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Utilizing a Technology-Based Web Platform to Promote Proper Hygiene Practices Among Sanitary Engineering Students of Batangas State University-Alangilan Campus

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Abstract: This study examined the use of web-based educational program to promote proper hygiene practices among Sanitary Engineering students of Batangas State University- The National Engineering University- Alangilan Campus. Using a descriptive quantitative research design, the data are collected among 200 students using a structure Likert-scale questionnaire to assess the hygiene awareness, engagement, and the web-based platform's usefulness and effectiveness. Furthermore, the results showed that there is a noticeable gap on the student's knowledge and actual practices. The web-based platform helped to address this gap by providing interactive learning material that improved student's understanding and encourage hygienic behaviour. Lastly, this study concludes that digital platforms serve as valuable medium in strengthening hygiene awareness and supporting preventive health action in academic setting. These finding may guide future initiatives and research with regards to technology-driven health education.

Keywords: *Web-Based Educational Platform, Hygiene Awareness, Technology-Driven Health Education.*

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I. INTRODUCTION

In the Philippines, the recurring prevalence of infectious diseases such as influenza continues to pose a major public health concern. According to the Department of Health (DOH, 2023), influenza remains one of the most common communicable diseases in the country, with cases increasing during seasonal outbreaks. The virus spreads easily through droplets when infected individuals cough or sneeze, particularly in populated environments such as schools and universities. This reality highlights the necessity of strengthening hygiene and sanitation awareness, especially among students who frequently interact in shared facilities. The World Health Organization (WHO, 2015) emphasizes

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that maintaining proper hygiene—particularly consistent handwashing—is one of the most effective ways to prevent the spread of infectious diseases and to protect public health.

Despite the availability of information regarding hygiene and sanitation, students often demonstrate inconsistency in applying these practices in daily life (Ejemot-Nwadiaro et al., 2015). This gap between awareness and actual practice necessitate innovative strategies that can make hygiene education more engaging and sustainable. The growing influence of digital technology in education offers an opportunity to address this issue effectively. Web-based educational platforms provide accessible, interactive, and student-centered approaches to learning (Al-Shorbaji, 2016), which can help translate hygiene awareness into consistent behavioral change among learners.

At Batangas State University – Alangilan Campus, engineering students—specifically Sanitary Engineering students taking the Bachelor of Science program—are frequently exposed to laboratory environments and technical fieldwork where strict adherence to hygiene and sanitation standards is crucial. Recognizing this, the researchers developed the study titled "Utilizing a Technology-Based Web Platform to Promote Proper Hygiene Practices among Sanitary Engineering Students of Batangas State University – Alangilan Campus." The study aims to assess students' level of hygiene and sanitation awareness, evaluate the usefulness and effectiveness of the web-based educational platform, and determine the extent of student engagement and participation in its utilization.

Furthermore, this study aligns with the United Nations Sustainable Development Goal No. 3, which promotes ensuring healthy lives and well-being for all at all ages (United Nations, 2015). By integrating health education with digital technology, the study aims to contribute to Batangas State University's commitment—as reflected in its vision and mission—to produce globally competitive and morally upright professionals equipped with values, knowledge, and excellence in their respective fields. The research embodies the university's pursuit of relevance, responsiveness, and innovation by addressing a pressing public health concern through a modern educational approach.

This study is expected to not only strengthen hygiene awareness among Sanitary Engineering students but also serve as a model for how technology-based initiatives can be applied to promote wellness and preventive health education. By doing so, it supports the institution's broader mission to shape a global Filipino imbued with moral courage, nurtured through values and excellent education, capable of contributing to a healthier and more sustainable society.

➢ *Objectives*

This study aims to develop and evaluate a web-based educational platform designed to promote proper hygiene practices among students. Specifically, it seeks to address the following objectives:

- Assess the level of hygiene and sanitation awareness of students through the use of a web-based educational program.
- Evaluate the web-based educational platform in terms of:
- Usefulness in promoting proper hygiene practices among students; and
- Effectiveness in enhancing students' knowledge and behavior toward proper hygiene.
- Determine the level of student engagement and participation in utilizing the web-based educational platform.

II. MATERIALS AND METHODS

➢ *Research Design*

The researchers used quantitative methods using a descriptive approach to evaluate the effectiveness and utilization of a technology-based web platform in promoting proper hygiene practices among Sanitary Engineering students at Batangas State University – Alangilan Campus. Data will be systematically collected through structured Likert scale questionnaires, focusing on students' hygiene awareness, behavioral practices, and engagement with the platform. As cited by Zubair (2022), descriptive research seeks to characterize a population or phenomenon without manipulating variables. To ensure validity and reliability, the researchers will maintain consistent survey administration and control for external factors such as access to alternative hygiene resources.

➢ *Subjects of the Study.*

This study used first year to sixth year of Sanitary Engineering Program from Batangas State University-Alangilan Campus as respondents. They are reliable sources of data because one of the possible fields that these students might take is about Public Health. The distribution of respondents per year level is presented in table 1.

Table 1 Distribution of Respondents

Sanitary Engineering Students	Population of Students
First Year	97
Second Year	63
Third Year	98
Fourth Year	97
Fifth Year	36
Sixth Year	6
Total	397

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➢ *Data Gathering Instrument*

A questionnaire made by the researcher was the main way that information was gathered for this study.

- *Questionnaire.*

The research questionnaire was disseminated to the respondents through a Google Form consisted of four parts: Part I assessing the level of hygiene practices awareness of the respondents, Part II evaluating the clarity of the web-based platform, Part III examining the organization of the information inside the website, and Part IV reviewing the user's experience in using the educational platform.

- *Scoring of Responses.*

The four-point Likert scale was used to score responses from parts 1, 2, 3, and 4. This scale was used to describe student's awareness about hygiene practices as well as the effectiveness of the proposed web-based educational platform.

Table 2 Scoring of Responses

Option	Scale Range	Verbal Interpretation
4	3.50 – 4.00	Strongly Agree
3	2.50 – 3.49	Agree
2	1.50 – 2.49	Disagree
1	1.00 – 1.49	Strongly Disagree

➢ *Data Gathering Procedure*

The researchers used a Likert scale type of questionnaire in google form to collect the data needed for the research. After survey accomplishment, the researchers gathered the information and tabulated the results for analysis and interpretation. The information needed for the study is derived from the respondents' answer.

III. RESULTS AND DISCUSSION

➢ *Awareness of Students Towards Hygiene and Sanitation.*

The level of awareness and knowledge of students towards hygiene and sanitation practices were assessed.

Table 3 Students' Synchronous Learning Experiences in Terms of Cognitive Presence

Level of Awareness	WM	VI
1 I am aware that handwashing prevents the spread of germs and diseases.	3.945	Strongly Agree
2 I am aware that proper hygiene protects both personal and public health.	3.945	Strongly Agree
3. I am aware that practicing oral hygiene reduces the risk of gum disease.	3.915	Strongly Agree
4. I am aware that digital platforms can effectively teach hygiene practices.	3.86	Strongly Agree
5. I am aware that waste should be properly segregated and disposed of.	3.94	Strongly Agree
6. I am aware that shared spaces such as classrooms, restrooms, and laboratories require regular cleaning to ensure safety	3.94	Strongly Agree
7. I am aware that the CLEANED program helps me apply hygiene and sanitation practices in my daily life.	3.92	Strongly Agree
8. I am aware that maintaining cleanliness in my surroundings contributes to sustainability and community well-being	3.93	Strongly Agree
9. I am aware that I have a responsibility to promote hygiene and sanitation practices among my peers.	3.92	Strongly Agree
10. I am aware that the CLEANED program increased my understanding of proper hygiene and sanitation.	3.92	Strongly Agree
Composite Mean	3.923	Strongly Agree

The findings reveal that all items obtained weighted means ranging from 3.86 to 3.945, with a composite mean of 3.9235, verbally interpreted as *Strongly Agree*. This indicates that respondents demonstrated a high level of awareness regarding the importance of hygiene and sanitation in promoting both personal and public health. The highest-rated items emphasized the recognition that handwashing prevents the spread of germs and diseases (WM=3.945) and that proper hygiene safeguards community well-being (WM=3.945). Similarly, awareness of waste segregation (WM=3.94) and the need to clean shared spaces such as classrooms and laboratories (WM=3.94) reflects students' understanding of collective responsibility in maintaining safe environments.

➢ *Assessment in the Utilization of the Web-Based Educational Platform in Promoting Hygiene and Sanitation Practices*

The extent to which the website's informational content was clearly presented and systematically organized was assessed.

- *Clarity*

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Table 4 Assessment on the Clarity of the Visuals Used

Clarity	WM	VI
1. I understand the instructions clearly because they are direct and easy to follow.	3.895	Strongly Agree
2. I find the language used in the lessons clear and simple.	3.895	Strongly Agree
3. I can follow the information presented without feeling confused.	3.87	Strongly Agree
4. I understand the content better with the help of visuals like images, icons, or videos.	3.92	Strongly Agree
5. I know the purpose of each section or activity.	3.88	Strongly Agree
6. I can easily identify the navigation buttons and menus because they are labeled clearly.	3.845	Strongly Agree
7. I receive clear feedback or messages when I complete a task.	3.85	Strongly Agree
8. I find the overall layout of the platform easy to follow.	3.84	Strongly Agree
9. I can easily identify the next step or action I need to take when using the platform.	3.91	Strongly Agree
10. I can read and understand the text and visuals without difficulty.	3.87	Strongly Agree
Composite Mean	3.88	Strongly Agree

The results all fall under the verbal interpretation Strongly Agree which range from 3.84 to 3.92, indicating the positive perception and acknowledgement of the students in the platform's instructions, language, visuals, and navigation features. With the highest weighted mean (WM = 3.92), students strongly agreed that the clarity of visuals such as images, icons, and videos greatly contribute to understanding the content. This is followed by the clarity of instructions and the simplicity of the language used (WM = 3.895), suggesting that the information provided is straightforward and easy to follow. High ratings were also recorded for respondent's ability to follow the information without confusion (WM = 3.87) and to clearly identify the purpose of each activity (WM = 3.88), demonstrating effective organization and communication within the platform.

The overall layout of the platform has the lowest weighted mean (WM = 3.84). Although, slightly lower than the others, it still falls under Strongly Agree that indicates the platform generally find the layout easy to follow. The low standard deviations (ranging from 0.0167 to 0.0171) also reveal a high agreement among respondents with regard to their positive experience. Overall, the platform was perceived as highly effective in terms of delivering clear instructions, understandable content, and intuitive navigation, as reflected in the composite mean of 3.8775 (Strongly Agree). In summary, the results show that the platform successfully supports student learning about sanitation and hygiene by providing clear guidance, helpful visuals, and a user-friendly interface that allows learners to navigate the website smoothly.

- *Organization*

Table 5 Student's Assessment on the Organization of the Web-Based Program

Organization	WM	VI
1. I can navigate quite easily in the web.	3.84	Strongly Agree
2. Producing videos to enhance students' engagement and learning experiences about mechanical waves and sound.	3.85	Strongly Agree
3. I can easily locate the information.	3.85	Strongly Agree
4. I get enough information for proper hygiene in the web.	3.87	Strongly Agree
5. I have the information I need in the web	3.86	Strongly Agree
6. I can access the web in all devices	3.87	Strongly Agree
7. I notice the web has enough tags for every information.	3.87	Strongly Agree
8. I find that the web has structured categorization.	3.87	Strongly Agree
9. I see that the information is organized in a way that helps me become more productive	3.86	Strongly Agree
10. I find that the web has a simple structure to navigate.	3.88	Strongly Agree
Composite Mean	3.86	Strongly Agree

The results shown that most of the respondents strongly agree that they can navigate in the web quite easily with the weighted mean of 3.845. Moreover, they also strongly agree on the next statement showing the 3.855 same as the third statement saying they can easily locate the information. Most of the respondents also agreed that the web has enough information for proper hygiene having a weighted mean of 3.875. most of the respondents agreed that they can access the web in all devices showing weighted mean of 3.87. They also notice that web has enough tags for every information with the weighted mean of 3.87 same as the previous weighted mean. A weighted mean of 3.87 also applied on the next statement which is the respondents find that the web has structured categorization. Furthermore, they also strongly agreed that the web is organized in a productive way having a weighted mean of 3.865. Lastly, most of the respondents strongly agreed that the web has simple structure to navigate. Overall, the respondents show positive response on the web.

➢ *Student's Experience in Utilizing the Web-Based Educational Platform*

The feedback and experience of different users in using the web-based educational platform on promoting sanitation and hygiene are assessed.

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Table 6 User's Experience in Utilizing Web-Based Educational Platform

Experience	WM	VI
1. I found the website's layout and design to be visually appealing.	3.78	Strongly Agree
2. The program's navigation system is logical and easy to understand.	3.81	Strongly Agree
3. The program loaded quickly when accessed	3.82	Strongly Agree
4. The platform provides clear instructions on how to use its features.	3.81	Strongly Agree
5. The content is presented in a way that is easy to understand.	3.835	Strongly Agree
6. The program's learning objectives were clearly defined.	3.875	Strongly Agree
7. The pace at which the content is delivered is appropriate.	3.85	Strongly Agree
8. I enjoy using the program as a primary learning tool.	3.81	Strongly Agree
9. This web based educational program is a high-quality educational resource.	3.83	Strongly Agree
10. Overall, I am satisfied with my experience using this web-based educational program structure to navigate.	3.82	Strongly Agree
Composite Mean	3.82	Strongly Agree

The assessment shows a scale where all ten items registered a Weighted Mean (WM) falling within a narrow range, from 3.78 to 3.875, all corresponding to the Strongly Agree verbal interpretation. The Composite Mean for the platform structure and design is {3.825}, confirming a strong overall positive evaluation by the student respondents.

The item receiving the highest level of agreement was "The program's learning objectives were clearly defined" (WM = 3.875). This high score suggests exceptional clarity regarding the platform's educational goals, which is a critical factor in successful instructional design.

Further evidence of the platform's instructional effectiveness is seen in the high weighted means for "The pace at which the content is delivered is appropriate" (WM = 3.85) and "The content is presented in a way that is easy to understand" (WM = 3.835). These findings indicate the students perceive the content delivery as optimized for comprehension.

The data presented supports the conclusion that the web-based educational program is a highly effective and well-received learning tool. Students strongly agree that the platform is easy to use, well-organized, and successful in delivering clear and understandable educational content, as evidenced by the high weighted means and very low standard deviations across all items.

- *Proposed Learning Plan*

The learning plan should integrate a clear, well-organized, and meaningful digital content and interactive educational strategies in order to improve the learning experience, widen the field for hygiene and sanitation activities, and properly address the challenges faced by the students.

IV. CONCLUSIONS

In lined with the finding drawn from the survey, the following conclusion were made:

- The students from BS Sanitary Engineering are knowledgeable enough about basic sanitation and hygiene practices and their level of awareness are commendable.
- The study shown that students positively assessed the clarity and organization of the visuals, instructions, and navigation features, confirming that the platform's design supports comprehension and ease of use in delivering health education content.
- A well-organized and accessible digital educational platform can serve as a high-quality educational resource, promoting responsible hygiene behaviour in lined with the sustainable development goals through user-friendly medium and clearly defined objectives.

RECOMMENDATIONS

Through the use of the finding and results, the following recommendation are hereby presented:

- The study found that the web improves students' productivity. Therefore, it is recommended that everyone uses this web as it is helpful in a productive way.
- Expand hygiene and sanitation content that deepen students understanding by providing more infographics and interactive activity.
- Implement the web to other schools, university, and program for overall community sanitation and healthy people to prevent such contagious infection.
- To address the issue of sickness of infection, researcher recommended to use the web then follow proper hygiene such as handwashing, waste segregation, and maintaining cleaned shared spaces.

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