Effect sizes across the four activity categories were small (experimentation d = .16; dissection d = .24; microscopy d = .09; classification d = .21). Importantly, the perceived quality of the hands-on experience correlated positively—and often strongly—with interest for each type of activity (correlations of $r \approx .44$ to .88) (Holstermann et al., 2010). The authors conclude that while performing hands-on activities holds potential to foster interest, not all such tasks do so equally; the design and experience quality matter critically. They recommend that science educators design biology lessons that allow students to engage in activities that are both hands-on and meaningful, ensuring that the experience is positive and stimulating rather than routine or disengaging.

Holstermann et al.'s study contributes to the literature by differentiating among types of hands-on activities rather than treating them as a homogenous category; this granularity allows educators to understand which tasks may be more motivating and why. It aligns with broader research on interest and motivation, which emphasizes that positive emotional and cognitive experiences during tasks can support deeper engagement (Hidi & Renninger, 2006; Krapp, 2005). However, a limitation of the study is its cross-sectional design—causality cannot be definitively established; interest may influence whether students engage in hands-on tasks rather than the other way around. The authors attempt to compensate for this by analysing covariance, but some residual confounds remain (Holstermann et al., 2010). Also, the study is context-specific (German 11th-grade biology), which may limit generalizability to other curricula or grade levels. For future research, longitudinal designs could clarify how sustained, high-quality hands-on experiences impact long-term interest and career choices in science.

3) Students Experiences of Learning Sanitation through Hands- on Activities

The Three-Star Approach (TSA) WinS Hygiene Booklet developed by the Philippine Department of Education (Department of Education, 2018) serves as a practical and policy-aligned guide for strengthening hygiene practices within basic education schools. The booklet outlines standardized procedures for daily group handwashing, supervised toothbrushing with fluoride toothpaste, and essential menstrual hygiene management. These practices are emphasized as critical health interventions that support improved attendance, reduced illness, and enhanced student learning outcomes (Department of Education, 2018). The material provides step-by-step instructions, required facility standards, and behavior-change strategies that help schools integrate hygiene routines into their daily schedules and School Improvement Plans. A significant strength of the booklet is its alignment with DepEd's WinS policy framework, which enables schools to progressively improve their hygiene standards through the Three-Star Approach, encouraging both compliance and sustainability (Department of Education, 2018). The inclusion of menstrual hygiene management also reflects the program's commitment to gender-responsive and inclusive education. Despite these strengths, the implementation of the booklet's recommendations may be hindered by inequalities in school resources, particularly in maintaining consistent supplies such as soap, toothpaste, sanitary pads, and functional hygiene facilities. Nevertheless, the TSA WinS Hygiene Booklet remains a valuable and comprehensive framework for institutionalizing WASH practices in Philippine schools and promoting long-term hygiene behavior among learners.

Stock et al. (2016) investigated the effectiveness of an innovative hands-on hygiene training program aimed at improving adherence to hygiene rules in both controlled and real-life settings. Their findings showed that practical and experiential training significantly enhanced participants' ability to follow hygiene procedures compared to traditional, lecture-based instruction. The study emphasized that hands-on activities promote active engagement, allowing learners to practice movements, receive immediate feedback, and internalize hygiene behaviors more effectively. According to Stock et al. (2016), hands-on training supports better retention and real-world application because learners physically perform hygiene tasks rather than passively observe them. Although their research focused on a general population, the results have meaningful implications for groups who benefit from concrete, task-based learning—such as children with developmental delays or Down Syndrome. Because these learners often need structured repetition and guided practice, the success of hands-on hygiene training suggests that similar approaches can be adapted to improve fine motor skills, routine formation, and independence in daily hygiene activities. Overall, the study provides strong evidence that hands-on, experiential hygiene activities can significantly improve behavioral adherence, supporting the use of practical hygiene tasks in educational and therapeutic settings.

B. Related Studies

1) Students Awareness of Proper Sanitation Practices

Celik, E. Y., &Yuce, Z. (2019) investigated the awareness and habits of secondary school Students about cleanliness and hygiene. In their study, it was determined that the students' cleaning and hygiene levels were high. It was concluded that it can be said that individuals in a clean and hygienic environment pay more attention to their personal hygiene. Everyone can comment on personal hygiene, cleaning and health promotion, but when it is said "What is cleaning, hygiene and personal hygiene?", it is seen that everyone has made individual definitions of their own. The educational status of the parents has an important place in the cleaning, hygiene and personal hygiene habits of the students. As a result of the research, it is of great importance that students' families should be educated on cleanliness and personal hygiene as a result of the obvious effect of families on cleanliness and personal hygiene behavior. The researchers stated that in schools, proper cleaning and hygiene behaviors should be reminded by seminars, theaters, conferences and showing public spots with certain periods.

In the study of Bravo, V. et al. (2025), "Personal Hygiene Practices and Food Sanitation Awareness as Correlates to Students' Health", personal hygiene practices are essential for maintaining students' health, which includes regular hand washing and overall cleanliness that help prevent the spread of illnesses (Berhanu et al., 2021). Furthermore, applying food sanitation awareness for students' health and creating and sustaining clean and healthy circumstances for the production and consumption of our food depends on several actions highlighted by food hygiene and sanitation (Adling, 2022). The level of awareness and availability of resources was a significant predictor of the extent of compliance with implementation rules and regulations on sanitation, as well as food safety (Palapar& Rio, 2022). Supporting the recent study in Tarlac City, emphasized that food sanitation awareness for students is essential as a self-learning tool and a necessity for an active life (Collado, 2020). The study concludes that the level of influence of food sanitation awareness was very high, along with its indicators, namely, knowledge of food sanitation, attitude towards food sanitation and practices towards food sanitation.

2) Impact of Hands-on Activities on Students Sanitation Practices Attitude and Behavior

Mohammadi, M. et al. (2020) investigated how handwashing education affected the awareness, attitude, and handwashing abilities of third-grade children in Tehran. The researchers emphasized that hand hygiene is an important way of infection control in schools, and their findings revealed that instruction significantly changed students' attitudes toward good hygiene practices. The intervention group (62.37 ± 0.65) had a more positive attitude towards cleanliness and handwashing than the control group (48.45 ± 0.73), with a statistically significant difference ($P < 0.05$). These findings imply that teaching and engaging students in hygiene-related activities can help them develop positive attitudes regarding sanitation. This is relevant to the current study, which used hands-on activities to assess the influence on students' sanitation attitudes and behaviors.

However, in the cross-sectional study conducted by Chua, J. et al. (2015) sought to investigate the existing knowledge, attitude, and practice of hand and food hygiene, as well as the potential risk factors for diarrhoea in a Singaporean residential community. The results showed that approximately 77% of the knowledge needed and attitude were observed in at least 80% of the participants, compared to just about 31% of the predicted behaviors and practices. The study indicated that, while knowledge and attitudes were usually strong, they did not transfer into regular cleanliness behaviors, which may contribute to the rise in diarrhea cases.

These findings highlight the need for more community-engaged interventions to increase the practice of proper hygiene actions, which supports the current study's focus on hands-on activities as a strategy for improving students' sanitation practices that can impact students' attitudes, and behaviors.

According to Oura et al. (2024), practical hygiene education enhances the behavior of elementary school students to wash hands greatly. The activity during their study in Japan was practical and activity based with the students able to put into practice proper hand washing methods and also determined the level of cleanliness through ATP tests. The findings showed that students who had joined the hands-on program showed a significant change in the habit of washing their hands properly as compared to baseline observations. This implies that the students are more likely to carry out the knowledge into routine use as hygienic activities when they are actively engaged in learning to do the sanitation tasks.

Based on the study of Jetha et al. (2020), a 6-week school-based campaign in the Philippines used social and emotional motivators and was effective in enhancing students' hand washing behavior. The program involved the integration of both the hygiene education and activities that were based on the social motivation, influence of peers and participatory activities that promote hand washing following the use of the toilet. The findings showed that students who participated in the campaign had higher rates of hand washing with soap compared to the students who had their baseline observations. This study highlights the fact that practical, socializing and participatory approaches can make great contributions towards improving sanitation behavior among the students.

3) Students Experiences of Learning Sanitation through Hands- on Activities

Sangalangen et al. (2014), a school-based Water, Sanitation, and Hygiene (WASH) initiative was conducted among selected public schools in Metro Manila to evaluate its impact on students' health literacy, hydration status, undernutrition condition, and handwashing practice. The intervention was comprised of household practice related with good hygiene, availability of clean water and regular maintenance of sanitation facilities. The results showed that learners in the structured activity-based WASH sessions significantly improved proper handwashing and sanitation knowledge compared to students who only received standard lectures.

It was determined by the researchers that practicing the improvement of students' habits was due to the consistent implementation of a hands-on approach to skill-based practice. This study supports the current research by illustrating that the active and experiential participation in sanitation behaviors is superior to traditional methods of teaching for increased levels of positive behavior change.

Islam et al. (2024) conducted a study in rural Bangladesh to see the effect of skill-based health education on students adopting healthy hygiene practices. The health education intervention included health education demonstration, guided health education practice, and actual task performance of health education such as handwashing, hygiene task maintenance sanitation, and safe water storage. Results indicated that students that practiced hygiene activities were able to retain sanitation concepts and were more likely to incorporate appropriate hygiene practices into their daily activities.

Researchers underscore that, especially in resource-scarce educational settings, active, participatory involvement cultivates better internalization of sanitation practices than passive modalities. The present study is relevant to this current line of inquiry in that it illustrates the efficacy of active learning in transforming hygiene behavior, thereby justifying the incorporation of practical sanitation activities in school programs.

C. Conceptual Framework

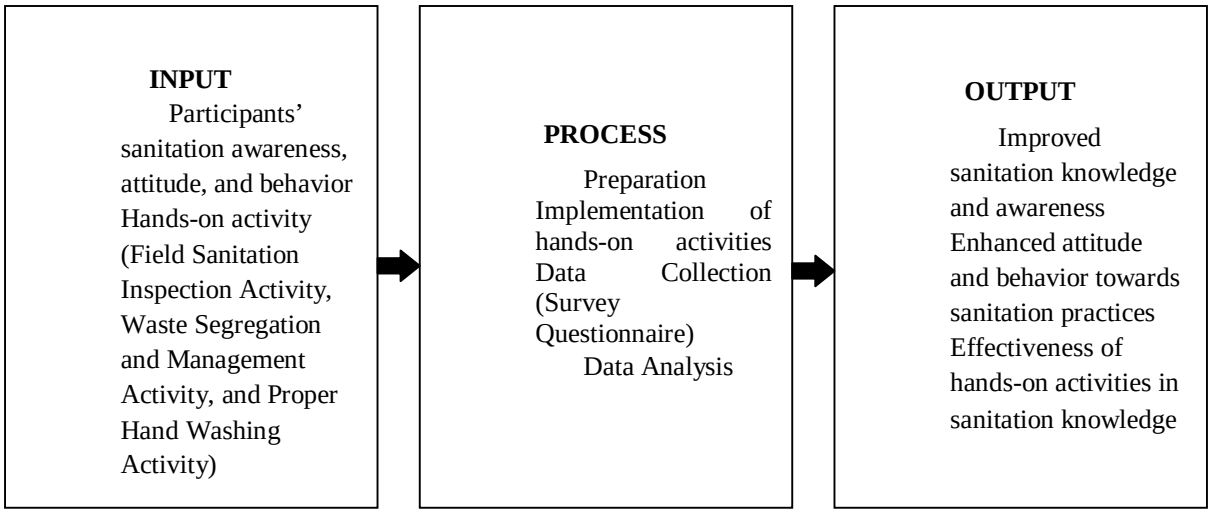

Figure 1
Research Paradigm

As shown in Figure 1, box 1 shows the participants' sanitation awareness, attitude, and behavior. It also shows the hands-on activity implemented which are the field sanitation inspection activity, waste segregation and management activity, and proper hand washing activity. This also includes the pre-test and post-test evaluation forms that the students answered.

The second box contains the preparation part which includes the orientation of the participants and administration of pre-test that focuses on the students' awareness on sanitation. The researchers also utilize questionnaires for the pre-test and post-test to determine the participants' awareness, attitude and behavior, and experiences on sanitation practices by doing the hands-on activities. The data is analyzed and interpreted, assessing the students' sanitation knowledge.

The third box contains the output for this research and it depends on the study's findings. The participants in this study improved their sanitation knowledge and awareness. Also, participants' attitude and behavior is enhanced with the help of the hands-on activities implemented. The output also serves as a basis if hands-on activities are effective for students' sanitation knowledge.

III. METHODOLOGY

A. Research Design

This study employed a quantitative research design to measure the impact of hands-on activities on improving students' sanitation knowledge. The data gathered through a self-assessment questionnaire, where students rate their level of understanding and engagement with each hands-on activity namely, field sanitation inspection activity, waste segregation and management activity, and proper hand washing activity.

Using a numerical scale (1-4), students evaluated how each activity helped them learn and apply proper sanitation practices. The collected responses then are analyzed statistically to determine the overall effectiveness of these activities in enhancing sanitation knowledge.

B. Participants and Setting

The participants of the study are the 20 members of the Pastorian Marshal Guild of Dr. Juan A. Pastor Integrated National High School. These students were chosen as participants because they help keep the school clean and orderly. The study is implemented at Dr. Juan A. Pastor Integrated National High School, where participants are enrolled and routinely fulfill their duties.

C. Data Gathering Procedure

The researchers collected data through a survey questionnaire conducted before and after the lecture with hands-on activities. Permission obtained from the administration of Dr. Juan A. Pastor Integrated National High School. The participants, who are members of the Pastorian Marshal Guild are informed about the purpose of the study, and their participation is voluntary and confidential.

Before the lecture, a pre-survey questionnaire is given to measure the participants' initial knowledge and understanding of the topic. After the lecture and hands-on activities, a post-survey questionnaire administered to the same participants to see if there are improvements or changes in their knowledge and skills.

The researchers collected all completed questionnaires, organized the responses, and encoded the data for analysis. The results are analyzed to determine the effectiveness of the lecture and hands-on activities, while ensuring the privacy and confidentiality of all participants throughout the process.

D. Research Instruments

To obtain accurate and trustworthy data on the influence of hands-on activities on students' sanitation knowledge, the researchers are going to use a survey-questionnaire. The instrument is tailored for an experimental pre-test/post-test design to assess the changes in the students' knowledge before and after the intervention.

- *Questionnaire*. The questionnaire comprises Likert-scale items (1–4), with 4 = Strongly Agree, 3 = Agree, 2 = Disagree, and 1 = Strongly Disagree. These items assess students' sanitation knowledge covering areas such as hygiene, waste management, and disease prevention. The questionnaire will be administered to both the pre-test and post-test to determine knowledge improvement after the hands-on sanitation activities.
- *Construction.* The researchers performed a comprehensive search, conducted a review, and engaged in analytical evaluation of numerous validated questionnaires pertaining to sanitation's knowledge, attitudes, behaviors, and learning experiences. The literature thus obtained became the reference point for the new tool's development. The "Awareness of Proper Sanitation Practices" questionnaire drew heavily on the work of Jiabei He, Yi Zeng, Ming Hao, and Taro Yamauchi (2020). The aspect of hands-on activities' influence on the sanitation attitude measurement was taken from the Journal of Family Medicine and Primary Care (2020). The behavior-related items were based on a sanitation-related paper published in November 2022. Finally, the learning experience questions related to hands-on sanitation activities were based on a study at the University of the Philippines Manila (July 2021). After collecting and examining these references, the researchers came up with a preliminary questionnaire consistent with their research goals. Reference literature's guidance and suggestions were thoroughly acknowledged, and the accuracy and relevance were ensured.
- *Validation.* The questionnaire that is made will be given to a validator who picked to evaluate its clarity, suitability, and significance. The validator looks at each item closely and points out what might be improved. The comments, suggestions, and feedback provided helped in making the instrument's revised version. The edited questionnaire then sent for final review and approval. Prior to actual administration, a pilot testing carried out evaluated the questionnaire's reliability and proposed necessary adjustments if any.
- *Administration.* After pilot testing and finalizing the instrument, the researchers administered the survey questionnaire. A formal request for approval was made to the Head of the Pastorian Marshal Guild at Dr. Juan A. Pastor Integrated National High School-Administration to distribute the surveys to the selected participants. Once permission was obtained, the researchers delivered the survey through google forms to ensure no class will be interrupted and thorough monitoring is done.

E. Data Analysis

The following statistical measures the impact of hands-on activities in improving students' sanitation knowledge in the Pastorian Marshal Guild of Dr. Juan A. Pastor Integrated National High School.

- Frequency/Percentage: These were used to determine the distribution of the respondents' awareness of proper sanitation practices, the impact of hands-on activities on students' sanitation practices in terms of attitude and behavior, and students' experiences of learning sanitation through hands-on activities.
- Descriptive Statistics: Means were calculated to summarize the students' awareness of proper sanitation practices, the impact of hands-on activities on students' sanitation practices in terms of attitude and behavior, and students' experiences of learning sanitation through hands-on activities.
- Ranking: These were utilized to evaluate the order or significance of specific indicators relating to good sanitation practices, attitude and behavior changes, and student experiences. Items were ordered according to their computed mean scores, with Rank 1 indicating the most strongly demonstrated practice or assessment.

F. Ethical Considerations

The study began only after securing approval from the appropriate authorities. Throughout the research, ethical standards are observed to protect the rights, safety, and privacy of all students. Students are informed fully of the purpose and process of the study, and their participation is entirely voluntary. They have the freedom to withdraw at any time without facing any consequences. All information collected was kept confidential and used solely for academic purposes.

The study also ensures that all hands-on activities are safe, respectful, and in accordance with the school guidelines. Students are treated fairly and with respect throughout the study. Data reported accurately and honestly, with all the sources used acknowledged properly to maintain academic integrity. Overall, the study aimed to promote learning and awareness while upholding fairness, respect, and ethical responsibility throughout the research process.

IV. PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents the analysis and interpretation of the data collected using a researcher-made questionnaire and supplemented by readings from unpublished materials, journals, books, and websites. The data are analyzed and interpreted in alignment with the study's objectives to assess impact of hands-on activities in improving students' sanitation knowledge.

A. Awareness of Proper Sanitation Practices

The table presents the students' level of awareness regarding proper sanitation practices, measured through different indicators like handwashing, waste segregation, personal hygiene, and environmental cleanliness. A mean score was assigned to each indicator, and the scores were interpreted in terms of the levels of awareness. This data aims to find out how well the students know about sanitation before or after participating in hands-on activities. By identifying their level of awareness, the study evaluates whether hands-on learning helps improve their understanding of sanitation concepts.

Table 1
Awareness of Proper Sanitation Practices

INDICATORS	MEAN	INTERPRETATION
1.I understand the importance of maintaining environmental cleanliness.	3.75	Very High
2.I know the correct steps involved in proper handwashing.	3.65	Very High
3.I understand that proper sanitation plays a role in keeping people safe and healthy.	3.65	Very High
4.I understand that good sanitation practices support the health of the community.	3.60	Very High
5.I understand that everyone has a shared responsibility in maintaining sanitation.	3.55	Very High
6.I know the importance of continuously learning about proper sanitation practices.	3.55	Very High
7.I recognize that unwashed hands can spread germs to food and surfaces.	3.45	High
8.I am familiar with the different categories of waste (biodegradable, non-biodegradable, recyclable, and hazardous) and how they should be disposed of.	3.40	High
9.I know that personal hygiene is connected to preventing illnesses.	3.36	High

10.I know that there are sanitation programs or policies implemented in my school or community. I know the importance of continuously learning about proper sanitation practices.	3.25	High
OVERALL MEAN	3.54	Very High

Based on the results, students show a very high level of awareness, with an overall mean of 3.54. Factors such as acknowledging cleanliness' importance, recognizing health's proper sanitation role, and knowing the right handwashing steps received the highest scores, indicating that students appreciate the significance of good hygiene in preventing diseases. Even though all items display high to very high awareness, the areas of knowledge about sanitation programs and illness prevention got a bit lower scores, which suggests that there are still places where awareness can be reinforced. These findings align with Mushota et al. (2021), who found that sanitation education and practical WASH activities significantly increased students' hygiene knowledge and awareness. Their study supports the idea that when students are involved in interactive and practical sanitation lessons, their awareness and understanding improve which is similar to the strong awareness levels reflected in the table.

B. Impact of Hands-on Activities on Students' Sanitation Practices in Terms of Attitude and Behavior

This section presents the impact of hands-on activities on students' sanitation practices in terms of attitude and behavior

1) Impact of Hands-on Activities on Students' Sanitation Practices in Terms of Attitude.

Table 2.1 shows the attitude of the students towards sanitation practices in the context of participating in hands-on activities. The indicators are concerned with the perception they have on cleanliness, value on hygiene, their drive to engage in sanitation, and their accountability of keeping both themselves and their environment clean. A mean was assigned to each of the items and interpreted according to the degree of agreement between the students and the statements. The purpose of the data is to determine the impact of the hands-on activities connected with sanitation on the attitude of the students and to assess whether these hands-on activities help make students more responsible and committed to proper sanitation.

Table 2.1
Impact of Hands-on Activities on Students' Sanitation Practices in Terms of Attitude

INDICATORS	MEAN	INTERPRETATION
1.I consider cleanliness and hygiene as essential aspects of my everyday life.	3.90	Very High
2.I believe that appropriate cleanliness is important for maintaining good health.	3.90	Very High
3.I believe that good sanitation habits demonstrate self-discipline and respect for others.	3.75	Very High
4.I realize that schools should provide more hands-on cleanliness lessons.	3.75	Very High
5.Participating in hands-on activities has increased my motivation to practice sanitation.	3.65	Very High
6.I believe that everyone should take part in keeping the environment clean.	3.65	High

7.I am confident that I can persuade people to practice good sanitation.	3.60	Very High
8.I feel that sanitation practices make a significant difference in the way we feel.	3.55	Very High
9.I like studying sanitation concerns through hands-on activities.	3.55	Very High
10.I believe that hands-on sanitation activities are the best way to learn about sanitary conditions.	3.36	High
OVERALL MEAN	3.69	Very High

The results show that the attitude of the students towards sanitation is highly positive as its mean is 3.69. The highly rated statements such as considering cleanliness and hygiene as essential aspects of everyday life and that appropriate cleanliness is important for maintaining good health, with a mean of 3.90 prove that the students are in agreement strongly. One can clearly see that the lowest mean of 3.36 which is equivalent to Agree states that the students are aware of the need to learn sanitation through hands-on activities. The results align with a recent systematic review by Ismail et al. (2024) that found that hygiene knowledge, attitudes and practices significantly improve in children when hands-on hygiene-related interventions are implemented in schools, which supports the idea that the application of hands-on hygiene-related activities is a favorable intervention in the enhancement of hygiene-related attitudes among students.

2) Impact of Hands-on Activities on Students' Sanitation Practices in Terms of Behavior.

The table presents the respondents' actual sanitation practices, focusing on how consistently they apply proper hygiene procedures in their daily routines. Its purpose is to assess whether students' sanitation knowledge is put into practice through behaviors such as handwashing, proper waste disposal, and regular cleaning.

Table 2.2
Impact of Hands-on Activities on Students' Sanitation Practices in Terms of Behavior

INDICATORS	MEAN	INTERPRETATION
1.I properly dispose of trash and avoid littering after attending sanitation activities.	3.75	Very High
2.After participating in hands-on sanitation activities, I wash my hands more frequently at key times (before eating, after using the toilet).	3.70	Very High
3.I regularly clean and maintain my personal hygiene supplies (toothbrush, towel) because of what I learned.	3.70	Very High
4.I follow proper toilet use and maintenance practices at home and at school.	3.70	Very High
5.I participate in community or school clean-up activities more often after the hands-on sessions.	3.70	Very High

6.I practice safe food handling at home (washing fruits/vegetables, covering food) because of what I learned.	3.70	Very High
7.I separate recyclable and non-recyclable waste as a result of the sanitation activities.	3.55	Very High
8.I report sanitation problems (broken toilets, open drains) to authorities or teachers.	3.40	High
9.I correct or remind others when I see unhygienic practices.	3.40	High
10.I use water and sanitation facilities responsibly (no wasting, no clogging) after the activities.	3.35	High
OVERALL MEAN	3.61	Very High

The results in the table indicate that students' cleanliness practices are generally very high, as evidenced by the overall mean of 3.61, which is interpreted as Strongly Agree. Several indicators, including washing hands more frequently, correct waste disposal, keeping personal hygiene products, and practicing safe food handling, had high mean ratings ranging from 3.70 to 3.75, showing significant support to these good sanitation behaviors. These findings imply that the hands-on cleanliness activities had a positive impact on students' habits, particularly those that were fully taught and practiced during the sessions. However, other factors, such as correcting others' unsanitary practices (3.40) and responsible use of sanitation facilities (3.35) have significantly lower mean values, which have been classified as Agree. The results in the table shows that students' sanitation practices are only moderately consistent, which means their knowledge is not always applied in real situations. This reflects the common knowledge and practice gap noted by the World Health Organization (WHO, 2020), which states that awareness alone does not ensure proper sanitation behavior. UNICEF (2019) also reports that many students understand sanitation principles but struggle with routine compliance without continuous reminders or support. These patterns are consistent with the findings in the table.

C. Students' Experiences of Learning Sanitation Through Hands-on Activities

The table illustrates hands-on activities as a way of learning sanitation, through the lens of student experiences. It highlights their levels of support and agreement regarding various indicators such as motivation, engagement, confidence, responsibility, and awareness. A Likert scale was used to rate each statement, and the means calculated reveal a consistently strong positive attitude towards experiential sanitation lessons. The aim of these data is to establish whether the implementation of hands-on activities can facilitate the students' comprehension of sanitation concepts and, furthermore, whether such methods would significantly change their minds and practices concerning hygiene and cleanliness.

Table 3

Students' Experiences of Learning Sanitation Through Hands-on Activities

INDICATORS	MEAN	INTERPRETATION
1.I became more aware of sanitation problems in my surroundings after the activities.	3.80	Very High
2.The hands-on sanitation activities motivate me to adopt proper hygiene practices.	3.75	Very High
3.The hands-on sanitation activities helped me become more observant of cleanliness in my surroundings.	3.75	Very High

4.I find learning sanitation through hands-on activities to be effective and meaningful.	3.70	Very High
5.I find it easier to connect sanitation lessons to everyday life through hands-on experiences.	3.70	Very High
6.I learned how proper sanitation systems protect the health of the community.	3.70	Very High
7.I feel more confident applying sanitation practices after participating in hands-on sanitation activities.	3.65	Very High
8.I developed a sense of responsibility toward keeping the environment clean after the activities.	3.60	Very High
9.I find hands-on sanitation activities enjoyable and engaging.	3.55	Very High
10.I feel more responsible for maintaining cleanliness after experiencing sanitation activities.	3.55	Very High
OVERALL MEAN	3.67	Very High

The data from the table shows an unchangingly high evaluation, with all the indicators being placed in the category of "Very High" interpretation. Students were of the same opinion, and the hands-on sanitation activities were very much responsible for their increased awareness of sanitation-related issues (mean = 3.80), their motivation to practice proper hygiene (mean = 3.75) and their being more observant regarding cleanliness of their surroundings (mean = 3.75). The lowest mean scores—such as finding the activities enjoyable (mean = 3.55) and feeling responsible for cleanliness (mean = 3.55)—still indicate very positive people's views. It is to be noted that these observations are in agreement with the ones by Vally et al. (2019), who indicated that school-based WASH and experiential sanitation interventions significantly improved students' hygiene and practices thereby confirming that hands-on methods are one of the most effective precautions in ensuring continuous sanitation awareness and behavior.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. Summary

The purpose of this study is to evaluate the effectiveness of hands-on activities to improve the students' sanitation knowledge, attitudes, and practices at Dr. Juan A. Pastor Integrated National High School. Lessons on sanitation are already being taught in schools, and yet, students do not continually practice proper hygiene. The researchers understood that mere lecturing is not enough to effect change in a habit. Therefore, this study sought to determine whether experiential learning is a more effective and impactful method to improve sanitation practices.

In order to meet the objective, the team of researchers implemented a quantitative experimental research design focused on a sample of 20 participants. Members of the Guild completed a pre-test, participated in three interventions involving field sanitation inspection, waste segregation, and management and proper handwashing, followed by a post-test completion. A 4-point Likert-scale questionnaire was used to assess the participants' sanitation awareness, attitudes and behaviors, and the learning experiences gained. Responses were analyzed using frequency and percentage distributions and descriptive statistics to determine the level of change in attitudes and behaviors post-intervention. Findings demonstrated a clear advancement in students' knowledge and practice regarding sanitation. The students' recognition of sanitation principles was at a very high level (mean value = 3.54), accompanied by a very positive attitude concerning hygiene (mean value = 3.69).

Furthermore, there was a significant improvement in their behavioral practices (mean value = 3.61), particularly regarding proper waste disposal, consistent hand washing, and the attainment of responsible sanitation practices at school and at home. Besides, students indicated high levels of participation in the activities and expressed that their learning experience was very positive (mean value = 3.67), which meant that they were encouraged by practical methods to more consistently practice and sustain desired behavioral sanitation practices.

To conclude, the findings prove the effectiveness of hands-on activities which correlate positively in shaping students' knowledge, attitudes, behaviors, and actions in the practice of sanitation. The current study states the importance of incorporating activities of a practical nature, beyond the lectures, to achieve successful and enduring changes in behavior. To facilitate and strengthen the daily practice of good hygiene, the researchers recommend the adoption of equivalent experiential training programs in sanitation in schools.

B. Conclusions

From the findings of the study, the following conclusions are drawn:

1) The students' level of awareness certainly aligned with the study's findings as these participants absorbed lessons in sanitation practices like hygiene, waste management, and disease prevention.

2) Students' attitudes towards sanitation were positively shaped as the hands-on activities appreciated sanitation, understood the relevance of health, and took responsibility for sanitary activities and systems.

3) Students demonstrated improved sanitation behaviors by appropriately disposing of waste, washing hands more regularly, and responsibly using sanitation facilities, including at home.

4) Students were engaged and found the learning experience of the activities meaningful. They appreciated the hands-on activities for linking the lessons in sanitation to concrete situations, which enhanced their retention and practice of hygiene.

C. Recommendations

Based on the conclusions, the following recommendations are offered:

1) Schools may include more practical sanitation activities in the curriculum to strengthen the classroom workshops and ensure that hygiene skills are given enough practice.

2) To prolong students' positive sanitation attitudes and practice, workshops, training and reinforcement activities may be carried out on the regular.

3) The school administration may adequately provide sanitation facilities, and ensure that they are properly maintained, that is, handwashing facilities, properly segregated waste bins, and clean comfort rooms, to enable the practice of sanitation knowledge.

4) Teachers may be encouraged and supported to develop more experiential learning activities in which students actively participate in the learning of sanitation concepts rather than merely listening.

5) The program may be developed to include more student organizations and more grade levels to foster a more widespread culture of sanitation awareness and responsibility throughout the school.

6) Future researchers may wish to conduct comparative studies of large populations that include hands-on learning, as well as other teaching strategies, to validate the effectiveness of experiential sanitation programs, and to identify other variables that may affect hygiene behavior.

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APPENDICES

A. Photo Documentation

Discussion on Sanitation and Overview of the Procedures for the Hands-On Activities

ACTIVITY 1: Field Sanitation Inspection

ACTIVITY 2: Waste Segregation and Management Activity

ACTIVITY 3: Proper Hand Washing Activity

B. Data Gathering

Pre-assessment Questionnaire

Dear Participants,

Good Day!

The researchers are currently conducting a study entitled "An Experimental Study on the Impact of Hands-On Activities in Improving Students' Sanitation Knowledge." We kindly ask for your time and cooperation in answering this questionnaire, which will help gather important information related to the study. Rest assured that your responses will be treated with the utmost confidentiality.

Part 1. Awareness of Proper Sanitation Practices

Research Question 1: How do students rate their own awareness of proper sanitation practices?

Instruction: Using the scale below, rate your own awareness of proper sanitation practices by putting a check (✔) mark that corresponds to your rating.

Scale : **4** – Very Aware **3** – Aware **2** – Slightly Aware **1** – Not Aware

Statement	4	3	2	1
I understand that proper sanitation plays a role in keeping people safe and healthy.				
I know the correct steps involved in proper handwashing.				
I recognize that unwashed hands can spread germs to food and surfaces.				
I am familiar with the different categories of waste (biodegradable, non-biodegradable, recyclable, and hazardous) and how they should be disposed of.				
I understand the importance of maintaining environmental cleanliness.				
I know that personal hygiene is connected to preventing illnesses.				
I understand that good sanitation practices support the health of the community.				
I understand that everyone has a shared responsibility in maintaining sanitation.				
I know that there are sanitation programs or policies implemented in my school or community.				
I know the importance of continuously learning about proper sanitation practices.				

Post-assessment Questionnaire

Dear Participants,

Good Day!

The researchers are currently conducting a study entitled "An Experimental Study on the Impact of Hands-On Activities in Improving Students' Sanitation Knowledge." We kindly ask for your time and cooperation in answering this questionnaire, which will help gather important information related to the study. Rest assured that your responses will be treated with the utmost confidentiality.

Part 2.1 Impact of Hands-on Activities on Students' Sanitation Practices in Terms of Attitude

Research Question 2: How do hands-on activities affect students' sanitation practices in terms of: 2.1 Attitude; 2.2 Behavior

Instruction: Using the scale below, rate how hands-on activities affect students' sanitation practices in terms of Attitude by putting a check (✔) mark that corresponds to your rating.

Scale: **4** – Strongly Agree **3** – Agree **2** – Disagree **1** – Strongly Disagree

Statement	4	3	2	1
I consider cleanliness and hygiene as essential aspects of my everyday life.				
Participating in hands-on activities has increased my motivation to practice sanitation.				
I like studying sanitation concerns through hands-on activities.				
I believe that good sanitation habits demonstrate self-discipline and respect for others.				
I believe that appropriate cleanliness is important for maintaining good health.				
I believe that hands-on sanitation activities are the best way to learn about sanitary conditions.				
I am confident that I can persuade people to practice good sanitation.				
I feel that sanitation practices make a significant difference in the way we feel.				
I believe that everyone should take part in keeping the environment clean.				
I realize that schools should provide more hands-on cleanliness lessons.				

Part 2.2 Impact of Hands-on Activities on Students' Sanitation Practices in Terms of Behavior

Research Question 2: How do hands-on activities affect students' sanitation practices in terms of: 2.1 Attitude; 2.2 Behavior

Instruction: Using the scale below, rate how hands-on activities affect students' sanitation practices in terms of Behavior by putting a check (✔) mark that corresponds to your rating.

Scale: **4** – Strongly Agree **3** – Agree **2** – Disagree **1** – Strongly Disagree

Statement	4	3	2	1
After participating in hands-on sanitation activities, I wash my hands more frequently at key times (before eating, after using the toilet).				
I properly dispose of trash and avoid littering after attending sanitation activities.				
I regularly clean and maintain my personal hygiene supplies (toothbrush, towel) because of what I learned.				
I follow proper toilet use and maintenance practices at home and at school.				
I participate in community or school clean-up activities more often after the hands-on sessions.				
I correct or remind others when I see unhygienic practices.				
I separate recyclable and non-recyclable waste as a result of the sanitation activities.				
I use water and sanitation facilities responsibly (no wasting, no clogging) after the activities.				
I report sanitation problems (broken toilets, open drains) to authorities or teachers.				
I practice safe food handling at home (washing fruits/vegetables, covering food) because of what I learned.				

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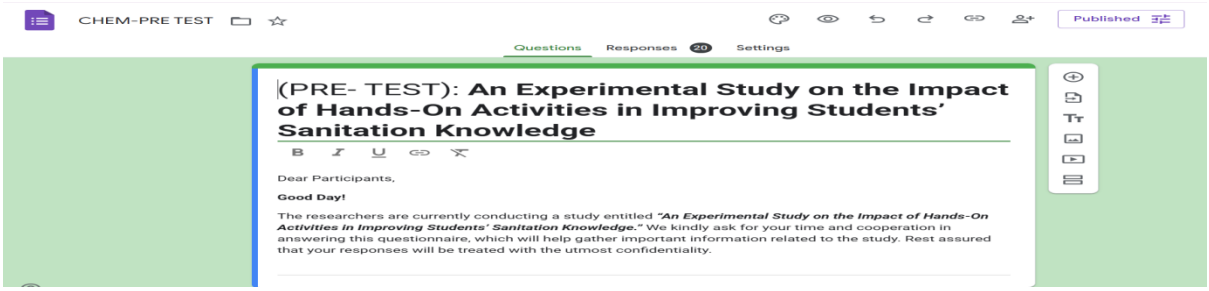
Part 3. Students' Experiences of Learning Sanitation Through Hands-on Activities

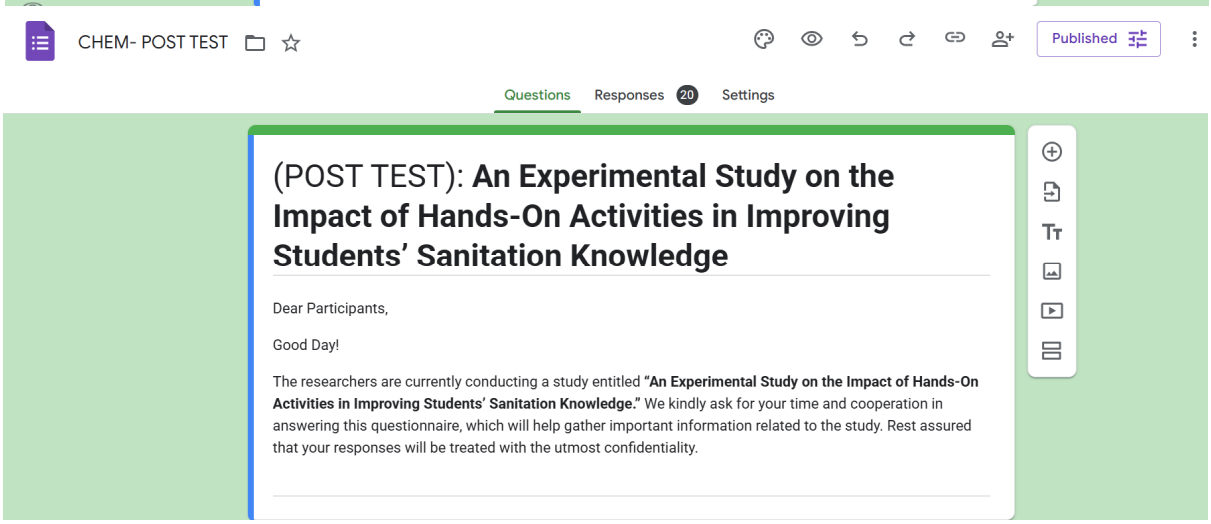
Research Question 3: What are the students' experiences of learning sanitation through hands-on activities?

Instruction: Using the scale below, rate your experiences of learning sanitation through hands-on activities by putting a check (✔) mark that corresponds to your rating.

Scale: **4** – Strongly Agree **3** – Agree **2** – Disagree **1** – Strongly Disagree

Statement	4	3	2	1
The hands-on sanitation activities motivate me to adopt proper hygiene practices.				
I find hands-on sanitation activities enjoyable and engaging.				
I feel more confident applying sanitation practices after participating in hands-on sanitation activities.				
I feel more responsible for maintaining cleanliness after experiencing sanitation activities.				
I find learning sanitation through hands-on activities to be effective and meaningful.				
I find it easier to connect sanitation lessons to everyday life through hands-on experiences.				
I became more aware of sanitation problems in my surroundings after the activities.				
I developed a sense of responsibility toward keeping the environment clean after the activities.				
I learned how proper sanitation systems protect the health of the community.				
The hands-on sanitation activities helped me become more observant of cleanliness in my surroundings.				





C. Letter

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November 07, 2025

Dr. Juan A. Pastor Integrated National High School
Talaibon, Ibaan, Batangas

Dear: Sir

We, the Group 5 students in Chemistry for Engineers (CHEM 101) subject under Bachelor of Science in Sanitary Engineering from Batangas State University- Alangilan Campus are conducting research entitled "**An Experimental Study on the Impact of Hands-On Activities in Improving Students' Sanitation Knowledge**". We are respectfully seeking your approval and permission to conduct surveys and implement hands-on activities related to our research topic at this school.

Rest assured that all the information that we would gather will be treated with confidentiality and will be used for academic purposes only.

We are hoping that this request would merit your positive response.

Respectfully yours,

Medrano, Gabriel B.
Mendoza, Althea H.
Moral, Lu Jain Janelle O.
Morete, Chrismarie R.
Panganiban, Gayzelle G.
Papasin, Sandra Rose L.

Noted by:

EDMAR DIMAANO
Head of the Organization

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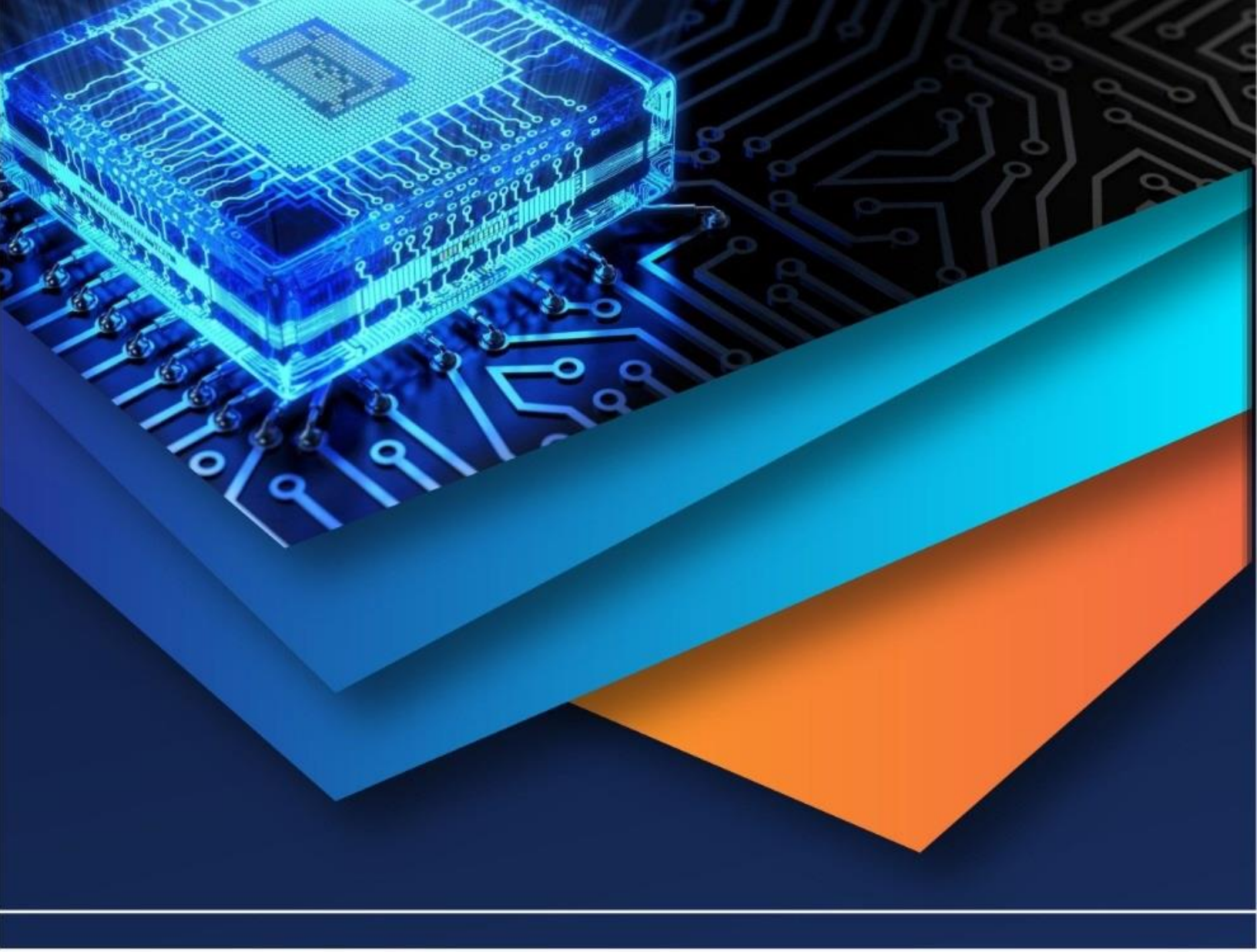

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