Agrisost 2018, Vol.24, No.1: pages: 59-74 ISSN 1025-0247
Available at http://revistas.reduc.edu.cu/index.php/agrisost/index

Environmental Health for Sustainable Hygienic Education in Rural School Students

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DOI: https://doi.org/10.5281/zenodo.13843807

Received: June, 12, 2017

Accepted: December 17, 2017

ABSTRACT

In Cuba, transformations in rural schools are taking place to facilitate the development of quality teaching-learning processes, where environmental education is a fundamental national issue due to its incidence in comprehensive education of elementary school children. The purpose is to foster personal and collective care, as well as environmental sanitation in rural, schools, in Agüero-Mar Verde People's Administration Council, municipality of Santiago de Cuba. This paper offers an environmental educational project for rural schools. Its practical application contributed to the consolidation of hygienic-environmental behaviors through implementation of regular hygienic practices, which change attitudes in natural and social environments. These actions were part of Turquino Research Project, designed at the Faculty of Educational Sciences, University of Oriente.

KEY WORDS/: environmental sanitation, attitudes, rural context.

INTRODUCTION

The lack of universal access to water and sanitation in the region is a serious problem that compromises the health of the population and sustainable development of countries. Therefore, the implementation of public policies based on the human rights approach is important to guarantee access to basic levels of drinking water and sanitation toward healthier and decent living standards.

Water supply and basic sanitation systems are influenced by the effects of climate change, particularly the most vulnerable populations who live on islands, coastlines, and rural areas.
Recently, the international community has expressed growing concerns. The UNEP has revealed a series of critical issues in relation to fresh water, including quick deterioration of water quality, and the loss of water-related ecosystems and biodiversity. Accordingly, four strategic priorities have been identified.
Tackling global water quality challenges.
Providing benefits to aquatic ecosystems.
Developing resilience capacity toward climate change through water management.

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Increasing resource use efficiency.

The Cuban government has taken several actions in favor of the environment, whereas the Ministry of Education, along with different institutions, has designed various norms and strategies to tackle environmental education of professionals in the sector, based on rational and critical attitudes toward the environment and a more environmentally sustainable teaching process.

Outstanding research in this field has been done by Fernández Sanfiel (2012), Martínez Morgado (2013), Rodríguez Ramos (2016), Clavel Hernández (2016), and Velázquez Labrada (2016). This works support the idea that environmental education of students has been well designed and implemented at different educational levels, with significant contributions, such as the design and implementation of strategies, methodologies or programs to create awareness in terms of hazard and disaster prevention, as well as upgrading in environmental education. However, its theoretical and methodological approach has been insufficient, considering the particularities of fostering new personal and collective hygienic habits and environmental sanitation in primary school students, particularly in rural schools.

Rural primary school students require the design of an environmental educational project to promote environmental attitudes, based on a pedagogical model for education management of environmental attitudes, which takes into account new relationships within the dynamics of environmental education and environmental axiological empowering to revert knowledge and action of students. This system can be realized through a set of procedures of environmental search as a way to contribute to new hygienic and environmental basic sanitation habits, which facilitated proper environmental education since early ages.

It is also important to articulate education with rural development. The implementation of actions is not an easy endeavor. Environmental training of rural primary school students becomes more relevant in that students are in charge of continuing the environmentalist culture in schools and communities to improve the quality of life. It is also important to change daily habits, household and work decisions, consumption habits, and attitudes during leisure, and at school, in order to foster a community culture in concert with the current people's requirements.

At the beginning of intervention in the area, several shortcomings that limited rural primary school students were highlighted. A significant inappropriate behavior of students toward the environment was observed due to poor management of hygienic habits, such as,

Insufficiencies in the work of teachers in favor of personal and collective hygiene of students due to weak implementation of curricular and extracurricular strategies.

Limited use of the potential offered by the contents of syllabi to promote personal and collective hygiene; i.e., hand washing before eating and after using the toilet, and consumption of unclean water.

Insufficient maintenance of gardens, lands, adjacent school areas, and rural community housing.

Lack of actions to face droughts, since the ideal conditions for water storage and treatment are not created. These drawbacks show the lack of systematic application of hygiene measures; the students not always know how to play a decisive role in face of hygiene issues in the surrounding areas, which calls for new ways to optimize actions in different contexts to guarantee a relevant participation in the solution of various hygiene issues.

The actions included in the environmental and educational project were designed to cope with Task No. 2, Turquino Project, University of Oriente, of the National Project for Current Problems of the Cuban Educational System (PAP). These actions were implemented through the active participation of their members in the diagnostic and application of activities; it also favored the development of attitudes toward a new health conception, via the objectives of the primary school students, (ODS), and the goals set in the project.

MATERIALS AND METHODS

This research was made in Mar Verde community, province of Santiago de Cuba (19º 58´ 1´´ NL and 75º 56´ 27´´ WL), with the participation of 28 rural school students (14 fifth graders from multi-grade school Felix Varela Morales, and 14 fourth, fifth, and sixth graders from Rafael Marzan Chacon school), and four teachers (3 teachers of fourth to sixth grades, and one multi-grade teacher of fifth and sixth grades), in the People's Administration Council, Turquino Plan Mar Verde.

During the first stage of the educational project, the main hygienic behaviors were determined by means of environmental surveys to students and neighbors of the schools in the study. The chief hazards, dangers, vulnerabilities, and absence of hygienic and sanitary measures and inappropriate water treatment were evaluated. The main limitation observed was insufficient access to safe water.

Surveys and interviews

Survey to students

Objective: to diagnose the knowledge acquired about the main environmental issues, and their behavior toward the environment. How long have you lived in the community? _____ 1-. What is an environmental issue?

2- Check the subjects below which you consider most contributing to rational water use.

____ Spanish ___ Mathematics ___ Natural Sciences ___ Computer Science ___ The World we Live in ___ Civic Education ___ Vocational Education. Explain your choice.

3- Do you feel ready to address situations related to hygiene and environmental sanitation at school or home, based on the environmental contents that you take at school?

___ Yes ___ No ___ Sometimes ___ Always ___ Never

4- Do you think some activities are intended for your parents to save water and perform sustainable management at home? ___ Sometimes ___ Always ___Never

5-If you had to mention the main issues related with water at school and home, which ones would they be?

6-Suggest hygiene measures to eradicate hygiene and sanitation issues in your school and community.

7-Does your school take actions to encourage your participation and that of your classmates in hygiene and sanitation activities? If yes, mention them. What other activities would you like to include?

Survey to teachers

Objective: To check the knowledge of teachers about dealing with hygiene habits in students from a teaching-learning perspective.

What environmental issues are affecting the locations where students go to school and live?

Is the methodological preparation you take effective to deal with hygiene-related contents through teaching? Explain.

3- What hygiene and sanitary issues are the most harmful in your school? Suggest measures for their eradication.

4- What activities would you like to do at school to help with care and water use at school and the students´ homes?

From the observation of the following process developed at school, and the diagnostic results, several environmental and educational actions were designed for implementation in class, and other different contexts, which include students´ homes and the community where they reside. These actions were grouped in modules with specific objectives. Their purpose was to generate a responsible environmental consciousness in rural primary school students as propagators, through systematic practice of hygienic and environmental sanitation measures to achieve sustainable development.

RESULTS AND DISCUSSION

Water, hygiene, and environmental sanitation are pillars of human health, since they are essential elements of sustainable development. In addition to household use, they are important to guarantee the existence of ecosystems, but can also generate pollution if there are insufficient sustainable management habits and conducts.

The integrated management of water resources is essential for management and sustainable availability of water and sanitation for all. International concerns were expressed by the heads of states back in 2015, in New York, during the preparation of the 2030 Agenda for Sustainable Development (17 objectives and 169 goals), in order to transform the reality of environmental education. A specific objective related to water and sanitation in the Agenda called for the need to set goals to follow up and monitor drinking water, sanitation, and environmental hygiene. In order to achieve the previous, the rural population must be persuaded of the importance of political commitment, decision-making, and promotion of capacities to guarantee rational water access and use.

The right of water sets the right of all to access water with adequate quality and affordable prices, safe for household and personal use. The right to basic sanitation services implies universality and accountability, instead of just a simple charitable service, that depends on the will of institutions in charge. This right promotes universal access to water, particularly in favor of the most vulnerable groups and rural or scattered populations.

Although the right to water is not officially recognized as an independent human right in international treaties, the international norms for human rights comprise specific obligations in relation to drinking water access. These obligations urge states to guarantee access to sufficient amounts of drinking water for everyone, for domestic and personal use, including consumption, sanitation, laundry, cooking, and personal and household hygiene. Likewise, progressive access to proper sanitation services is also demanded as a key element of human dignity and private life, along with protection of drinking water supply and quality water resources.

Although there is an immediate obligation to speed up the levels of universal access to water, it may occur progressively, provided the states comply with their obligations to follow up and control access to available resources extensively, and that investment includes sanitation and promotion of good hygiene practices.

Water and sanitation are absolute personal and worldly prosperity requirements for humans. In rural communities, they are essential elements of sustainable development, particularly if water collection and required hygienic conditions in those areas are difficult due to unsafe and long-rooted attitudes.

In Cuba, quality water supply for household and personal consumption is not guaranteed in urban or peri-urban locations. This issue is even more striking in rural communities, especially because adequate hygienic conditions are not created to store water. In many homes, water is supplied from wells, which does not mean the inexistence of simple techniques to improve quality, thus facilitating the consumption of safe water for humans and food production from plants. These measures are known as good practices.

In that sense, to encourage rural primary school students to acquire knowledge and skills in terms of health, it is important to keep healthy study, work, and living conditions. Schools and teachers should fulfill their social function with the introduction of hygiene habits as one of the transversal axes of the Master Plan for Health Promotion and Education, of the National System of Education, in order to achieve better living standards. Education and health are some of the most relevant social achievements of the Cuban people, as part of the Moncada Program, which was established and defended by the Generation of the Centennial. Today, it has been continued by the governing documents of the nation (Communist Party of Cuba, 2016), guideline No. 127, which establishes the need to strengthen health actions with inter-sector and community participation in promoting and preventing actions, directed to improve the living standards, which can also contribute to increased health standards in the population.

The relationship between hygiene habits and health education strengthens the attention of students' needs toward their environment, which is a first order social aspiration, keeping a close relationship that leads to a more integrated development of personality.

Teachers should know how interpersonal relations are produced among students; what knowledge they have about their health; their awareness of health care, and personal and collective hygiene; the extent of their responsibility toward health promotion; and the level of correspondence between concepts and attitudes. Accordingly, hygiene habits should not become a weakness of the educational community, because it may be an obstacle to comprehensive education in students.

Hygiene is a habit that students acquire in their homes since early ages, which is reinforced through observation, practice, and learning or imitation from parents or tutors. They include bathing, hand washing, wearing clean clothes, cleaning homes and yards, which are usually not assimilated properly, though they are acquired through time. These activities improve by constant practice, and they favor a more integrated personality, so the family also has an important role in the formation of hygiene habits.

To promote healthy lifestyles, knowing the behavior that causes or prevents diseases is necessary. There are several types of thoughts and feelings modulated by personal knowledge, beliefs, attitudes, and values, which determine personal behavior. These behaviors should be identified at school and home; they often are the product of experience, but also are part of the information provided by parents, teachers, friends, etc. for the wellbeing of all. To evaluate the

results of the environmental educational project, the information below was used as reference. The National Environmental Strategy (EAN 2016-2020) (December 2015) refers to the shortages and drawbacks in management, availability, water quality, and deterioration of hygienic and sanitary conditions in human settlements, as well as the main environmental issues. As a result, general strategic goals and instruments for environmental management were recommended, among other aspects. Likewise, the Agenda of Sustainable Development for 2030 also includes objective No. 6, to guarantee water availability and its sustainable management, along with sanitation for all.

Mar Verde was the location chosen to implement the educational and environmental project due to its high population density, in the south of the city of Santiago de Cuba. The area comprises 110 Km^2, with a total average of 9 492 houses. It includes three residential areas and eight settlements and small rural towns: Los Guaos, Piñalito, San Agustín, El Carmen, La Línea, Mar Verde, Espartillo, and Siete Vista.

Mar Verde is part of Plan Turquino, spreading from the beach coastline with the same name. It was founded in 1981, and has several tourist resorts for camping lovers, a drug store, family doctor house, grocery store, and two primary schools (rural and multi-grade). The town also has 20 rustic streets and other 80 laid out streets. All the population enjoys electricity; 28.53 % has access to water through the local duct system; and sewage covers 42.34 % of the area. The rest of the population and town facilities use septic tanks to collect wastes.

This is a very little productive location, whose main source of income is ecological tourism, including the beach. The soil is arid, very unsuitable for agricultural practices. The inhabitants are engaged in corral animal raising, brick manufacturing for construction, and charcoal production.

The local primary schools have the conditions and equipment to ensure teaching and learning, and they are fully supported by the Party and Government in the province.

The educational and environmental project “Promoting Hygiene and Environmental Health in Rural Schools” has been conceived to cope with the above mentioned environmental problems related to student and community behavior and suit the local characteristics.

As a result of the diagnostic, 100% of the teachers interviewed (4) stated that the environmental problems are linked to water, air, and soil pollution. The local drinking water is supplied from wells, which the locals consider clean with no need of treatment.

Water pollution:

The water used for human consumption is not treated, since propane gas for cooking is not available and water cannot be boiled easily. Chlorinated or boiled water is only guaranteed to small infants, thus parasitic diseases are often, with repercussions on health and learning. Moreover, the water used for household chores is not reused to wash yards and pens.

Three teachers claimed that the ocean water is dirty due to wastes deposited by swimmers. They add that the beach staff do their part, but are unable of coping with seawater care, and sand cleansing. The poor conditions of these resources are attributed to reckless behavior of tourists, who are often accompanied by small children, consume alcoholic beverages and foods in disposable containers, which are then dumped around and carried by the waves into the beach.

The interviews to teachers and students revealed that the water for schools and communities is carried by people in tanks, and then it is sold without measures to prevent bacterial contamination. This costly inadequate handling of water is justified by the students and teachers´ obligation to save it, regardless of hygienic measures due to insufficient access to drinking water. Hand washing is practically impossible because of limited access to drinking water and soap.

Air pollution:

Other environmental problems are centered on the emission of smoke into the environment, from outdoor cooking in many homes, from charcoal ovens, and brick manufacturing, since it is the main sustenance of many families, and an irresponsible habit among the local inhabitants.

Soil pollution:

Hog slaughter without proper hygienic measures; the burning of solid waste, tree residues, and garbage in any area, sometimes near homes, affect the environment and the respiratory health of the inhabitants. The main cause of these issues is the lack of environmental awareness of community dwellers, as well as wrong decision-making policies, with ensued improper behavior. On top of that, no workforce is assigned to sanitation.

Sewage does not cover 100% of the town, so latrines are often used, which lack proper sanitary control of feces, proving inadequate hygiene habits that hinder sustainable hygienic behaviors.

On evaluation of the importance of methodological trainings to create healthy habits in the students, three teachers (75%) manifested that such meetings facilitate lesson preparation and exchange of pedagogical experiences in the field of natural sciences. They claim that the nature-related subjects promote environmental knowledge of students, and that they fit the methodologies and syllabi.

All the teachers said that extracurricular activities are held to clean the school and its surroundings, but they do not offer any orientations to families about the topic, to encourage personal hygiene and environmental sanitation actions in their homes. In spite of it, 50% of the teachers acknowledged the existence of environmental problems that affect the community, but they do not take measures to help fight them. Additionally, all coincided in that they motivate their students to carry out outdoor and indoor activities, such as garden maintenance, and porch and classroom cleaning. Other cases are seen as changes in labor, useful work, or as oriented by higher ranks. It proves the insufficient engagement and incorrect formation of hygienic habits, evidenced in little systematization of hygienic actions and environmental sanitation by students in their rural school surrounding.

All the students interviewed identified the main environmental problems of the location; they considered that nature-related subjects in both cycles have contributed to the creation of hygienic habits. All of them acknowledged the importance of identifying environmental problems and knew what actions could be taken to eradicate them. Some of the sanitation measures they mentioned were community work, plantation of trees, and animal care, which denoted insufficient orientation and apprehension of hygienic actions to care for personal hygiene and environmental health in the rural locations where they live and study. They also recognized the environmental problems underlying in schools and residences, but they did not act accordingly. The main cause is incorrect formation of environmental attitudes regarding personal and collective hygiene, and environmental sanitation.

Actions taken

The educational and environmental projects offers environmental activities distributed in three blocks, which are directed to updating and training in environmental and hygienic issues (access

to water safely, and implementation of hygienic measures to guarantee personal hygiene and environmental sanitation) of students in rural primary schools, homes, and communities where they act with family members and neighbors.

The environmental educational project was conceived for insertion in the syllabus, through extracurricular and community activities. It is directed to fulfilling the objectives of primary school students, according to the Governing Program of Health Promotion and Education in the National System of Education. The topics suggested are below,

PERSONAL AND COLLECTIVE HYGIENE

- Personal hygiene habits: washing, dental hygiene, feeding, rest, and sleep; posture habits: systematic physical education, sports, and gymnastics.
- Labor protection and hygiene in the school garden, classrooms, laboratories, and others.
- Environmental hygiene. Environmental sanitation. Health and sustainable development.

NUTRITIONAL EDUCATION AND FOOD HYGIENE

- Hygienic manipulation of foods.
- Sanitary controls to drinking water. Quality and quantity. Water as the main food in the diet.

Each activity is assessed according to the acceptance and mastery of their actors, and may be redesigned according to the context they are developed, which is critical to accomplish goals. In addition to it, the results observed during the pre-design stage, mastery of relevant concepts to implement the educational and environmental project, the objectives of primary school students, the cultural, socio-economic conditions of the rural community, mastery of contents, environmental behavior of students, their families, and community members must be considered.

Block No. 1.

Activity No.1 Educational-environmental workshop.

Objective: To record the main hygienic and environmental basic sanitation problems identified by the students in school and the community.

Environmental survey:

Are there problems related to irrational use of water in your school? What are such hygienic problems? If you had to solve the hygienic problems at school, what would you do?

Classwork:

A video of students talking about the main hygienic and environmental basic sanitation problems identified by the students in school.

What's your school like now? Activities implemented to eradicate or minimize the environmental problems.

What would you like your school to be, and which educational activities do you suggest as part of an environmental sanitation plan?

Assessment: Video analysis and discussion of the students' criteria.

Activity No.2 Tour around several school areas and adjacent sites.

Objective: To assess the school's hygienic and sanitary state, as well as its surroundings and student´s homes, to encourage environmental awareness.

Classwork: Guidelines for site observation, and collection of information about the hygienic state of the sites visited. Assessment of the information compiled.
Activity No.3 Health for all.
Objective: To train students in the principal hygiene standards to guarantee the use and consumption of safe water in schools and communities.
Description: Brief talk to students on the adoption of hygienic measures to access safe water in schools and homes.
Essential measures to guarantee water storage and saving. Use of water for personal care and environmental sanitation.
Planning of curricular and extracurricular activities in order to ensure water saving and optimum quality in different contexts.
Poster sessions on water saving, hygiene, and sanitation.
Intervention to community homes adjacent to school to encourage neighbors to save water and adopt related measures.
Possible water saving measures:
Construction of cisterns in the homes. Meaning of cisterns.
Rain water collection as part of a millenary tradition in the city of Santiago de Cuba.
Measures for rain water purification.
Goals to follow: Explain the importance of water, based on the use given in homes. Identify some contaminating agents of water, and some purification methods used, like chlorination.
Activity No.4 Community map of hazards.
Objective: Design a community map of hazards, in order to face droughts or water shortages in rural schools and communities.
Description: Explain the conception of the community map of hazards, and make recommendations for design. Its importance to mitigate droughts or water shortages.
Main vulnerabilities in case of droughts (elderly, infants, disabled people, and pregnant women).
Design of a community map, aided by the Manual for Community Map of Hazards.
Evaluation of presentations and generalization of results.
Block No. 2. Water management
Activity No.1 Climate change.
Objective: Developing resilience capacity toward climate change through water management as a vital resource for life.
Prioritized actions:
To select and disseminate information about climate change, the impact of water-related disasters on the environment, and the benefits of water management for adaptation to climate change.
To create awareness on water footprints and alternative mitigation measures to face climate change.
To promote the participation of students in activities that build responsibility toward use, saving, and protection of water.
Work space: curricular and educational actions.
Activity No.2 Healthy water for sustainable development.
Objective: To carry out activities to commemorate the Inter American and World Water Day.
Information: Fresh water management includes several provisions to tackle the impacts of

climate change, and measures to reduce hazards caused by disasters within the broadest framework of integrated management of water resources.
Commemoration of the Inter American Day of Water (IADW), on the first Saturday of October; and the World Water Day, on Mach 22nd.
Activities:
Creation of fliers, brochures, and posters to publicize dates and saving measures of water and cleansing.
Presentation of works.
Launching of the contest *Trazaguas*, for children.
Block No. 3. Rain water collection.
Activity No.1 Small water saviors.
Objective: To promote water saving actions, and their usefulness through video **Water Saving Heroes**.
Description: To watch the video and foster a discussion among students. Later, they will make the aids they need to disseminate their actions of water saving and sanitation in communities, for intervention in neighbor organizations and crowded places.
Watch this video **H_2Oooo, Water Saving Heroes**, and make the aids needed to advice neighbors about water saving, norms of personal hygiene, and environmental sanitation actions.
Pick the ideas suggested in the video, which you may use to explain why saving water is important.
Activity No.2 The water from the clouds must be used properly.
Objective: To encourage rainwater collection and enjoy the benefits of rainfall.
Activities: What does rainwater collection mean? What should we do to collect rainwater in schools and homes? What are the benefits of rainwater collection? Information: Water can be found in oceans, seas, and lakes. It precipitates from clouds in the form of rainfall, hail or snow. Water runs along rivers and creeks or is stored in lakes or dams, and underground. It also exists in many other spaces, like humans, plants, animals, in the soil and rocks.
Water is one of the most valuable treasures of the earth. People, plants, and animals owe their existence to water. It is the number one food for every living creature. In nature, water moves around the water cycle, which allows for continuous use on the planet. Each step in the water cycle takes place in different stages: evaporation, condensation, precipitation, infiltration, and runoff. Explain the characteristics of each stage...
Water that falls in the form of precipitation or rain, as is known, is the one we suggest being saved... that water must be collected. How? Like this (Fig. (1)

Fig. 1 Variants used by local residents for water collection.

Benefits of rainwater.
It is far cleaner than other sources of fresh water available.
It is an essentially free of charge resource, totally out of the reach of regular water suppliers.
It requires quite a simple structure for collection, storage, and distribution. It helps reduce contaminant particles in the air.

- It helps regulate air temperature.
- It makes lands more fertile.

Activity No.3: On Desertification Day.
Objective: To promote good practices of safe water access, stimulating resilience in periods of shortages and droughts, in the framework of the World Day against Desertification and Droughts.
On June 16th, 2017, the day devoted to the international fight against desertification and droughts, teachers, students, and their families displayed all their creative talent, using scale models to illustrate water saving and uses, hygienic and nutritional habits provided by water when it is managed with responsibility.
Description:
Opening ceremony to commemorate the World Day against Desertification and Drought. Presentation of works and drawings made by students, including a painting on the pavement. Assessment of works by commissions. Award ceremony of most outstanding works, and final remarks.
Block No. 4. Educational-environmental actions.
Activity No.1 Food hygiene.
Objective: To assess the importance of proper nutrition, the introduction of a balanced diet, and the observation of hygiene norms concerning handling, making, and consumption, to incorporate proper feeding habits.

Aids or materials: Pencils, sheets, blackboard, posters, Natural Sciences student book, food guide for Cuban population +2 years old (food pyramid and booklet). Activities: Read the food guide for the Cuban population above two years old. Analyze the food pyramid and answer,

Make a menu that includes proper foods, according to the time and amount of foods, based on their energy contents, for consumption from morning to evening in the company of your family.

Explain,

The hygienic measures you should take into account for handling, making, and consuming the foods chosen.

The importance of adopting proper feeding habits.

Evaluate if nutrition in your home is healthy, based on the indications provided by the food guide for the Cuban population.

Points for evaluation: The importance of water based on the use given in homes.

Concept of balanced diet.

Assessment of the menu made by the students (selection of healthy foods).

Hygienic measures adopted for making, handling, and consumption of foods.

Activity No.2 Personal and collective hygiene.

Objective: To identify the actions for conservation of personal and collective hygiene. Make a list of activities you perform to keep the hygiene of your body. Order them starting in the morning and ending in the evening.

Activity No.3: Transforming the surroundings.

Objective: To assess the important of maintaining hygiene and sanitation at school.

Look at the conditions of some areas in your school. What actions would you recommend in the students meeting to change the current scenario? Discuss them with your classmates. Make a plan of environmental education that can be used in school. You should remember that these measures will be implemented to tackle hygiene and environmental sanitation.

Activity No.4 Photographic display.

Objective: To disseminate the actions of sanitation, and personal and collective hygiene in schools and communities, with the support of images and comics.

Set up a working team of three-four classmates. Then make a photo board with two topics: the positive actions of man and the negative actions of man in terms of personal hygiene and environmental sanitation. Discuss their adverse effects on the health of people.

Make a comic to persuade your neighbors to care about cleaning at school and at home; then explain how to keep places clean.

Activity No.5 Sanitation of Mar Verde Beach.

Objective: To accomplish sanitation of Mar Verde Beach.

Description: Guided tour along Mar Verde Beach shore, and sanitation actions. A talk to workers and swimmers in order to create awareness of the importance of clean sand and seawater.

What were the conditions of the beach before cleaning? What were the most commonly found wastes found at the beach? How would you classify the pollution degree of the beach before sanitation? What advice would you give to visitors and staff to keep the beach clean? How important is beach sanitation to you?

When the activity is finished, describe the current state of Mar Verde Beach.

What are the causes of its good or bad conservation state?
Search for other forms of negative actions of man on the beach and its surroundings, and write them down in your rural record, under the title: **What we should not do.**
Activity No.6 Final workshop.
Objective: To assess the effectiveness of the actions in the educational and environmental project.
Description: Exchange of views with members of the project to gather information about the quality of activities, and possible suggestions.
Now you have the possibility of stating your criteria about the activities carried out within the framework of the educational and environmental project.
Actions:
To gather opinions about the significance and importance of the actions as a way to encourage an appropriate behavior of students and the other actors engaged in educational and environmental tasks toward the environment.
To sign an agreement stating the commitment of all actors to conscious and dynamic participation in hygiene and sustainable environmental sanitation actions.
Collection of data, experiences, and suggestions in the rural record.
At the beginning students said that environmental sanitation and personal hygiene were the least recurrent in their life projects. However, when they learned the goals of the educational and environmental project, and their importance for environmental health as well as the damages caused by deficient personal hygiene to student´s hygiene, they recognized the need to observe such measures in schools and homes, extending them to other family members and neighbors. It led to the acquisition of an environmental awareness on the part of the population, which implied a new collective responsibility as actors in the preservation of personal hygiene and environmental sanitation, as school and family are influenced by their actions.
Implementing environmental actions helped promote environmental tasks directed to the goals of the educational and environmental project, with stronger motivations in teachers, students, and their families. Parental engagement contributed to improved collaboration, involvement, participation, and understanding of the environmental contents, as well as the importance of learning and environmental practices acquired by their children. The school also gained higher significance in this area, by creating an ideal space to promote hygiene and healthy life style habits in students, considering five directions: 1) Learning fundamental measures to maintain hygiene and basic environmental sanitation through curricular activities. 2) Creating favorable surroundings for hygienic habits, in order to stimulate learning of behaviors to protect personal and collective hygiene, as well as rational use of water, to achieve harmony between man and the environment. 3) Reinforcing school and community actions that facilitate the integration of students to self-care in terms of hygiene and sanitation, including training to perform their duties. 4) Re-arranging educational actions to prevent diseases and promote hygienic habits, with the implementation of more preventive than therapeutic actions. 5) Developing individual habits and resources into a personal construction, based on expectations, culture, social and economic conditions, and particular ways to conceive life.
Students: the implementation of sanitation and personal and collective actions consolidated good practices of hygienic-sanitary measures in 90% of students. The environmental participation of family members and community residents was accomplished through actions of environmental sanitation and personal and collective hygiene.

The general population and the students showed increased knowledge on issues like hygiene and environmental health. Family members and neighbors obeyed the hygiene-sanitary measures thoroughly, which was corroborated by visits to 94% of homes; the same was observed in schools. The measures adopted are listed below:

- Proper control of feces in latrines by spreading lime around the places.
- Regularization of hand washing before ingesting foods, and after using the toilet and latrines.
- Regularization of boiled and chlorinated water consumption to prevent the outbreak of diseases.
- The population observed proper garbage collection and storage, avoiding the burning of solid wastes in inadequate areas.
- Regularization of new habits of healthy eating.

CONCLUSIONS

The assessment of students regarding acquisition of environmental knowledge and other important environmental issues that affect this rural area helped characterize the inadequate conceptions of environment, the behavior to achieve personal and collective hygiene, and other viewpoints related to hygienic and sanitary measures, to accomplish environmental health in schools and homes.

Likewise, despite conceptual and attitudinal limitations to identify, evaluate, and set up actions to cope with environmental and community issues, the educational and environmental actions implemented in the rural school and community showed the existence of a favorable attitudinal orientation based on a respect for the environment, observed in positive affections and conducts toward the environment.

The implementation of hygienic and environmental sanitation measures in rural schools and communities improved personal and collective hygienic habits, and environmental sanitation through proper behavior toward the environment. The discussions with student family members and residents of the community was one of the factors that helped achieve these results, including their engagement through hygiene and environmental sanitation in schools and public areas.

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