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Implementation of Youth for Environment in School Organization (YES-O) in the Secondary Schools and Its Impact on Science Learning Progress

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ABSTRACT

The deliberate attempt to prevent the environment from being completely destroyed has gained attention. Schools are recognized as a vital platform for implementing environmental education. Accordingly, the Youth for Environmental in School Organization (YES-O) stands out as the only recognized implemented environmental co-curricular organization in basic education. Hence, this study evaluated the implementation of the Youth for Environmental in School Organization (YES-O) programs and its impact to the students' science learning progress in the secondary schools in Oquendo 3 District, Schools Division of Calbayog City, Philippines. The study revealed that YES-O successfully implemented its mandated programs. These programs included seed banks and nurseries, the collection of seeds and seedlings from native and endemic species, emphasis on tree planting and care, implementation of water conservation initiatives, promotion of power supply programs, organization of clean-up drives, and implementation of ecological solid waste management programs. Similarly, YES-O programs had a high impact on students' science learning progress, particularly in terms of their pro-environmental behavior and science performance. There was a strong positive relationship between the implementation of YES-O programs and its impact on students' science learning progress. The study promoted creativity in environmental education and positioned YES-O as an effective organization that inspired students to become genuine stewards of the environment thereby contributing to a sustainable future.

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INTRODUCTION

In the global endeavor to preserve, protect, and conserve the environment, schools are recognized as crucial agents for environmental education. Environmental education is defined by Luna-Krauletz et al. (2021) as a dynamic and interactive process in which students gain knowledge and develop the skills, attitudes, and values necessary to understand and address environmental concerns. Encouraging them to adopt responsible judgments and action to safeguard the environment is the ultimate goal. This is consistent with the evaluation of short- and intermediate-term results, such as critical thinking and environmental awareness, which are essential for assessing the effectiveness of environmental education initiatives (Ardoin et al., 2015). It is recognized that quantifying environmental education impacts within larger educational programs can be challenging (Ardoin & Heimlich, 2018; Trewhella et al., 2020). The holistic definition, which is consistent with ecological systems theory encapsulates the essence of

environmental education as a transforming process. By placing a strong emphasis on real-world applications, interwoven linkages, and school-community involvement (Crawford, 2020). This theoretical framework enhances the environmental education process and helps students develop a stronger understanding, respect, and dedication to environmental protection. This all-encompassing strategy places a strong emphasis on the value of developing ethical connections, actively tackling a range of environmental issues, and understanding environmental concerns.

Various environmental concerns are exacting a heavy toll on the lives, properties, and livelihoods. Thus, it is very necessary that everyone does his/her share in saving the environment and preventing the threats of environmental degradation. In the Philippines, the basic education sector is one of the most significant institutions which can effectively teach people, specifically the young generation to love and care more for the environment. As early as 2003, the Department of Education (DepEd), in partnership with the Department of Environment and Natural Resources (DENR), issued DepEd Order No. 72, which established the Youth for Environment in Schools Organization [YES-O] (YES-O Handbook). The directive considered the organization as the only recognized co-curricular environmental organization which provides avenue for the students' actions and movements toward safeguarding, protecting, and conserving the environment for future generations. Schools were mandated to strengthen environmental education through school-based activities that seek to preserve and protect the environment in consonance with the establishment of YES-O and in compliance with the tenets of Republic Act (RA) No. 9512 or the National Environmental Awareness and Education Act of 2008 which was enacted to streamline environmental awareness and education in the school curricula for all levels and sectors.

With the pressing concern on educating the youth on environmental awareness, protection and preservation, and examining outcomes of environmental education in a variety of contexts, various research studies were already conducted internationally and locally. In a review of 206 residential environmental education programs, Ardoin et al. (2015) found that intended outcomes included environmental awareness, attitudes, skills, and behaviors, including citizen participation. Stern et al. (2014) review of 66 studies evaluating youth environmental education programs found positive correlations with the outcomes of knowledge, awareness, skills, attitudes, intentions, behavior, and enjoyment. Ardoin et al. (2019) reviewed 119 studies of K–12 environmental education programs and reported 121 discrete outcomes grouped categorically into domains of knowledge, dispositions, competencies, behavior, and personal characteristics. In their systematic review of climate change education, Monroe et al. (2017) described programs measuring knowledge, attitudes, and behavior. Thomas et al.'s (2018) review of 79 evaluations of conservation education programs reported cognitive, behavioral, social, and ecological outcomes. They also discussed a need for improved links among the environmental issues that programs addressed, metrics of program effectiveness, and actual outcomes measured and reported. Taken together, these reviews suggest a range of intended outcomes for environmental education, yet they also indicate that few programs explicitly articulate an environmental quality or conservation improvement goal. Environmental education programs often are designed to impact knowledge, attitudes, and behaviors; consequently, researchers measure changes in those areas, rather than documenting direct ecological impacts.

Environmental education programs are a crucial tool for promoting children's and adolescents' pro-environmental attitudes and behaviors, as well as their feelings of connection to nature, and pursuing the goal of reducing human impact on the environment and natural resources therein (Pirchio et al., 2020). In fact, the experience of natural environments has been shown to promote recovery from stressful experiences, allowing individuals to recover their cognitive and emotional resources depleted in the course of daily life tasks, thus helping human adaptation to the environment and promotes subjective wellbeing, as well as physical and mental health (Marselle et al., 2020; Marselle et al., 2021). A major aim of outdoor environmental education interventions is to provide students with the opportunity of knowing relevant facts

about the ecological processes of natural environments, and to develop positive attitudes and behaviors toward environmental preservation. Most of the studies in the last decades, aiming to explore the outcomes of environmental education programs, found an effect on environmental knowledge and attitudes (Schmitz & Da Rocha, 2018). Yet, while the role of knowledge in promoting ecological behaviors has been considered as controversial (Moss et al., 2017; Otto & Pensini, 2017), the link between pro-environmental attitudes and ecological behaviors has received greater empirical corroboration (Barrable & Booth, 2020). Outdoor visits to natural spaces, as long as they can provide students with an intense and prolonged positive experience in nature, might thus have an impact on ecological behaviors, together with factual knowledge of, and positive attitudes toward, the natural environment (Braun et al., 2018). Erhabor & Don (2021) conducted a study to assess students' level of knowledge and attitude towards the environment. The result revealed that a high level of knowledge and positive attitude towards the environment among the students. It was observed that the relationship between their knowledge and attitude towards the environment is a negative, little or no relationship. It was concluded that environmentally literate students especially in tertiary institutions are being nurtured to foster EE. Meanwhile, a qualitative study was piloted in Istanbul to improve environmental awareness in primary school students. The data of the study were obtained by the students' environmental pictures, observation forms and semi-structured interview forms. According to the findings of the research, the students who received environmental education, draw pictures enthusiastically and reflecting environmental awareness, also after interviews students gain awareness toward environment, empathized with nature and draw highly esthetically appreciated pictures (Yesilyurt, et. al., 2020).

Local researches on environmental awareness and education have also been conducted. Prado (2019) focused on the level of environmental awareness, practices, and attitudes of the selected students at the University of Northern Philippines (UNP) in terms of seven environmental themes, namely: stewardship, finiteness of resources, diversity and stability, change, material cycle, balance nature, and interdependence. The descriptive survey-correlational research design showed that the student-respondents had very high level of environmental awareness and good practices on the overall environmental themes. The respondents did not favor the cutting of trees, forest burning/forest fires, quarrying, hunting, road widening, squatting, mining, river drilling, use of inorganic fertilizer, and industrialization. Correlation analysis revealed that there was a significant relationship between the level of awareness and extent of practice of the respondents along the seven environmental themes. It was recommended to improve further the environmental awareness, practices, and attitudes of the students by developing an environmental education program and strict implementation of the laws and ordinances protecting the environment in the university. Punzalan (2019) centered on the premise that the global advocacy on environmental sustainability regardless of context is significant to combat exponential environmental degradation. The study aimed to determine the difference between the level of environmental awareness among selected Filipino grade 8 students in rural and urban school contexts based on seven environmental themes and to identify its implications to science teaching. The descriptive quantitative study utilized the Environmental Awareness Questionnaire (EAQ). The results revealed that both students from urban and rural schools had a very high level of environmental awareness. However, there was no significant difference between the students' environmental awareness using z-test statistical analysis. It was supported by the values of standard deviation from two sample groups which is higher from urban school students and explained that they had responded with broad insights. Urban school students were environmentally aware as they pursue to live in an environment with healthful lifestyle. Likewise, rural school students who were commonly linked with nature were environmentally aware as they were directly benefiting from it.

Further, study of Labog (2017) aimed to determine the relationship between teachers' integration of environmental awareness and level of sustainable development practices of

selected public high schools in the First District of Oriental Mindoro. The study found out that the teachers integrated environmental awareness topics on waste management, pollution, forest conservation and climate change on their class lessons; the schools were practicing proper waste disposal, recycling, composting, tree planting and energy conservation for sustainable development practices. Teachers' integration of environmental awareness influences sustainable development practices. This integration and practices can be enhanced by reaching out to communities outside the school and by strengthening the established linkages to other environment-related agencies in order to achieve sustainability. It means amplifying by extending sustainable practices as collaborative effort of the students, schools, outside communities, LGU's and other related government and nongovernment agencies. Such interaction can improve the quality and coverage of sustainable practices not only in school but in the whole community. Similarly, Garcia (2019) determined the environmental awareness of the selected graduating students in Region IVA and to measure correlation between demographic profile and respondents' environmental awareness. Results shows female respondents obtained high level environmental awareness compared to male respondents. Most respondents, regardless of their courses, had a high level of environmental awareness. There were also respondents from the rural area who had a low level of environmental awareness. Gender was significantly correlated to the level of environmental awareness. It was recommended that the school provide environmental education exposure for male students to reduce gender gap issue and help the remote community by giving them environmental education program.

Magaji et al. (2022), focused on finding if participation in environmental education programs could have a skill that may promote the learning and progress of students. Evidence from this study has shown that all students who attended in the program made progress in their learning with improved academic attainment. The paper of Pereira and Freire (2021) conducted a systematic review on how the Positive Youth Development framework may inform future approaches to promote adolescents' and young adults' well-being and engagement in the context of climate change following Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. The results showed that the Positive Youth Development theory is not yet directly embedded in existing studies concerning adolescents and young adults in the context of climate change, but some of its principles were identified. Meanwhile, the study of Schusler (2020) explored the practices of teachers, nonformal science educators, community organizers, youth program managers, and other educators facilitating youth participation in local environmental action, as well as the experiences of some of the youth involved. Through interpretation of educators' stories and youths' reflections, it was discovered strong parallels with theory and empirical research in the youth development literature suggesting environmental action is a valuable context for positive youth development. Orijuela (2019) analyzed the management practices on the implementation of YES-O programs in terms of management of the organization; management of programs, projects, and activities; addressing immediate needs of the organization; and collaborating with stakeholders and other organizations. The problems encountered in implementing YES-O programs in terms of documentation, risk reduction, executing programs, projects and activities, and approaches in dealing with other organizations were also identified. The research produced an Annual Implementation/Improvement Plan on the effective implementation of YES-O programs at the district level. The study is expected to improve the management practices of school heads and teachers in the implementation of YES-O programs. It is assumed that through the activities implemented through the YES-O, students and the community would be more aware of the environment and more informed about their role in the society. Eventually, the preservation and protection of nature and environment could ensure a better place for future generations. Perez (2019) evaluated the implementation of YES-O programs in the public schools in Bulacan. The study revealed that the YES-O Program is more relevant today due to the growing number of environmental problems. From its establishment in 2003, it has been a frontrunner in empowering the youth to protect and care for the natural

environment by providing relevant and meaningful activities. It was concluded that even though schools are mandated to establish YES-O, in recent years, the monitoring and evaluation has been weak. With greater focus to revive and strengthen the program, different stakeholders must be aware and take part in improving it. Issues like weak monitoring and evaluation, time constraint in the conduct of activities and uncoordinated and overlapping projects by different youth organizations must first be addressed before it can be considered truly responsive to the needs of the 21st century learners.

These studies reveal that YES-O activities, fostering linkages with other organizations, serve as avenues for students to advocate for environmental issues. While YES-O allows students to be environmentally relevant, challenges in execution, documentation, and evaluation have been identified. Notably, there is a dearth of research on the specific impact of YES-O on students' science learning progress. In light of the environmental challenges facing the Philippines, particularly Samar, there is a pressing need to strengthen environmental education and enhance environment-related school activities. This strategic approach aims to make schools more significant in instilling environmental values among young people, positioning them as stewards of nature. The study's results serve as imperative baseline data for improving YES-O programs and activities, contributing to the broader goal of fostering environmental education in the secondary schools for policy recommendations and redirections. It also proves that environmental education particularly emphasizing the role of the school to promote and increase environmental awareness, protection, and preservation is a necessity specifically in a developing country like the Philippines. With the present environmental crisis, the young generation must be theoretically and practically knowledgeable on ways of protecting the environment. Laws and statutes must be crafted and promulgated to ensure that environmental concerns are streamlined in pedagogy particularly in the basic education curriculum. Learners, at the earliest stage, must be taught plausible ways of caring for the environment. Various instructional methodologies and strategies were also studied and proposed for the effective integration of environmental lessons in classroom instruction. Outdoor environmental activities were proven to be effective. Learners are seen to care best for nature after experiencing first-hand the beauty and wonders of the environment and the worsening effects if degradation continues.

RESEARCH METHOD

This study utilized the descriptive-correlational research design. It is descriptive since it describes the respondents' perceptions on the implementation of their schools' YES-O programs and its impact on the learning progress in science. Moreover, it is correlational since it ascertained the significant relationship between the extent of implementation of the YES-O programs and the Science learning progress of the students.

The total number of enrollees in each grade level during the school year 2022-2023 was utilized to get the sample size of the respondents of each school using the Raosoft. Inc. sample size calculator with 5 percent margin of error and 95% confidence level. The respondents have a sample size of 272, which was taken from a total population of 918. To complete the target sample size per school and per year level using the cluster random sampling technique since the population is mutually heterogeneous groups. The total number of respondents from these schools already suffice the need for the research.

It is conducted in the Oquendo 3 District, Schools Division of Calbayog City, Samar Philippines. particularly to the five (5) secondary schools to wit: Cabatuan National High School, Pilar National Agricultural High School, Mawacat Integrated School, Dawo Integrated School, and Macatingog Integrated School. These schools are annually implementing YES-O programs and activities in compliance with the directives from the Department of Education on environmental education.

This research utilized an adapted questionnaire constructed based on the objectives of the study. The Part I contains the extent of the implementation of the Youth for Environment in

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School Organization (YES-O) programs in in terms of; seed bank and nursery establishment, planting, growing, and caring of trees, water conservation, biodiversity conservation, power supply, clean-up drives, ecological solid waste management, and school-initiated activities. Part II covers the impact of the YES-O program on their science learning progress based on science performance, pro-environmental behavior, and environmental actions. The statements under Science performance were lifted and modified from the Atlas of Science Literacy (American Association for the Advancement of Science, 2001) while the indicators under pro-environmental behavior were lifted and modified from the research article of Balunde et al. (2019). Lastly, the statements under environmental actions were lifted and modified from the work of Inocencio (2018). The questionnaire underwent face and content validation, and Cronbach's alpha analysis was used to ensure the reliability of the instrument. The information from the questionnaires was recorded, tallied, and analyzed using the most relevant statistical tools and operations. The weighted mean and standard deviation have been computed to describe the respondent's perception on the implementation and impact of YES-O programs. The Kendall Tau Correlation was used to determine the significant relationship between the implementation and the impact of YES-O programs. The privacy of the respondents and the information obtained were treated with utmost confidentiality.

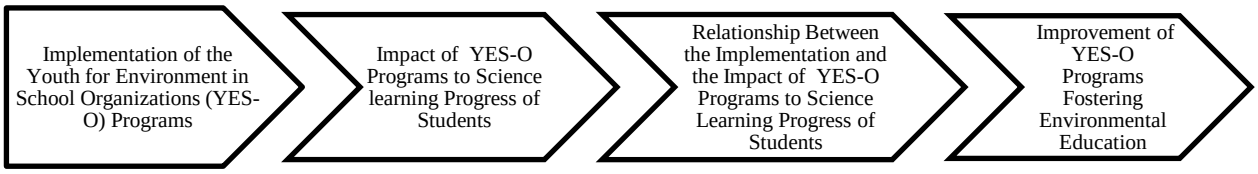


Figure 1. Research flowchart

RESULTS AND DISCUSSION

Implementation of the Youth for Environment in School Organizations (YES-O) Programs in the Secondary Schools

Tables 1, 2 and 3 show the mean and standard deviation on the implementation of the Youth for Environment in School Organizations (YES-O) programs in the secondary schools in terms of seed bank and nursery establishment, planting, growing, and caring of trees, water conservation, biodiversity conservation, power supply, clean-up drives, ecological solid waste management and school-initiated activities.

As gleaned from the results, the YES-O programs in terms of their seed bank and nursery establishment are implemented. They successfully established a seed bank and nursery within the school premises (3.59) and managed it together with students (3.74). Moreover, the organization collected seeds and seedlings from native, endemic, or indigenous species of trees (3.51) and also included fruit trees in their collection (3.64). Additionally, they engaged in entrepreneurial activities by selling excess seedlings (3.36) and utilized the proceeds for nursery maintenance and operation (3.50). Thus, the organization's efforts in seed bank and nursery establishment are successfully implemented, indicating their commitment to environmental conservation and education. It can be further deduced that the is true to their mandate of caring for the environment.

The YES-O also implemented their programs in terms of planting, growing, and caring of trees. It was emphasized that they focused on planting trees within the school premises (3.86) and extended their efforts outside the school, reaching other barangays or communities (3.74). The YES-O also took care of trees both within and outside the school premises (3.96 and 3.72, respectively) and emphasized planting fruit trees (4.02) and provided their members with necessary materials and equipment for planting and growing (4.03). However, the item on coordinating with DENR for provisions of seedlings and trees (3.33) received a moderate rating. It can be forwarded that the programs of YES-O programs along tree planting and care are

generally implemented be implemented, with the highest ratings seen in planting fruit trees and providing materials/equipment. However, it must be noted that establishing and maintaining coordination with DENR needs to be further improved.

Table 1. Mean and standard deviation on the implementation of the Youth for Environment in School Organizations (YES-O) programs in the secondary schools in terms of seed bank and nursery establishment, planting, growing, and caring of trees, and water conservation

Indicator	Mean	SD	Int.
A. Seed Bank and Nursery Establishment *The Youth for Environment in School Organization (YES-O) …*			
1. establishes a seed bank and nursery within the school premises.	3.59	1.27	I
2. manages the seed bank and nursery together with students	3.74	1.25	I
3. collects Seeds and seedlings coming from native, endemic, or indigenous species of trees and used for the nursery.	3.51	1.25	I
4. collects Seeds and seedlings of fruit trees and uses them for the nursery.	3.64	1.31	I
5. sells their excess seedlings to interested public and private entities as part of its entrepreneurial activities.	3.36	1.25	MI
6. uses the proceeds for the maintenance and operation of the nursery.	3.50	1.30	I
Average	3.56	0.13	I
B. Planting, Growing, and Caring of Trees *The Youth for Environment in School Organization (YES-O) …*			
1. plants trees within the school premises.	3.86	1.22	I
2. plants trees outside the school premise or other barangays or communities.	3.74	1.32	I
3. grows and cares for trees within the school premises.	3.96	1.12	I
4. grows and cares for trees outside the school premise or in other communities.	3.72	1.23	I
5. partners with different organizations in planting and growing of trees in specific communities.	3.47	1.21	I
6. chooses native, endemic, or indigenous species of trees to be planted, grown, and cared for.	3.60	1.23	I
7. plants fruit trees.	4.02	1.17	I
8. provides members with planting and growing materials and equipment such as shovel, gloves, sprinklers, natural fertilizers, among others.	4.03	1.20	I
9. coordinates with DENR through the CENRO for provisions of seedlings and trees.	3.33	1.32	MI
10. provide training and workshops on the proper ways of planting and growing of trees to students.	3.77	1.21	I
Average	3.75	0.23	I
C. Water Conservation *The Youth for Environment in School Organization (YES-O) …*			
1. constructs or put-up a rainwater harvesting facility in the school.	3.54	1.32	I
2. collects rainwater and uses it in the maintenance of the school seed bank and nurseries.	3.37	1.32	MI
3. collects rainwater and uses it in cleaning of school facilities.	3.62	1.29	I
4. collects and uses rainwater wisely such as in cleaning the comfort rooms.	3.59	1.30	I
5. encourages students to use refillable water bottles or containers.	3.85	1.12	I
6. checks the school water system for leaks.	3.84	1.17	I
7. posts signages for water conservation in conspicuous areas.	3.50	1.21	I
Average	3.62	0.18	I

Legend 1.00-1.80 ... … … Not Implemented (NI) 1.81-2.60 … … …Slightly Implemented (SI)
2.61-3.40 … … …Moderately Implemented (MI) 3.41-4.20 … … …Implemented (I)
4.21-5.00 … … …Very Much Implemented (VMI)

The YES-O also implemented their programs in terms of planting, growing, and caring of trees. It was emphasized that they focused on planting trees within the school premises (3.86) and extended their efforts outside the school, reaching other barangays or communities (3.74). The YES-O also took care of trees both within and outside the school premises (3.96 and 3.72, respectively) and emphasized planting fruit trees (4.02) and provided their members with necessary materials and equipment for planting and growing (4.03). However, the item on coordinating with DENR for provisions of seedlings and trees (3.33) received a moderate rating. It can be forwarded that the programs of YES-O programs along tree planting and care are generally implemented be implemented, with the highest ratings seen in planting fruit trees and providing materials/equipment. However, it must be noted that establishing and maintaining coordination with DENR needs to be further improved.

The YES-O also implemented their water conservation programs. They constructed rainwater harvesting facilities in the school (3.54) and collected rainwater for various purposes such as maintaining the school seed bank and nurseries (3.37) and cleaning school facilities (3.62). They also encouraged students to use refillable water bottles or containers (3.85) and actively checked the school water system for leaks (3.84). The organization emphasized the value of water conservation by posting signages in conspicuous areas (3.50). This denotes that YES-O's water conservation efforts are appropriately implemented, with a focus on rainwater harvesting, wise use of collected rainwater, and promoting water-saving practices among students.

The results of the study regarding establishment of seed banks and nurseries, planting, caring for, and growing trees, and conserving water closely match the key subjects in the literature on the execution of YES-O programs. With an emphasis on biodiversity conservation through the gathering of native seeds, the well-executed creation of a seed bank and nursery and the passionate engagement of students align with the larger objectives of environmental education and conservation (Ardoin et al., 2015; Thomas et al., 2018). Comparably, the emphasis on caring for and planting trees both inside and outside of school grounds coincides with the beneficial results of youth environmental education initiatives, which highlight the development of positive attitudes and behaviors toward environmental preservation (Stern et al., 2014; Marselle et al., 2020; Barrable & Booth, 2020). Furthermore, studies showing the beneficial effects of environmental education on water-related knowledge and behaviors support the implementation of water conservation programs, such as rainwater harvesting and encouraging water-saving practices (Monroe et al., 2017; Braun et al., 2018). These studies emphasize the significance of outdoor environmental education interventions. Local studies and the larger context of young environmental awareness and education demonstrate the importance of YES-O programs in raising students' environmental knowledge, attitudes, and consciousness (Erhabor & Don, 2021). Hence, the combination of national and international studies underlines the beneficial effects of YES-O initiatives on youth development and environmentally conscious behavior.

The YES-O demonstrated moderate level of implementation along their biodiversity conservation programs. They actively identified green spaces within the school premises (3.67) and planted local wildflowers in the gardens (3.49). However, the establishment of a Science Park with bird feeders and houses (3.17), encouragement of classrooms to have aquariums (2.83), and terrariums (2.91) manifested a lower level of implementation. The organization also conducted bootcamps to educate learners on wildlife (3.10) and established different gardens within the school premises (3.28). It can be inferred that in-school biodiversity conservation programs need to be enhanced since there is still room for improvement in the implementation of initiatives particularly on establishing a Science Park, encouraging classrooms to have aquariums and terrariums, and organizing educational bootcamps to enhance biodiversity conservation efforts.

In terms of YES-O power supply programs, the students actively posted signs on energy conservation (3.54) and encouraged students and teachers to turn off gadgets and equipment when not in use (3.92). The organization also promoted the use of natural light in classrooms

(3.83) and checked classroom ventilation to minimize the use of cooling appliances (3.86). They advocated for the use of energy-efficient appliances (3.58) and encouraged the school community to use fluorescent bulbs (3.42). Additionally, YES-O promoted charging mobile phones and gadgets at home to reduce electric consumption (3.46). The efforts of the organization in conserving power and promoting energy-efficient practices are clearly implemented. It can be inferred that the school, through the YES-O, understands the need for energy conservation, highlighting the measures' environmental and financial gains.

Table 2. Mean and standard deviation on the implementation of the Youth for Environment in School Organizations (YES-O) programs in the secondary schools in terms of biodiversity conservation, power supply, and clean-up drives

Indicator	Mean	SD	Int.
D. Biodiversity Conservation *The Youth for Environment in School Organization (YES-O) …*			
1. identifies green spaces within the school premises.	3.67	1.19	I
2. plants local wildflowers in the gardens inside the school.	3.49	1.36	I
3. establishes Science Park with bird feeders and houses.	3.17	1.35	MI
4. encourages every classroom to put up aquariums.	2.83	1.43	MI
5. encourages every classroom to put up terrariums.	2.91	1.40	MI
6. conducted bootcamps to educate learners on wildlife.	3.10	1.38	MI
7. establishes different gardens (Science Park, botanical garden, butterfly sanctuary) within the school premises that attract and allow animals to stay.	3.28	1.43	MI
Average	3.21	0.30	MI
E. Power Supply *The Youth for Environment in School Organization (YES-O) …*			
1. posts signages on energy conservation in conspicuous areas within the school premise.	3.54	1.21	I
2. encourages students and teachers to turn off gadgets and equipment when not in use.	3.92	1.25	I
3. encourages students to use natural light inside the classrooms to conserve energy.	3.83	1.17	I
4. checks the classroom ventilation to minimize the use of cooling appliances such as electric fans.	3.86	1.15	I
5. encourages the school community to use energy-efficient appliances.	3.58	1.18	I
6. encourages the school to use fluorescent bulbs which are more energy more efficient than incandescent bulbs.	3.42	1.24	I
7. encourages students and teachers to charge mobile phones and other gadgets at home for lower electric consumption.	3.46	1.34	I
Average	3.66	0.21	I
F. Clean-Up Drives *The Youth for Environment in School Organization (YES-O) …*			
1. conducts a clean-up drive within the school.	4.34	0.98	VMI
2. conducts clean-up drives outside the school premise.	3.93	1.15	I
3. encourages the classroom sweepers to clean the classroom regularly.	4.35	0.99	VMI
4. partners with other organizations for cleanup drives in nearby communities.	3.78	1.20	I
5. teaches students about sustainable ecosystem management (e.g., forest, river, etc.) for them to contribute more in protecting the environment.	4.04	1.27	I
6. provides cleaning materials to YES-O members, and volunteers.	3.93	1.11	I
7. makes sure to separate garbage from recyclables after clean-up drives.	4.15	1.08	I
Average	4.07	0.22	I

Legend 1.00-1.80 ... … … Not Implemented (NI) 1.81-2.60 … … …Slightly Implemented (SI)
2.61-3.40 … … …Moderately Implemented (MI) 3.41-4.20 … … …Implemented (I)
4.21-5.00 … … …Very Much Implemented (VMI)

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The YES-O implemented their programs in terms of clean-up drives. They conducted clean-up drives within the school with high effectiveness (4.34) and encouraged classroom sweepers to clean the classrooms regularly (4.35). The organization also taught students about sustainable ecosystem management (4.04) and ensured the separation of garbage from recyclables after clean-up drives (4.15). They provided cleaning materials to YES-O members and volunteers (3.93) and partnered with other organizations for clean-up drives in nearby communities (3.78). It can be deduced that clean-up activities are common among YES-Os of different schools as it aims for a clean environment both within and outside the school premises. However, establishing linkages and partnerships with other organizations remains a challenge.

This implies that in order to take a more comprehensive approach to biodiversity protection, the YES-O needs to step up its programs. In particular, it needs to construct a Science Park and support classrooms. Nonetheless, the school's consistent attention to energy conservation is shown in its power supply programs, which effectively involve the community. Although school-wide clean-up campaigns are successful, difficulties with outside partnerships for community events exist. Therefore, for a more significant and long-lasting environmental impact, it is critical to continuously increase biodiversity conservation and look into collaborative opportunities for clean-up initiatives beyond school premises.

Table 3. Mean and standard deviation on the implementation of the Youth for Environment in School Organizations (YES-O) programs in the secondary schools in terms of ecological solid waste management and school-initiated activities

Indicator	Mean	SD	Int.
G. Ecological Solid Waste Management *The Youth for Environment in School Organization (YES-O) …*			
1. put ups properly labelled waste storage bins at school entrances, exits, and other conspicuous areas.	3.97	1.14	I
2. practices waste segregation.	3.97	1.13	I
3. keeps the waste storage bins dry for the materials to be useful.	3.96	1.10	I
4. establishes a functional Materials Recovery Facility (MRF).	3.95	1.19	I
5. establishes a functional compost pit.	3.75	1.23	I
6. spearheads eco-trashion shows and recycling competitions to help students realize the value of 3Rs/ 5Rs (Refuse, Reduce, Reuse, Repurpose, & Recycle).	4.13	1.16	I
7. partners with other organizations or institutions for the entrepreneurial aspect of waste management such as the *May Pera sa Basura Project*.	3.72	1.23	I
8. conducts a room-to-room orientation about waste management.	3.81	1.19	I
9. encourage the students to practice 3Rs/5Rs (Refuse, Reduce, Reuse, Repurpose, and Recycle).	4.11	1.08	I
Average	3.93	0.14	I
H. School-Initiated Activities *The Youth for Environment in School Organization (YES-O) …*			
1. plans its programs and activities.	4.18	1.11	I
2. monitors and evaluates its programs and activities.	3.89	1.14	I
3. conducts school-based environmental camps and activities to consolidate environmental efforts and actions.	3.92	1.17	I
4. conducts outreach programs in nearby communities.	3.61	1.16	I
5. practices organic farming in school.	3.99	1.13	I
6. facilitates an Income Generating Project (IGP).	3.68	1.23	I
7. observes environmental celebrations like Earth Hour, Environmental Month, World Environment Day, among others.	3.76	1.21	I
Average	3.86	0.20	I

Legend 1.00-1.80 ... … … Not Implemented (NI) 1.81-2.60 … … …Slightly Implemented (SI)
2.61-3.40 … … …Moderately Implemented (MI) 3.41-4.20 … … …Implemented (I)
4.21-5.00 … … …Very Much Implemented (VMI)

Efforts along ecological solid waste management are implemented as disclosed by its overall mean rating of 3.93. The organization had effectively put up properly labelled waste storage bins at strategic locations (3.97) and practiced waste segregation (3.97). It also ensured that the waste storage bins remain dry (3.96) and established functional facilities such as a Materials Recovery Facility (MRF) (3.95) and a compost pit (3.75). They also engaged students through eco-trashion shows and recycling competitions (4.13) to promote the value of the 3Rs/5Rs (Refuse, Reduce, Reuse, Repurpose, & Recycle). Furthermore, the organization collaborated with other organizations for entrepreneurial waste management initiatives (3.72) and conducted room-to-room orientations about waste management (3.81). It can be inferred that programs and activities along ecological solid waste management are implemented; yet need to be revisited for further enhancement to achieve better impact.

The YES-O successfully implemented school-initiated activities with an overall mean rating of 3.86. They demonstrated effective planning (4.18) and monitoring and evaluation of their programs and activities (3.89). They also conducted school-based environmental camps and activities (3.92) and engaged in outreach programs in nearby communities (3.61) and even extended their environmental efforts beyond the school premises. They also actively practiced organic farming (3.99) and facilitated an Income Generating Project (IGP) (3.68), showcasing their commitment to sustainability and self-sufficiency. The organization also participated in environmental celebrations (3.76) and emphasized the importance of events like Earth Hour, Environmental Month, and World Environment Day. This suggests that YES-O successfully carries out school-initiated activities through carefully thought-out and supervised programming. The emphasis on sustainability, self-sufficiency, and a connection to nature in these initiatives is in line with the larger objectives of environmental education. Therefore, it can be said that although the YES-O efficiently organizes its events, some of the programs emphasize the need for higher levels of involvement and participation.

By bringing out efficient waste management strategies like waste segregation and the construction of facilities like compost pits and Materials Recovery Facilities (MRFs), the study on the ecological solid waste management of YES-O programs and school-initiated activities closely aligns with the larger objectives of environmental education programs (Pirchio et al., 2020). Student participation in recycling competitions and eco-trashion shows, which promote the 3Rs/5Rs values, demonstrates the positive impacts of outdoor environmental education interventions on fostering pro-environmental attitudes and behaviors (Braun et al., 2018). Adolescent well-being depends on structured activities, and positive youth development principles align with effective program design, monitoring, and evaluation (Pereira and Freire, 2021). Participation in environmental education initiatives that support sustainability, self-sufficiency, and a connection to nature, such as income-generating projects (IGP), outreach programs, organic farming, and school-based environmental camps, is in line with larger environmental education objectives (Marselle et al., 2020; Labog, 2017). Furthermore, the research supports the idea that students should be more environmentally conscious in their activities, attitudes, and knowledge (Prado, 2019; Punzalan, 2019; Garcia, 2019). Therefore, in order to maximize their impact on environmental education and youth development, YES-O programs must be improved.

Impact of the Youth for Environment in School Organization (YES-O) Programs to Science Learning Progress of Students in the Secondary Schools

Table 4 shows the impact of YES-O programs to science learning progress of students in terms of science performance, pro-environmental behavior and environmental actions.

Table 4. Mean and standard deviation on the impact of the Youth for Environment in School Organization (YES-O) programs to science learning progress in the secondary schools in terms of science performance and pro-environmental behavior

Indicator	Mean	SD	Int.
A. Science Performance *Because of the Youth for Environment in School Organization (YES-O) programs …*			
1. I can trace and understand the history and nature of science specifically on areas like biodiversity, waste management, water management, energy use, and climate change among others.	3.85	1.15	HI
2. I can relate my previous knowledge to the new ones specifically on updates regarding environmental issues.	3.75	1.11	HI
3. I can infer and communicate well my learning and realizations specifically on matters concerning natural life and the environment.	3.70	1.14	HI
4. I ask questions, predict, observe, describe, and make generalizations of environmental and other scientific processes.	3.73	1.15	HI
5. I formulate conclusions that are logical and supported by evidence specifically on concerns about the environment.	3.70	1.18	HI
6. I can better understand environmental concepts discussed in my science classes.	3.82	1.11	HI
7. I observe that my test results in science validation activities significantly improved.	3.84	1.05	HI
8. I can actively engage in classroom discussions pertaining to environmental care and protection.	3.86	1.10	HI
9. I can better understand lessons on biodiversity specifically on maintaining safe spaces for living creatures.	3.74	1.13	HI
10. I am more knowledgeable on the native, endemic, or indigenous species of trees available in the Philippines particularly in my community.	3.73	1.12	HI
Average	3.77	0.06	HI
B. Pro-Environmental Behavior *Because of the Youth for Environment in School Organization (YES-O) programs …*			
1. I uphold that respecting the earth is our primary task as humans.	4.10	1.08	HI
2. I find unity with nature whenever I engage myself with environmental causes.	3.85	1.06	HI
3. I vow to protect the environment in school and at home.	3.99	1.06	HI
4. I promise to minimize and/or prevent pollution to save Mother Earth.	4.01	1.12	HI
5. I acknowledge that nature is the source of life and spirituality.	3.95	1.10	HI
6. I value that Earth is our home, hence it needs to be protected.	4.13	1.09	HI
7. I consider environmental education important to spread awareness on the present state of the environment.	3.96	1.15	HI
8. I believe that the government has a significant duty of protecting and preserving the country's natural resources.	3.90	1.17	HI
9. I consider my personal efforts in waste segregation as important towards environmental conservation.	3.94	1.15	HI
10. I realized that environmental protection necessitates the collaborative efforts of the community.	4.24	0.90	VHI
Average	4.01	0.12	HI
C. Environmental Actions *Because of the Youth for Environment in School Organization (YES-O) programs …*			
1. I support and practice waste segregation.	4.18	1.01	HI
2. I support and practice recycling.	4.14	1.06	HI
3. I encourage my parents to use long-lasting light bulbs.	3.76	1.13	HI
4. I save electricity by turning off my gadgets and appliances when not in use.	3.99	1.17	HI
5. I walk or take a bike to school to save energy.	3.76	1.33	HI
6. I volunteer for cleanup drives in the school and in my community.	3.77	1.13	HI

7. I participate in tree planting activities in our school and community.	3.77	1.21	HI
8. I participate in environmental forums and information drives.	3.70	1.19	HI
9. I plant trees, vegetables, and other plant species at home.	3.98	1.15	HI
10. I encourage my peers to take their part in environment protection.	3.96	1.11	HI
Average	3.90	0.17	HI

Legend 1.00-1.80 ... … … Very Low Impact (VLI) 1.81-2.60 … … …Low Impact (LI)
2.61-3.40 … … …Moderate Impact (MI) 3.41-4.20 … … …High Impact (HI)
4.21-5.00 … … …Very High Impact (VHI)

In terms of science performance, the highest mean scores were seen in indicators related to better understanding of lessons on biodiversity (3.74) and improved test results in science validation activities (3.84). It can be inferred that the YES-O programs highly impact the students' learning in science, specifically their pro-environmental behavior.

In terms of pro-environmental behavior, the highest mean scores were observed in indicators related to pro-environmental behavior. The highest of which is 4.24 which indicates that students realized that community effort is necessary for environmental protection. Additionally, students reported high mean scores in indicators on upholding respect for the Earth (4.10), valuing Earth as their home (4.13), and minimizing pollution (4.01).

In terms of environmental actions, the highest mean scores were observed in indicators related to waste segregation (4.18) and recycling (4.14), indicating strong support and high level of practice of these environmental actions among students. On the other hand, the indicator with the lowest mean score was associated with encouraging parents to use long-lasting light bulbs (3.76), suggesting a potential area for improvement in promoting energy-saving practices at home. Overall, the students' engagement in various environmental actions proved to have a high impact on their learning progress, as indicated by the high overall mean score of 3.90. It forwards that students are more aware of their decisions and actions which would benefit and save the environment.

The results above suggest that YES-O programs have a high impact on the science learning progress of students, particularly in terms of their pro-environmental behavior and science performance. This indicates that YES-O programs have effectively instilled environmental values and consciousness among students. Moreover, the students' improved performance in lessons on biodiversity and their enhanced test results in science validation activities demonstrate the positive influence of YES-O programs on their science learning progress. The study's emphasis on YES-O's impact on science learning progress is in line with Labog's (2017) demand for formal environmental education programs and the larger call to evaluate outcomes, such as environmental concern and critical thinking. The study's emphasis on the critical role played by the school sector is further supported by the 2003 publication of DepEd Order No. 72, which further reinforces the understanding of schools as essential agents in environmental education. The literature essentially supports the study's focus on YES-O as a powerful platform for environmental education, highlighting the significance of structured programs, outcome monitoring, hands-on learning, and resolving issues to strengthen the impact of environmental education in schools.

Test of Relationship Between the Implementation and the Impact of Youth for Environment in School Organization (YES-O) Programs to Science Learning Progress of Students in Secondary Schools

Table 5 shows the result on the test of the relationship between the implementation and the impact of Youth for Environment in School Organization (YES-O) programs to science learning progress of students in secondary schools in terms of relevant indicators.

Table 5. Test of relationship between the implementation of the Youth for Environment in School Organizations (YES-O) programs and its impact to science learning progress in the secondary schools

Parameter	Impact to Science Learning Progress					
	Science Performance		Pro-Environmental Behavior		Environmental Actions	
	τ	Sig. Value (p)	τ	Sig. Value (p)	τ	Sig. Value (p)
Seed bank and nursery establishment	0.391**	<0.001	0.391**	<0.001	0.426**	<0.001
Planting, growing, and caring of trees	0.461**	<0.001	0.465**	<0.001	0.515**	<0.001
Water conservation	0.456**	<0.001	0.433**	<0.001	0.456**	<0.001
Biodiversity conservation	0.356**	<0.001	0.255**	<0.001	0.335**	<0.001
Power supply	0.506**	<0.001	0.474**	<0.001	0.434**	<0.001
Clean-up drives	0.483**	<0.001	0.523**	<0.001	0.518**	<0.001
Ecological solid waste management	0.506**	<0.001	0.574**	<0.001	0.527**	<0.001
School initiated activities	0.557**	<0.001	0.541**	<0.001	0.522**	<0.001

It was evident from the table that the extent of implementation of YES-O programs across different parameters highly impacts the Science learning progress of the students. It can be surmised that proper implementation of YES-O activities positively affects and influences students' Science performance, pro-environmental behavior, and environmental actions.

The study is in line with previously published research on youth development, environmental education, and the impact of educational programs. Results confirm studies by Thomas et al. (2018), Monroe et al. (2017), Stern et al. (2014), Ardoin et al. (2015), and Ardoin et al. (2019), emphasizing the impact of environmental education on behaviors, attitudes, knowledge, and enjoyment. Supported by Pereira and Freire (2021) and Schusler (2020), the Positive Youth Development framework indicates that participation in YES-O programs promotes ecological behaviors, pro-environmental attitudes, and responsibilities. Recognizing outdoor environmental education (Marselle et al., 2020; Marselle et al., 2021) goes well with the focus the study places on YES-O activities and their possibly beneficial effects. According to YES-O objectives, local studies conducted by Prado (2019), Punzalan (2019), Labog (2017), and Garcia (2019) highlight the significance of environmental education for Filipino children. In line with evaluation and management perspectives from Orijuela (2019) and Perez (2019), the study supports successful implementation, monitoring, and assessment of YES-O programs. The focus of Magaji et al. (2022) on the way environmental education helps students learn is relevant and supports the idea that YES-O involvement improves academic performance. When taken as a whole, these offer a thorough knowledge of the ways in which YES-O programs enhance students' engagement with the environment and scientific learning.

The findings above suggest that as the extent of implementation increases across various program parameters, there is a corresponding positive impact on students' science performance, pro-environmental behavior, and engagement in environmental actions. These results emphasize the importance of effectively implementing YES-O programs to maximize their impact on students' science learning progress and encourage their involvement in pro-environmental practices.

CONCLUSION

The Youth for Environment in School Organization (YES-O) in the secondary schools have effectively implemented its programs on Seed Bank and Nursery Establishment, Planting, Growing and Caring of Trees, Water Conservation, Biodiversity Conservation, Power Supply, Clean-up Drives, Ecological Solid Waste Management, and School Initiated Activities. The study's findings underscore a high impact of these programs to the students' improved and enhanced science performance, environmental actions, and pro-environmental behavior. There is a strong positive relationship between the implementation of YES-O programs and its impact

on students' science learning progress. However, the programs tend to focus on the most common advocacies of the organization, rather than on a more holistic approach. Nevertheless, this underscores the crucial role of YES-O in nurturing environmental stewardship among students, which meaningfully supports in the development of a policy recommendations, redirections, and sustainable future. As a cornerstone of environmental education participatory process that helps students develop the information, abilities, attitudes, and values necessary to understand and address environmental concerns, YES-O does not only enhance students' understanding of ecological principles but also fosters a profound sense of responsibility toward environmental preservation, protection, and conservation.

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