

## Students' Participation in Tree Planting Activity: Promoting the 21st Century Environmental Education

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**Abstract:** Universally, trees have been an important part of urban landscapes for millennia since they offer adequate benefits to humanity. Studies highlighted the positive impacts of biodiversity conservation in the students' academic performance but there is still lack of literature pertaining to its role on the promotion of environmental education in the Philippines. On this note, this study aimed to analyze the Filipino senior high school students' perceptions and experiences on participating in a tree planting activity, identify the implications of tree planting activity in studying Earth and Life Sciences, and explore the perceived constraints and opportunities. The study design is descriptive-qualitative in nature. Based on the qualitative data analysis, five themes have emerged such as: (1) simple yet beneficial; (2) opportunities and constraints; (3) practical application of learning; (4) environmental awareness promotion; and (5) mitigating environmental degradation. In conclusion, tree planting activity as a part of the field study program in schools is one of the most effective ways to combat and slow down the effect of global warming while promoting the students' academic interests. This study also highlighted the positive impact of tree planting by improving the Filipino students' perceptions of life, community, and environment which is the goal of 21st century education. Lastly, the study recommends the development of extension programs to school communities in the Philippines and worldwide that will arouse the interests and participations of the students to tree planting activity, gardening and ecological tours by partnering with relevant organizations and agencies.

**Keywords:** environmental education, tree planting, environmental awareness, Education for Sustainable Development, ESD

### Biography

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## Introduction

### Benefits of Trees and Reforestation

Universally, trees have been known as an important part of urban landscapes for millennia since they offer adequate benefits to humanity. The idea of urban forestry is insufficiently understood and often disregarded in Nepal even though the planting of trees has been an essential and significant share of their human settlements. One study investigated urban peoples' awareness towards urban forests and the observed benefits related to the consumption and presence of urban forests in Lalitpur, Nepal. The results inferred that most respondents held affirmative attitudes to urban forests and were mindful of the benefits delivered. There was still greenery weakening in the city despite the participation of different agents from government and non-governmental organizations in urban forests promotions. Because of the city's suffering from water, air, and soil pollution, the damage and degradation of urban forests unfavorably affected the ecosystems. The local government has endorsed urban greenery in recent years; though, there are no supplementary legislations or regulations leading to urban forestry (Gurung et al., 2012).

According to Pawar and Rothkar (2015), forests are vital for human life because they offer a varied range of resources such as absorbing carbon or acting as carbon sink, generating oxygen which is important for life's existence on earth so they are also known as earth lung, aiding to regulate hydrological cycle, world's climatic condition, water purification, providing habitat to wildlife, decreasing global warming, absorbing poisonous gases and noise, reducing pollution, preserving soil, and mitigating natural threats like floods and landslides. However, currently forest cover is quickly diminishing due to various causes such as development of agriculture, urbanization, road construction, industrial plants and factories that constitute the major and severe danger to the forestry that lead to serious destruction of the environment.

Furthermore, Sivarajah et al. (2018) confirmed that human exposure to green surroundings and vegetation is broadly known to benefit both physical and mental health conditions. But there was no investigation yet on the particular effects of tree cover, diversity, and species structure on the academic performance of students. There was a suggestion about the importance of urban forestry investments in those schools where effects of tree cover and species composition were most marked that showed the maximum level of external encounters.

Based on the article about the benefits of trees for livable and sustainable communities authored by Skoff and Cavender (2019), we are living in a period swayed by humans to the fact that the Earth's systems are now reformed. Also, the world's major population lives in cities. The United Nations General Assembly formed the United Nations Sustainable Development Goals (UN SDG) to progress the value of life for people and to come across their needs in a shifting world. The greatest encounters of our era were bounded in these comprehensive goals. Planting and protecting trees particularly in cities where the bulk of people live are effective approaches to contribute in accomplishing these goals. They directed a critical review of the benefits of trees that stimulate health and social well-being by eliminating air pollution, decreasing stress, boosting physical activity, and supporting social ties and community. Trees can decrease urban temperatures while cities are getting warmer while they provide the animals with home and food. Lastly for being a

treasured green structure, forests manage stormwater while having a high return on investment when it comes to money expended.

### **Community Initiative to Support Environmental Education**

Some communities have already agreed on the benefits of trees and forestry which also visions the promotion of environmental awareness. Relf et al. (1992) stated in their study that there has been an improved attention in the role of vegetation in social well-being and in the general public's observation of the plants' significance. The method where plants are used in public and private sceneries, the sum of money capitalized in the foundation and preservation of plants, and the contentment derived from the plantings can be affected by understanding the nature and level of the significance of plants to people.

Summit and McPherson (1998) conducted site studies on community residences in Sacramento, California whereas the participants were provided with questionnaires leading to questions about the addition of trees to their properties, peoples' inspirations for planting trees, and the level and occurrence of the trees' maintenance on their properties. The survey results showed that most residents (68% of the sample) plant trees on their properties; there is a reasonably densely planted (with room for about 9% more trees than are already in place) in residential areas; that tree planting tends to be highest early in a resident's tenure in a home; that concerns of ease (shade) and presence show more of part in the judgment to plant trees than do worries about energy reserves, ecological benefit, or isolation; and that accessibility is a strong predictor of the forms of tree maintenance delivered by residents relative to that provided by suppliers.

Likewise, Agea et al. (2009) assessed the attitudes of out-of-school youths towards tree planting undertakings in Masaka district, central Uganda. 104 semi-structured questionnaires were used to collect the data about the opinions on readiness to plant and tender trees which also widely diverse from cumulative index of 305 for those who would very much plant and accomplish the trees to 5 for those who would very much not plant and accomplish the trees. Sex, age, education, occupation, distance to the nearby trading center and land ownership considerably subsidized to difference in the attitudes. Factors that hindered out-of-school youths' efforts are lack of capital; land and tree tenure security; long payback period from planted trees; bad beliefs, prohibitions and misconceptions about some trees. Thus, the out-of-school youths can be directed and encouraged to plant trees as a livelihood prospect by the creation of strong policies and by-laws.

In the same way, Obori et al. (2011) specified in their study that tree planting and tree reserve protection have been endorsed in Northern Ghana as an answer to forest and land deterioration in the past three decades. The assessment of local communities' insight and factors prompting involvement in tree planting programs in Northern Ghana that focuses on the initiatives of Ghana's government implemented between the period of 1980 to 1995 was the aim of the study. It specified that communities observed tree planting as a fairly vital social program with 74% of respondents supporting it. Foremost exciting factors persuading participation in the planting program were free source of seedlings, provision of food aid and free inputs resource. The major limitations affecting people's involvement were deprived extension services and deficiency of strong competent groups. They suggested that institutional capacity building to upkeep the extension services at the community level is a requirement for an effective and sustainable estate development program.

In the study 'Greening Sydney: attitudes, barriers and opportunities for tree planting', Sierra (2015) assumed that it is vital to recognize people's attitudes towards the urban forest in order to progress the objective of urban sustainability and for recommending changes in local government's policies and practices. The study intended to assess attitudes of residents and local government officers to pinpoint barriers and opportunities for tree planting in two local government zones of Sydney region, namely Parramatta and North Sydney. Based on the results, residents' attitudes towards trees differ depending on tree setting. Residents will plant because of the aesthetic and functional (shade and privacy) values of trees on private land whereas the aesthetic and the environmental aspects are relevant on public land. They also mentioned that the destruction done to infrastructure by roots and branches of trees are motives for tree removal. Additionally, due to income, varying education and dwelling type, the participants' attitudes vary. When it comes to the obstacles for public tree planting by officers comprise long-term maintenance, budget, infrastructural destruction and tree longevity. Soil type and space and pressures from utility authorities were known as constraints. The training deficiency, connection with stakeholders and indefinite tree strategies are also revealed. Local governments still need to contemplate residents' attitudes towards trees as values vary based on socio-economic capacities.

Today, environmental degradation poses a foremost risk to the human being both in rural and urban contexts. The significance and need for environmental education as a tool for environmental management and preservation cannot be exaggerated in such a setting since environmental literacy, attitude development, and involvement in ecological behavior are the end products of this discipline. In an urban area-Nairobi, Kibera and Kasarani represented the different settlements where a study intended to establish the association between attitudes and level of participation in environmental undertakings. The study established that there is no significant difference between the attitude and level of participation in environmental activities while there is a positive relationship between attitude and ecological behavior among secondary school students in Kasarani and Kibera Divisions (Boiyo et al., 2015).

Pawar and Rothkar (2015) explained in their article 'Forest Conservation and Environmental Awareness' that forest protection is the repetition of planting and sustaining forested landscapes for the value and sustainability of future generations. This forest conservation comprises the maintenance of the natural properties within a forest that are useful to the humans and environment.

Besides, O'Brien et al. (2017) concluded that forestry intermediations have affected behaviors but without obviously connecting them to 'behavioral' dialogues. There is also a lack of vigorous monitoring and assessment to track behavior variation. They claim that the ideologies they have established can be used in forest program design to guarantee that involvement processes, monitoring and evaluation criteria and sufficient phases for reflection are built into intermediations.

Meaningfully, Tadesse and Teketay (2017) evaluated the perceptions and attitudes of people towards participatory forest management (PFM) executed in Wof-Washa Forests (WWF). The perceptions and attitudes of local people towards PFM vary with socio-economic variables, such as sex, age, level of education, family size, occupation type, annual income, length of duration of local residence, livestock, and land ownership was hypothesized. It was discovered that socio-economic variables had substantial effects on the observations towards "the prevalence of the

difficulties with the current PFM system” (39% variance explained), “the concept of PFM” (30% variance explained), and “the presence of PFM practice” (11% variance explained). In order to guard and take care of the WWF, the majority of the participants acknowledged the PFM program initiated in WWF.

On the same topic, Almas and Conway (2018) believed that urban forests are progressively recognized as valuable zones for creating ecosystem services and preserving ecosystem processes. Because of this, North America’s municipalities have been embracing long-term policies to fund strategic management of the urban forest. The researchers accompanied a case study of four municipalities in southern Ontario, Canada with two that have management plans that request for additional native species plantings and two that do not. They discovered the residents’ attitudes and actions toward native tree species, focusing on the association between municipal importance on native species planting, household socio-demographics, and residents’ attitudes and actions toward native species using survey forms. Residents commonly have positive attitudes toward native trees while fewer are concerned in planting native species once hazards are present.

### **Tree Planting, Biodiversity and the Academic Setting**

Some studies highlighted the impact of tree planting and biodiversity conservation in the academic performance and achievement of students. One of the studies was piloted by Manzanal et al. (1999) that synthesized the studies conducted on Spanish secondary school students who were 14 to 16 years of age. These studies intended to find out what influences fieldwork marks toward the knowledge acquisition of concepts and principles of ecology and to determine the effects of fieldwork on the protection of the studied ecosystem. Using the combined qualitative and quantitative research procedures, the study concluded that fieldwork supports to clarify ecological ideas and mediates directly in the improvement of more positive attitudes toward the protection of the ecosystem.

In the meantime, Yorek et al. (2008) examined how pupils build some concepts associated with biodiversity like classifying living things, variation in living things and ecosystem elements, and the idea of life using the constructivist theory of learning. A biological diversity conceptual understanding scale made with open ended questions was developed and administered to 191 first class high school pupils in seven diverse high schools in Izmir City, Turkey for this purpose. Some implications of the study revealed that even though the pupils’ observations towards living things and nature were comparable to complete understanding, there is a weak construction of the subjects of nutrition relationship and energy flow, and it appeared to be prevalent among them the notion of anthropocentric view in which human beings are in the center of all living things.

Kaplana and Topsakal (2013) explored the students’ attitudes toward plants and its influence on gender and socioeconomic status. The use of a qualitative research method gathered the data from 40 6th grade students in Istanbul. Their study utilized a survey instrument with open-ended questions and semi-structured interviews. It was discovered that by accepting the plants as living things 6th grade students have positive attitudes towards them and their attitudes were not influenced by the difference in gender and socioeconomic status. Their study tried to define the feelings of students about harmful behavior toward plants, how the students protect the plants based on their knowledge and how conscious they were toward nature.

Further, Bokor et al. (2014) concluded that informal settings offer possibilities to extend the K–12 school curriculum, familiarizing learners to novel ideas, piquing interest in science, and nurturing scientific literacy. University researchers can increase their awareness of college and career preferences and focus on interdisciplinary fields of science research and expand the science curriculum through participations in science, technology, engineering, and mathematics (STEM) outreach activities.

Lastly, Korkmaz et al. (2018) illuminated that environmental education targets to build positive and environmental-sensitive insights, attitudes and behaviors toward environmental protection. It mainly centers on shifting the attitudes and behaviors of students, rather than transmitting information. In formal education programs, nature training projects deliver enlightening methods to convey information on nature and environment and improve people that are profound to society and environment. They examined and determined the effects of nature training projects on environmental perception and attitudes of secondary school students. According to questionnaires and observations given during the project, students who joined the project had more positive environmental perception and attitudes compared to those who did not.

It is extremely evident that there is a lack of studies pertaining to tree planting experiences and views of students on its role to the promotion of environmental education in the Philippines and global context. This study aims to fill the literature gap on the primary part and contribution of tree planting activity as a form of green initiative in the Philippine educational setting by eliciting useful ideas based on Filipino students' involvement and learning. This study also intends to address the limited opportunities given to Filipino students and other academics in involvement to environmental projects or programs that empower the goal of integrating environmental education in school curricula as stipulated in law and endorsed by various academic, government and non-government organizations.

The objectives of this study were to analyze the Filipino senior high school students' perceptions and experiences on participating in tree planting activity, to identify the implications of tree planting activity in studying Earth and Life Sciences based on the narrative responses of the students, and explore the perceived constraints and opportunities to tree planting activities as observed by the students. These research objectives were considered and scrutinized from the related literature as relevant key points directly related to the tree planting activity in this study. Suitable translation of these objectives to come up with the survey research questions to gather deep knowledge from the participants' experiences was conducted.

This research exploration was conducted during the first semester of the academic year 2019 to 2020 at a private basic education institution in Dasmariñas City, Cavite, Philippines. The tree planting activity was held in October 2019 as part of the Cavite Arbor Celebration in a planting site in Silang, Cavite organized by the provincial environment office. This study, in another way, initiates the partnership of academic institutions and government agencies for the promotion of environmental awareness, practices and attitudes of students and other participating bodies. Since this study focused on the students' experiences towards the conduct of tree planting activity who are enrolled in sole educational institutions, this study asserts the former as one of its limitations.

## **Methodology**

### **Participants**

There were twelve (12) senior high school students enrolled in a private education institution in Dasmariñas City, Cavite, Philippines during the conduct of this study who served as the research participants. The participants were enrolled under the Academic Track of SHS program whereas 6 of them were studying Science, Technology, Engineering and Mathematics strand, 3 students belong to Accountancy, Business and Management strand, and the other 3 students were part of Humanities and Social Science strand. All the student-participants were taking up the course in Earth and Life Sciences. The study group was made with 6 (50%) male and 6 (50%) female students. When they were asked about their background or experience in participation in tree planting activity, only one among twelve of them had the involvement in this particular activity while the others were first-timers. Besides, the participants' names were not revealed in this study as agreed upon by two parties for ethical considerations.

### **Research Design**

The study design was qualitative in nature which employed phenomenological approach as a type of research based on the topic and goal of this investigation. It follows the phenomenology type as it seeks to gather the experiences among student-participants of tree planting activity and their views on its significance to fight the effects of climate change and promote environmental education. This study described how the student-participants perceived the targets or benefits of the tree planting program through direct involvement for them to actually appreciate the activity and come up with substantial insights to realize the research objectives.

### **Instrument**

The researchers developed the survey questions according to the existing related literature from both local and foreign studies which addressed the same problem. These questions were inclined with the objectives of this study. Direct observation was also applied by the researchers during the tree planting program with corresponding checklists in order to support the responses of the participants in the administration of questionnaires. Some questions specified in the survey include the following: do you like or dislike the tree planting activities?; would you plant and managed trees if you were given free seedlings?; what are the actions that you have ever taken as a commitment to tree planting activities, if you ever participated in tree planting activities, at what level?, what do you think are the roles and values of trees?; what are your perceptions on the importance of tree planting program?; what are the constraints affecting participation in the tree planting program?; what are the factors motivating respondents' participation in the tree planting program?; and how important is the conduct of tree planting activity in learning earth and life sciences topics?

### **Procedure**

This phenomenological-qualitative exploration involved the Filipino senior high school students in a Philippine private education institution who were undertaking the course in Earth and Life Sciences. They were purposely chosen as they matched the research objectives and have the capacities and knowledge on the benefits of tree planting activity which were needed to become part of this study. The small number of participants was decided by the researchers as these students portrayed the most of characteristics and qualities that met the objectives of the study. The online administration of survey questionnaires together with the consent forms were given after the conduct of tree planting activity. Student-participants volunteered to become part of the study and were informed that they could withdraw anytime. The direct observation was performed by the researchers with the aid of a checklist which was used to support and validate the survey responses of participants during the data analysis. Using the content analysis, the researchers developed and applied codes through categorization of data, identified themes, patterns and relationships like words and phrase repetitions, and summarized the data by connecting the link between findings and objectives.

## Results

The research objectives were achieved according to the findings of the data analysis procedure. These objectives aimed to analyze the Filipino senior high school students' perceptions and experiences in participating in tree planting activity, to identify the implications of tree planting activity in studying Earth and Life Sciences based on the narrative responses of the students, and explore the perceived constraints and opportunities to tree planting activities as observed by the students.

Based on the conduct of data analysis through thematic coding of participants' responses, the qualitative data interpretation highlighted different emerging themes. Each theme was illustrated by the direct observation's findings and participants' responses. The following themes emerged based on the similar and contextual responses of the participants whereas their tree planting participation was recognized as: simple yet beneficial; with raised opportunities and constraints; practical application of learning; environmental awareness promotion; and mitigating environmental degradation. All of the themes are interconnected and based on the analysis of the data, it emerged that tree planting activity has a large impact and is beneficial to students that can affect their perspective towards environmental consciousness and awareness.

### Simple yet beneficial

All of the participants enjoyed the tree planting activity and agreed that it is beneficial not only to our country (Philippines) but mostly to our planet. One of the participants described how the activity was simple yet worthwhile.

*S1: I like it (tree planting activity), although it's exhausting. It made me feel happy because I did something to help the country and the world itself even though it's just a simple action.*



Two of the participants described how they appreciated the activity and described it as something helpful and can make a huge difference to our environment.

*S2: I like it because through this activity, I was able to do something for our planet and I did something extraordinary as an ordinary student.*

*S3: I like the tree planting activity because I believe that even the smallest amount of help can make a huge difference for our environment nowadays.*

Most of the participants recognized the benefits of tree planting activity as well as how they felt happy and content with themselves.

*S4: Planting trees can bring a wealth of benefits in our life like it can provide shelter for us.*

*S9: I liked it as it helps the environment and it was a good exercise.*

The sense of accomplishment was also evident to the response of the participants as they described the feeling as something good.

*S6: It was very refreshing to help the environment and be in nature itself. It was very good to help the environment even with a little effort. To live in a better world and to experience a better life, small things do big.*

*S8: We can help the environment even in a small way. With tree planting activity, the feeling of accomplishing something is evident. The fact that I helped the earth feels good.*

*S11: I liked it because it was fun and I became part of something meaningful.*

Interestingly, the participants found the activity meaningful and an experience that can make a better world and a better life.

### **Opportunities and constraints**

As it is beneficial and can open opportunities to have tree planting activity, there are also constraints accompanying it. Many participants spoke of joining tree planting activity when an opportunity arises as it helps sustainable growth in the environment.

*S10: I promised that if there's tree planting activities that they'll (schools or government) offer. I will join it without hesitation.*

*S11: Tree planting allows people to participate in an activity that helps the development (sustainable) of the world.*

Participants also highlighted the challenges that go with these kinds of activities (tree planting). Most of them talked about the lack of awareness regarding this activity.

*S4: Some of us don't know how to engage in this program (tree planting) maybe because of lack of time and knowledge.*

*S12: If ever I would be given a chance to join a tree planting activity, I make sure that I join and do the activity without complaints. Most people are not aware of this program because it is advertised less.*

One of the difficulties of having tree planting activity is the shortage of resources that are vital in this activity. Two of the participants mentioned soil and water as the primary resources.

*S3: I would try to (plant), but there isn't much nutrient-rich soil around my area. If I were in a forest, I would definitely do it.*

*S9: Water is not a problem because of rain, but it also depends if there's land to plant on.*

In relation to the worth of having tree planting activity, participants acknowledged the importance of this activity and spoke of joining as long as there is an opportunity to do so. However, there were also challenges that they recognized and highlighted the importance of eliminating those constraints.

### **Practical application of learning**

All of the participants agreed that through tree planting activity they have taken note of the practical application of the subjects they have in school.

*S1: Yes, it (tree planting) gave us more idea about biological (science) lessons that we can apply during classes.*

*S8: We can learn it (tree planting) not by words (verbal or lecture) but by experiencing it in actual.*

*S11: It's part of the subject itself, Earth and Life science. The activity is related to our lessons which are biology and global warming phenomenon.*

*S12: I liked the tree planting activity because I was able to practically apply what I have learned in class.*

Most of the participants settled on the idea of the importance of having this activity that improves their standpoints in life and in nature.

*S6: To know the value of planting trees is like knowing the value of how life is without trees. It is very significant as a living person to know the values of the trees in our daily lives and how we benefit from it and how they sustain our needs.*

*S7: It (tree planting) allowed us to understand furthermore about life and nature.*

Consciousness and acceptance of the importance of trees and its purpose that bridge people and environment were also grasped by the participants. Participants also realized the true value of balance among people, life, and nature.

*S9: It gave me an outlook of eco-conscious approach because it is an opportunity to learn ecology or interaction between people and the environment.*

*S10: As we studied Earth and Life sciences, we realized the things that may occur when trees are gone.*

### **Environmental awareness promotion**

All participants agreed that participation in tree planting activity promotes environmental awareness. One participant stated that this program helps in bringing awareness to the community in saving the planet. He stipulated that 'it also enables us to take actions in doing so.' Due to this, the significance of tree planting activity is heightened because of its essence and benefits.

*S3: Tree planting is significant in a sense that it teaches us that trees are a valuable asset to humanity and animals, and that without it; our natural ecosystems would have failed years ago.*

*S4: I like (tree planting activity) because we all know that the trees are the source of the oxygen that we inhale and I know that when we plant trees, we can save our environment. Because of this tree planting activity, I should give more care to the trees around us.*

Most of the participants emphasized the need for people to join tree planting activities. Authorities also played a big role in boosting the advocacies for this activity.

*S8: Nowadays, it is very important because more trees are cut than planted.*

*S9: Government officials (employees) persuade people to join and they advocate the environmental awareness, benefits of trees, and responsibility in environmental destruction.*

*S11: The willingness of the respondents, their awareness of what is happening on earth and how tree planting programs can help should be encouraged.*

Environmental awareness also motivates people to partake in tree planting activity. One of the participants acknowledged that trees should be valued.

*S12: With the knowledge that trees are very valuable, it is enough to motivate the people to participate in this kind of activity. If given the chance to plant trees, I would join because I know the importance of managing trees.*

### **Mitigating environmental degradation**

In relation to the large-scale effects and benefits of tree planting activities, participants explained and described the important role of trees in our environment and how trees benefit people. One of the participants mentioned its importance in decreasing the effect of global warming and lessen the amount of greenhouse gases. He also explained that *'trees filter the carbon dioxide and produce oxygen.'* Most of the participants explained why we need to plant and care for trees specifically combating climate change.

*S2: If we plant trees, we can lessen the effect of global warming (slowing down the effect of climate change) and save our planet. Trees provide oxygen and absorb CO<sub>2</sub> and also serve as a shade from direct sunlight. We get (harvest) foods and building materials from forests.*

*S5: It can help our country (environment) to recover and lessen the problems in our nature.*

Participants also made mention of its help in providing clean air and cleaning the air.

*S3: Trees supply us with clean oxygen and provide safe habitats for animals and other organisms.*

*S4: They (trees) prevent the soil from erosion and improve the air quality.*

Aside from providing clean air, converting carbon dioxide to oxygen, trees also block things. One participant specified *'they help in weakening (the impacts of) storms and waves (mangroves).'* One of the participants realized the importance of tree planting activity through first-hand experience.

*S12: It is significant because students are given the chance to have first-hand experience to contribute to the (sustainable) development on Earth. Trees are very important because they do not only provide a cool area for humans and shield us from the heat but also reduce global warming effects.*

Trees are essential in sustaining the development of our planet; however, it would only be possible by the actions taken by people. All participants revealed that having this experience allowed them to think and reflect on their awareness toward tree planting. It has allowed them the opportunity to take part in the challenge of saving the planet through gaining environmental awareness and refocus their priority in relation to their life, community, environment and the world.

### **Discussion**

This study aimed to analyze the Filipino senior high school students' perceptions and experiences in participating in tree planting activity, to identify the implications of tree planting activity in studying Earth and Life Sciences based on the narrative responses of the students, and explore the perceived constraints and opportunities to tree planting activities as observed by the students. Interpretation of the findings; illustration of why the findings are relevant; and relation of the findings to other research are based on the analysis of the results obtained through participants' response and direct observation.

One of the research objectives of this study is to gather the experiences of participants during a tree planting activity, as expected, it has a positive impact and understanding to the participants. The first emerging theme of this study is the simplicity of the activity yet beneficial. All participants reported that they liked the tree planting activity and agreed that it is beneficial to our environment. The activity resulted in feelings of happiness, being helpful, sense of accomplishment and contentment. For some participants, it may be exhausting but nevertheless, a good exercise. Overall, the participants found the activity meaningful and an experience that can make a better world and a better life.

The tree planting activity resulted in positive attitudes of students towards environmental awareness. It may be due to the exposure of the participants to trees and nature that it has these kinds of effects on mental health. Recent research has shown that trees not only scrub pollutants from the air so we breathe easier, but also help make us feel better from an emotional standpoint as well (Earth Talk, 2015). It is clear from the findings that being surrounded with trees has a direct effect and green space is quite beneficial to mental health. All the participants realized the sense of accomplishment and felt good with the experience they had because of its benefits to the community and the environment.

The second theme of this study is the opportunity and constraints of tree planting activity. The tree planting activity is one way of expressing concern to the environment and saving trees. It also shapes strong relationships (friendship) and solidarity with diverse groups. All the participants in this study expressed the likelihood of joining tree planting activity when an opportunity arises however, there are challenges in doing so. Some of the participants emphasized the lack of time, knowledge and less promotion of this activity. It is possible that all the participants understood why this practice is important but it does not come without challenges.

One of the participants identified that location is one of the constraints of tree planting activity. It was discussed in Green Blue Urban (2015) that to have a chance of success, tree species and

location are the first priority in establishing trees. Also, trees need space, they need soil volume – there is a direct correlation between what we provide to grow below ground and with the result we will see above ground. Obviously, trees bring big benefits but they must be located wisely. This is only one of the challenges that accompany tree planting activity, however, we should be planting the right trees, for the right reasons, right locations, and right manner.

Another theme emerging from this study is the practical application of learning – from school to the community. Tree planting activity exposed the participants to the importance of this practice that goes beyond what they learn inside the classroom and school. All of the participants reported that this activity is a practical application of the subjects they have. Some participants accepted that this practice is giving them more ideas, practical application and learning through actual experience. Moreover, helping plant trees gives students a sense of pride and purpose (Brewin, 2014).

Most of the participants settled in the idea of the importance of having this activity that can improve their standpoints in life and in nature. Furthermore, the sense of purpose and sense of ownership that they are doing something for themselves and their community were among the values that participants mentioned. Consciousness and acceptance of the importance of trees and its purpose that bridge people and environment were also grasped by the participants. Participants also realized the true value of balance among people, life, and nature. Overall, the most rewarding part of this activity was that the participants understood the benefits of tree planting to the core of their being.

According to Pawar and Rothkar (2015), forests are vital for human life because they offer a varied range of resources such as absorbing carbon or acting as carbon sink, generating oxygen which is important for life's existence on earth so they are also known as earth lung, aiding to regulate hydrological cycle, world's climatic condition, water purification, providing habitat to wildlife, decreasing global warming, absorbing poisonous gases and noise, reducing pollution, preserving soil, and mitigating natural threats like floods and landslides. Thus, tree planting activity has large-scale effects that not only a certain community is benefitted but the world. Participants explained and described the important role of trees in our environment and how it helped in combating climate change.

A consistent theme throughout questionnaires and direct observation relates to mitigating environmental degradation in which impacts the perception of the participants toward tree planting. The findings of this study suggest that all the participants knew the life-long effect of planting trees and how this is the most effective way to save our planet. Most of the participants highlighted that if we plant trees, we can lessen the effect of global warming, and reduce climate change. Harmful carbon dioxide contributes to climate change, the biggest current problem the world has to deal with but trees help fight it (Jacobs, 2018). Trees are our main survival tool. Participants also made mention of its help in providing clean air and purifying the air thus improving the air quality. One participant specified *‘they help in weakening (the impacts of) storms and waves (mangroves)*. These findings proved that the participants are aware and informed of the tremendous benefits of planting a tree. It can help restore the quality of life in the community and contribute in the fight against climate change. One participant stipulated that *“it is significant (tree planting) because students are given the chance to have first-hand experience to contribute to*

*(sustainable) development on Earth.* More importantly, the participants set an example on how to become a decent human by being the steward of the environment. Trees are essential in sustaining the development of our planet; however, it would only be possible by the actions taken by people.

Environmental awareness promotion is the last theme developed in this study. All participants agreed that tree planting activity promotes environmental awareness. Letting the participants experienced tree planting raise their awareness on the importance of saving the environment as soon as possible. One participant said that *'it also enables us to take actions in doing so'*. According to Bekele (2015), tree planting activity raised students' awareness and many school children serve as a channel for disseminating various environmental messages to their parents and the surrounding community. Therefore, by providing students with opportunities like participating in tree planting activity increases the possibility of widespread information on the benefits of this practice. It is also an opportunity to instill the values of love for the environment. Due to this, the significance of tree planting activity is heightened because of its essence and benefits.

There is a difference between the environmental awareness levels among the urban and rural school students. Urban school students have only a high level while rural school students have a very high level of environmental awareness using the themes of environmental education (Punzalan et al., 2019). The possible reasons behind these results were likely urban school students wish to live in a setting with pro-environment preferences and lifestyles while rural school students are typically engaged with nature while they gain direct benefits from it.

Most of the participants emphasized the need for people to join tree planting activities. Authorities also played a big role in boosting the advocacies for this activity. This also offers the opportunity for diverse groups to develop relationships and build camaraderie as they have one goal – be steward of the environment. Environmental awareness also motivates people to partake in tree planting activity. One of the participants acknowledged that trees should be valued. It has been found out that tree planting is a call for action against harmful environmental practices and is helpful in spreading awareness about protecting the Earth's natural environment. Finally, planting trees is an essential lesson on environmental awareness. We should be mindful of the actions we do to help save our environment.

### **Conclusions and Recommendations**

The objectives of this study were to analyze the Filipino senior high school students' perceptions and experiences in participating to tree planting activity, to identify the implications of tree planting activity in studying Earth and Life Sciences based on the narrative responses of the students, and explore the perceived constraints and opportunities to tree planting activity as observed by the students.

Tree planting is one of the most effective ways to combat and slow down the effect of global warming. Researchers conclude that the experiences of the participants in tree planting activity was an eye-opener that made them realize that building small efforts can be used to create greater impact to their lives, communities, and the environment. Engaging the participants in this practice (tree planting activity) lets them take part in improving the planet and expose them to its multitude benefits, both long and short term. Moreover, this proves that tree planting activity must be joined

by students – start them young, as it is one of the most engaging and environmentally friendly activities that will shape their perspectives and attitudes to be a better steward of the environment.

It was also noted that students are already well-aware of the benefits of tree planting therefore their participation in this activity enhanced and fueled their drive to be more mindful of the actions they do toward the environment. This drive made them take the necessary actions when the opportunity arises. Also, this opportunity let them apply the things they learned in school to help the community and the environment. One of the most rewarding parts of students participating in tree planting was that even though it was about education and raising of awareness, no one told them to be happy with what they did but they did anyway. They understood that to the core of their being.

Aside from the significance of the tree planting that benefitted the students personally and socially, it was also concluded that through this activity environmental awareness is being heightened. Exposing the participants to the real situation raises their motivation to help and act accordingly. Challenges may be present but it did not decrease the drive of the participants to take action and that may be what we needed to encourage people that this is one of the most effective ways to save mother Earth. Trees help us breathe easier. This study highlighted the great impact of tree planting to students that will improve their perceptions to life, community, and environment.

Based on the derived conclusions in this study, the researchers recommend for school communities in the Philippines and foreign countries to formulate programs that will arouse the interests and participations of the students to tree planting activity, gardening and ecological tours. This can be done via field exposure projects related to the subject area like community outreach, natural science, social responsibility, and contemporary issues that will serve as a supplementary activity for the students to engage in practical applications of knowledge acquired from classroom lectures. Additionally, this study recommends a policy review related to the educational integration of environmental issues in different disciplines with the assistance from government agencies in the Philippines. There should be collaboration and concerted efforts among the educational institutions, environment agencies and private sectors to organize a tree planting activity at least once a year in all educational levels; early childhood, primary, secondary, and tertiary. Lastly, the opportunities for tree planting activity for the students must be amplified in all educational sectors with the help of primary organizers like the environment and natural resources department to encourage participation by providing necessary documents and materials to implement the partnerships. Though, the school communities can also organize their independent tree planting program by coordinating with the appropriate agencies to provide necessary knowledge about what tree species to plant according to the feasible locations.

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