



The Tri-Association Community Service Award

The Bolivar Garden - Agricultural Science Project:
breaking down barriers by building community
through vocational learning.

2022

Colegio Bolivar
Cali, Colombia

Vision

The Bolivar Garden will break down barriers in our community as we come together to learn about growing organic plants and food, whilst taking care of our natural environment in a sustainable way.

Mission

To create a communal space where our school community can come together to learn about agriculture from one another using a hands-on approach and have fun and enjoy their time together in nature.

Objectives

Set up an area for learning to allow students to demonstrate their knowledge of science / maths with other subjects in a vocational manner.

Deconstruct the paradigm that learning is based in a classroom and that vocational learning has a valued place in the education of our students.

Break down barriers between students and maintenance staff so that students value the knowledge of others and thus the person.

Increase community collaboration between parents, alumni, students, teachers, administrators, and school workers, whilst working within a natural environment, using natural resources, towards increasing our knowledge of agriculture and organic gardening whilst valuing the rich natural resource we have on our doorstep.

Give an opportunity for students to develop skills of collaboration, perseverance and leadership in a non-traditional setting and specific knowledge of natural processes and cycles.

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Evaluation of success

1. Academics and curriculum integration - sustainability

- 61 students from grades 11 and 12 have passed through the elective class
- 58 species specific monographs have been produced by students - most have been of undergraduate research level quality.
 - <https://www.colegiobolivar.edu.co/garden/student-monograph-project-species/>
 - <https://www.colegiobolivar.edu.co/garden/student-monograph-projects-species-year-2/>
 - <https://www.colegiobolivar.edu.co/garden/student-monograph-projects-year-3/>
 - <https://www.colegiobolivar.edu.co/garden/student-monograph-projects-year-4/>
- Classes of students from El Nido (our pre-school) to high school students have used the garden.
- Pre-Primary and Primary classes have visited the garden to learn about the needs of plants and animals to grow.
 - 1st grade students were taught by agriculture students how to manage and provide nutrients to plants.
 - K4 students learnt about soil types.
 - 3rd grade students came to see how organic matter could be changed into soil through composting.



Two agricultural science students teaching 1st graders how plants get nutrients: (2019)



K4 students and with Luz Adriana Serna learning about soil types. (2019)



3rd grade students learning about composting and the roles of worms and heat in this process (2019)



Pre-Primary principal, Ms. Odette Rumie, with some K5 students visiting the garden and tasting the sweet coffee berries.

- 5th grade students have visited the garden with their science teacher to make observations of the coffee plants at different stages of development.



5th Grade students visiting the garden with Mr Ryan Evansen - 5th grade science teacher.

- 8th grade students have used the garden as a basis for their Shark Tank Sustainability projects.



8th grade students using the garden as a basis for thinking of their Shark Tank Sustainability projects. Teacher Ms Annie Christy and STEM coach Ms. Imogen Herrick are in the photo. (2017)

- Bolivar Forum attendees, from Colegio Bolivar and other schools in Cali, visited the garden as part of a session on vocational learning and developing projects.



Bolivar Forum attendees visit the garden during a session on vocational learning (2018)

2. Our Community

- Maize, plantain, papaya, cherry tomatoes and sweet potatoes have been grown and provided to the workers' cafeteria



- **School gardeners** have attended class sessions with both students and outside speakers, helping students understand concepts and practices.



- **Fernando Oka** from OKA roasters came to teach students and school gardeners about coffee quality and the management necessary to produce high quality coffee.



- **Alex Arujo** came to teach students, alumni and parents of students, about the process of roasting through the act of roasting coffee.



- **Gabriel Artunduaga Cuellar** came to teach students, gardeners, and teachers about micro nutrients, organic fertilisation and the measurement of coffee sweetness.



- During the **2019 5K** race runners were invited to plant coffee and cacao trees in the garden and see what work was being done.



- Bolivar Garden Saturday (BGS) sessions started during the 2nd year of the BG.
 - Four were held during 2016 - 2017
 - Nine sessions were held during 2017-2018
 - Six were held before the pandemic during 2018-2019.
 - With the return to the school and following biosecurity measures one session has happened so far this year, and three more are planned.



- Bolivar Garden Saturdays (BGS) has been an ongoing collaborative project since the start of 2017, allowing parents, students, alumni, teachers, administrators, and school workers to work together to develop the garden.
- BSG volunteers have worked and learnt:
 - about agroforestry principles through planting multipurpose trees in a multi-strata coffee agroforestry system;
 - how to assess slope and determine the best line for planting of trees and vegetables to prevent erosion from slopes;
 - how to vegetatively propagate trees and manage them *in situ*;
 - how to protect river banks using planting of specific trees;
 - processes related to the growth and maintenance of a coffee plantation:
 - selection of coffee beans
 - germination of coffee and management of coffee plants
 - augmenting plant nutrition through organic practices
 - how and when to harvest coffee cherries
 - wet washing processing method for coffee
 - They have had lessons on coffee roasting
 - Been involved in the construction of the garden terrace
 - Planted cacao trees and other fruit trees.



The Sinisterra sisters sowing garlic. Mr Hernandez doing his bit. Parents and students learning about soil microbiology and digging out the terrace during the 1st Bolivar Garden Weekend.



BGS volunteers digging out the first compost area; enjoying a BBQ during a Saturday workday; preparing planting pots for seeds; figuring out the contours of our garden and learning about the garden during the 1st BGS.

3. Community Outreach

3.1 Cottolengo Old People's Home

The Bolivar Garden has welcomed the school's social service program that has brought people from Cotolengo Old People's Home to the garden to let them participate in garden activities, have time to talk and share their experiences and enjoy the natural environment.

Additionally, information developed at the garden with regard to sweet potatoes has been transferred to Cotolengo Old People's home.



A visit by residents of Cotolengo Old Peoples' Home accompanied by social service students to the Bolivar Garden (2018), and Cotolengo residents being awarded a prize of a bag of Don Simón Coffee after getting the closest guess to the number of beans in the bag of coffee (2022).

3.2 Escuela Pública Trinidad

As part of their social service requirement high school students brought primary students from the inner-city school Escuela Publica Trinidad, that Colegio Bolivar supports in the Primary section, to the garden to experience a garden setting, enjoy the natural environment and enjoy getting their hands dirty in the soil!



Students from Escuela Trinidad, a school supported by Colegio Bolivar, learn about organic soils and plant nutrients, accompanied by social service students.

3.3 Siete Rios Fest, Cali.

As part of the Siete Rios Fest, a public event regarding the seven rivers of Cali, agriculture science students produced and presented a conference poster about how the Bolivar Garden is protecting its section of the River Pance.



Agriculture students having just prepared their poster for the 7 Rios Festival, and presenting it to members of the public, Ciudad Jardin, Cali.



¡Visita nuestro blog!



OBJETIVOS

- Construcción del jardín (Bolivar Garden) con el fin de unir a la Comunidad, proteger el medio ambiente, al río que pasa por el Colegio Bolívar y enseñar a los estudiantes sobre agricultura.
- Dentro del jardín, se cosechan semillas, frutos, vegetales, maíz, café, tomates y se realizan diversas actividades recreativas para compartir en Comunidad.
- Como proyecto se creó una barrera protectora natural sembrando plantas y árboles Nacederos en la orilla del río, para disminuir el efecto de la eutrofización y lograr la adición de nutrientes a los arroyos. El Nacedero tiene la habilidad de "crear" manantiales, atraer más agua y mejorar las condiciones de los ríos.

PROCESO DE LA SIEMBRA DEL NACEDERO

- Se cortaron ramas gruesas y saludables de 50 cm y 70 cm de los árboles Nacedero.
- Se sembraron, con tierra orgánica rica en nutrientes, los tallos en bolsas plásticas con el corte en ángulo apuntando hacia abajo.
- Después de un mes, las plantas se sembraron en la orilla del río.
- Se realizaron agujeros de 40 cm de profundidad para introducir estacas con el objetivo de mantener firmes las plantas.



USO DE LAS PLANTAS DEL NACEDERO PARA SIEMBRAS A FUTURO

- El Nacedero tiene muchas funciones que agregan valor al jardín, entre ellas, su gran aporte a la composta.
- Las hojas de esta planta contienen gran cantidad de nitrógeno, el cual aporta nutrientes a la tierra del jardín. Por tal motivo, al podar la planta se utilizan las ramas para la composta.
- Para aprovechar siembras a futuro, sacamos "hijitos" de la planta, cortándolos diagonalmente para después ser plantado en otro lugar.



SIEMBRA DE GLIRICIDIA SEPIUM EN EL JARDÍN

- Esta planta es mejor conocida como Mata Ratón, la cual tiene el propósito de:
- Traer firmeza y estabilidad a la tierra de la colina donde está sembrado el café.
- Prevenir la erosión, dado que sus raíces hacen más fuerte el suelo.
- Proporcionar sombra para mejorar las condiciones climáticas en las que crece el café (esta planta es de clima frío).
- El Mata Ratón fija el nitrógeno al suelo y contribuye a su fertilización, lo que evita el uso de agroquímicos.



SIEMBRA DE ÁRBOLES TRICANTHERA GIGANTEA (NACEDERO) PARA PROTEGER EL RÍO

Los árboles Nacedero:

- Protegen el río soportando los costados con sus raíces.
- Absorben los nutrientes que se encuentran en el río evitando la eutrofización.
- Producen hojas ricas en nutrientes, las cuales se pueden utilizar como composta para el jardín y evitar el uso de químicos.
- Incrementan la biodiversidad, atrayendo insectos y dándoles hogar a los anfibios.

Con la siembra de los árboles estamos creando soluciones ecológicas para generar un impacto positivo en el medio ambiente, dado que se mantienen estables y adecuados los niveles de nutrientes en el río, además de ayudar a fertilizar la tierra aledaña y proteger la fauna.

"Se utiliza para protección de fuentes de agua, cerco vivo, forraje, medicina humana y animal, recuperación de suelos, control de erosión, y en construcción, y se le atribuye la capacidad de inducir el nacimiento y aumento del agua, por lo cual también se le conoce como "madre de agua" (Ríos, 2002)"

1. Valencia Arboleda, J. I., Sarria Vergara, E. F., & Rivera Rueda, D. A. (2007). Efecto de tres niveles de inclusión de Nacedero (*Trichanthera gigantea*) y materias primas convencionales en alimentación de pollos de engorde, en el municipio de Popayán - Cauca. (Universidad Nacional Abierta y a Distancia). Retrieved from <https://stadium.unad.edu.co/preview/UNAD.php?url=/bitstream/10596/1448/1/2007-05-03P-0002.pdf>

2. Ríos C. I. 2002. Usos, manejo y producción de Nacedero, *Trichanthera gigantea* (H & B) Nees. En: Ospina S., Murguieito R., E. (eds.). Tres especies vegetales promisorias: Nacedero *Trichanthera gigantea* (H & B) Nees; Botón de oro *Thitonia diversifolia* (Hemsl) Gray; Bore Alocaasia macrorrhiza (Linneo) Schott. CIPAV-CAB-Colciencias. Colombia.

Creating the future together!

The Siete Rios Poster, 2018

4. Leadership

4.1 The Don Simón Coffee Club

The club was established this year by students to market and sell our coffee at the Bolivar Farmer's market.

- Sales of over 1,100,000 pesos (\$293) with a net profit of US\$253.
- This profit has led to the purchase of organic fertiliser, coffee bags, stickers and netting for the school greenhouse.
- The coffee produced has a cupping score of 83-84 (Fernando Oka, Pers. comm.) and as such is classified as a high-quality gourmet coffee.



The above photographs show the process of producing coffee from selection of seeds, germination, transferring seedlings to pots, and finally mature plants with flowers and then fruit.



The above sequence of photographs show how students collected, depulped and dried coffee. Teachers, administrators and Don Hugo enjoying the first cups of Don Simón Coffee, which has been subsequently sold at the Bolivar’s Farmers Market by our students - Tomas Jaramillo pictured.

See the following album to see the progress of the Don Simon Coffee

<https://myalbum.com/album/c3yDgu7BuCLv>

BolivarGarden
AGRICULTURAL SCIENCE

Café Orgánico Don Simón

Año 2016

Septiembre 2017
Selección de semillas, para germinar en el jardín.

Enero 2018
Después de 4 meses, se obtienen los fósforos y se introducen en bolsas.

Abril 2018
Marcación de los sitios para la plantación del café.

Febrero 2019
Siembra de *Gliricidia sepium*, para estabilizar la pendiente, dar sombra y nutrientes.

Agosto 2018
Siembra de collinos de plátano para dar sombra al café.

Junio 2018
9 meses después se seleccionaron las semillas de café.

Agosto 2019
Primera cosecha de Café Orgánico Don Simón.

Agosto 2019
Capacitación en el tostado del café con Alex Aruajo, ex alumno del Colegio Bolívar.

Febrero 2020
¡Plantas de café listas para la segunda cosecha!

Disfrute nuestro Café Orgánico Don Simón

 **Don Simón** CAFÉ

Café Don Simón ha sido cultivado orgánicamente desde la semilla hasta la cosecha por estudiantes, profesores, empleados y miembros de la Comunidad Bolívar.

 **COLEGIO BOLIVAR**
WE MAKE A DIFFERENCE

Creating the future together!

Don Simón Coffee Poster used to educate the school community about how our coffee is produced for the 5K Verde Race, 2019.

4.2 Greenhouse construction

Two students have lobbied for and secured funding from the school, from the 5K Verde Race (the school's annual fundraising run used to support environmental projects at the school) to construct a greenhouse. This has taken two years of effort during the pandemic. Donations for materials for the construction of the greenhouse were made by parents, and by the Don Simón Coffee Club.

- Wood
- Cement
- Netting



The Bolivar Garden Greenhouse project in process. The original site for the greenhouse was then flattened by the school's gardeners. Funds from a variety of sources including the 5K Verde Race, the Don Simón Coffee Club and donations by parents helped purchase the structure. Students laying out where flatbeds are to go to be placed, and the two students who pushed this project forward to fruition, Melisa Loñono and Sara Escobar with Dr Waliszewski under the structure.

4.3 The Sweet potato project

Juan Manuel Sanabria, an alumni of Class of 2021 developed a project with the International Potato Centre CIP, (Lima, Peru) and the Bolivar Garden as part of a joint project to develop sweet potato production at Cotolenguo Old People's home. This project involved developing relationships with CIP and their sister organisation CIAT (The international Centre for Tropical Agriculture) based in Palmira, working with local producers, establishing a trial plot at the Bolivar Garden and then transferring that knowledge to Cotolengo.



Juan Manuel Sanabria, the sweet potato project leader, working during a BGS with BGS volunteers to prepare the terrace for the planting of the camotes. Students of the GIN class working with Juan Manuel to finish the preparation of the terrace. A joint visit (GIN/Agricultural Science) to a local supplier of sweet potato germplasm together with plant material. Alejandra Guasto, agriculture science student, planting sweet potato plants in the prepared terrace.

4.4 The bee (*Melipona sp.*) project

Two years ago, two students asked the agriculture teacher about beekeeping. Building contacts through Agrosavia, the government parastatal for agricultural research, students went to Agrosavia sede Palmira, and learnt about bee keeping. Since then, these students, Gabriela de Oliviera, Emma Aristizabal and Antonio Robles have joined the agriculture science elective and independently set up a business, La Colmena, which produces ready to use beehives with these stingless bee species. The honey produced from these beehives is of the highest quality, can be consumed by people with diabetes and is used in high-end cosmetics due to its high antioxidant properties. Gabriela, Emma and Tomas have donated one beehive to the school garden and have set up training for the maintenance of the project.



Emma, with Gabriela's grandfather and Gabriel at Agrosavia, Palmira. Emma, Tomas and Gabriel installing their Melipona bee hive, and the bee hive in situ.

5. Environmental sustainability & awareness - problem solving and teaching

A fully organic, agroforestry shade plot has been established with over 250 coffee trees, intercropped with Guamo, *Inga edulis*, Mata raton, *Gliricidia sepium*, and herbaceous plantains and bananas, *Musa musaceae*. Other plants that have been planted include: yuca, *Manihot esculenta*, pineapple, *Ananas comosus*, tomato, *Solanum lycopersicum*, papaya, *Carica papaya*, malanga, *Colocasia esculenta*, and beans, *Phaseolus vulgaris*.

Additionally, Nacadero, *Trichanthera gigantea*, has been planted from cuttings, alongside the stream's edge, to protect the riverbank, to absorb nutrients that pass through the slope through gravity and nutrient flow, and to provide a ready source of nitrogen rich organic material for the compost pile. These points were presented to the general public by agriculture science students (section 4.)

A compost structure was constructed in the second year of the garden and has been used to compost teachers organic waste, organic waste from the school canteen and organic residues from the garden.



Alejandra Guasto and Juan Jose Gonzalez next to Nacadero trees that protect our riverbank, and Javier "Tuti" Covarrubius with Mariana Zornoso in the newly constructed Compost Cage.



Planting Mata Raton trees in between coffee plants and plantains to produce a multi-strata agroforestry plot. The compost cage being used to decompose Nacadero leaves - providing vital nitrogen to the compost - and the composting of organic waste from our school.

Testimonials

Families, parents

Familia Sinisterra - Parents and students

*The Bolivar Garden is a testimony to the school, representing its best qualities through honest hard work that grows and advances throughout the years. Each coffee bean and seed is planted and watched over with professionals and learning minds, both of these contributing to the diversity and the sustainability this school holds with the garden as its fundament. This process is not only to provide and to give assistance to the environment, but to teach and shape young minds in such a way that allow these perceptions to grow on a global level. **This garden is a gift, but a gift that was meticulously kept and observed as if it was part of the Bolivar family and community.***

Thanks

Luis, Cristina, Luisa and Mariana Sinisterra



Luis, Cristina and BGS friends learning how to transplant chapolas

Tatiana Nieto - Bolivar Parent of Max and Daniel Tanner

*The opportunity to get your hands in the ground and be together around planting and growing edible foods is so enriching. It is therapeutic, fulfilling and relaxing! It is also an opportunity to learn to love nature and connect with likeminded people . **I highly recommend the Bolivar Gardening experience, it makes you feel more connected to the planet , to your community and to yourself!***

Luisa Fernanda Escobar - parent of pre-primary and primary students

*Como padres de familia de niños de Preprimaria y Primaria **consideramos que el Bolívar Garden es un proyecto de vital importancia en la educación de nuestros hijos.** Damos gracias al Colegio Bolívar y al Profesor Wojtek por permitir este espacio de aprendizaje tan enriquecedor para la Comunidad Bolívar.*

El Bolívar Garden es un proyecto que ayuda a los alumnos a tener conocimientos de agricultura y cuidado del medio ambiente, unas disciplinas a veces olvidadas por muchos pero tan importantes en una sociedad donde cada vez cobra más interés la seguridad alimentaria y la conservación de nuestros recursos naturales.

El Bolívar Garden fomenta todos los valores que se vivencian en el Colegio: Respeto, Integridad, Excelencia personal, Curiosidad, Autonomía y Responsabilidad, Sentido de Comunidad Bolívar y Compromiso Social, lo que hace que el Colegio marque la diferencia.

Anthony Bradbury - Parent of a primary student

My first contact with the garden was after a 5k walk event at school. We went, with our 6-year-old daughter and a friend, for a few minutes, to plant one tree. We ended up staying there for a couple of hours. The girls planted I-don't-know-how-many trees: digging the soil, adding water, and getting extremely mucky with great enthusiasm.



Anthony's daughter, Hannah, and a friend at the 5K race.

*For children, many of whom live in apartments, this is a magnificent opportunity to literally get their hands dirty. **It puts a completely different perspective on the world to discover that plants are living beings, to smell and feel nature, not just look at it on videos, to find out that we can interact with the world in a positive, creative, and mutually beneficial way.***

*Besides the obvious educational aspect with regards to the biological science of the garden, there is also the social reward of physically working together, the personal satisfaction that comes from feeling that you have helped something to grow and even providing food for the school community. **We were inspired to start our own herb garden on the balcony and are now even making compost.***

The garden helps to take the children (and, at times, their parents) out of their routines, out of their (un-)tidy boxes, out of their cocoons and put them back in touch with reality, with their feet planted in the newly-turned ground.

*Regards
Anthony Bradbury*

Current students

Gabriela de Oliveira - 12th grade student, President of the Don Simón Coffee Club. Going on towards U. Penn - Huntsman Scholar.

*Of all the times I pictured myself walking to school as a senior for the first time, I never imagined it would be after two years of enclosure and that I would provoke countless confused looks. I guess I should have seen it coming considering I was wearing rubber boots, worn out clothes, a hat, gloves, a shovel in one hand and a machete in the other. Since that day **the garden has become one of the places I most value**. It started like an escape, a place where the world went silent and for one hour I could focus on my work and reconnect with the earth. Whether it was painting, getting my hands dirty, picking coffee, digging holes, building broka traps, or planting seedlings **I always feel recharged after working on the garden**. More than a class it became an experience like no other, where we learned by doing, where we literally saw the fruit of our effort, where we were challenged both academically and physically, where we were taken out of our comfort zone.*

*The garden has also been a source of support since it has helped me achieve one of the principal goals of my bee focused enterprise by giving me the opportunity to place native stingless beehives to spread awareness about their importance to the community. Moreover, it has been the inspiration for the foundation of the coffee club, a student led enterprise that is dedicated to producing and commercialising high quality coffee in the very grounds of our school. Furthermore, it's a club of students that share a passion for coffee, knowledge, and our school. Through the club we have learned about coffee production, finance, marketing strategies, and sales to name a few. We have been extremely successful selling our coffee in the Bolivar Farmer's Market. **We have made enough money to give back to the garden by funding new projects like the green house**, which is also a student initiative.*



Gabriela de Oliveira, the President, Esteban Villegas, the Treasurer and Tomas Jaramillo (see below), the Vice President of the Don Simón Coffee Club Company, selling coffee at the Bolivar Farmer's market in .

*Ultimately the garden isn't simply a garden. It's the product of the work of five generations of students; one extremely passionate, dedicated, loving and even crazy teacher; and the support of the school community. It's a representation of our values; it's a safe space to reconnect with nature; it's where you can turn ideas and dreams into reality. **It's much more than "just a Garden"**.*

Tomás Sanabria - 9th grade student. BGS volunteer and member of the Don Simon Coffee Club

*I was introduced to the Bolivar Garden a few months ago and although throughout middle school I had heard about the project, I had never personally attended. With things opening again after the pandemic, I was finally able to go and see what was going on, and now I am more than happy to be part of this wonderful program. The garden is a place that truly comes to life as soon as you walk past it; you can sense the commitment, love, time, and effort that has gone into shaping it into what it is today. **It represents the best of our community and shows what we can achieve when we come together as one and work towards an individual goal.***



*Tomas Sanabria and Alejandro Mejia (see below) working together to make traps for coffee borer (*Hypothenemus hampei* - Broca) at the most recent BGS.*

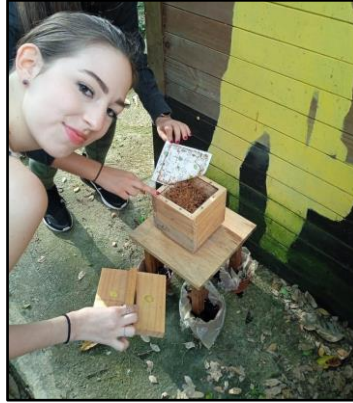
Alejandro Mejia - 9th grade student. BGS volunteer and member of the Don Simon Coffee Club

The Bolivar Garden gave me the opportunity to contribute in an impactful way to the environment around my community. This is how I first got introduced to the project. I started to become a part of this program because the Bolivar Garden truly made me be a part of an incredible initiative not only to grow our surroundings but also to cherish them. The sense of community that has been built is what I most value from my time on this project. Growing the Bolivar Garden potential as a place, where we can all come together and get in touch with nature by the work we're doing, is something I am looking forward to being part of.

Emma Aristizabal - 12th grade agriculture student - see 4.4 The Bee Project, above.

When I first joined agriculture, I was pretty wary of it. I am deathly afraid of anything bug related and loath getting dirty. My arm strength is subpar at best and am the kind of girl to run away from anything resembling physical labour. Yet somehow, I decided to take a leap of faith and my life was changed forever.

I have never in my life been challenged more physically or mentally in a class than this. But that is the beauty of it. It is unlike anything anyone that isn't in the class will ever experience. I have learned to play in the dirt and how to use a machete. Things I would have thought unthinkable at some point. I have learned how to germinate seeds and work the land. I have learned about the process of coffee growing and making, and about the importance of teamwork.



Emma with the first bee hive installed at the garden.

I have managed to love this class with all my heart. It is a way of escaping the world just for an hour and working with my peers to achieve one common task. I have been able to express my interests, such as beekeeping, and implement it in the school. I am able to get out of my comfort zone and test myself to see how far I can go.

Despite my struggles and my inability to properly hold a shovel (despite the Dr's many attempts to teach me) I have been able to achieve things I never thought possible. I have painted, hammered, dug and ploughed. I feel truly sad for my peers that miss out on such a wonderful opportunity and will recommend this class to anyone.

Tomas Jaramillo - 11th grade agriculture student. Vice President Don Simón Coffee Club

I've learnt not only about plant and crop management but many life skills that I'll carry on throughout the rest of my life. I've learnt about time management skills, how to work and treat different people and personalities; how to be a better person. I've learnt how to germinate plants, how to fertilize organically, what goes into a successful plantation, and how what is in the soil directly affects what is produced. These are all things that I've developed in an incredibly short time under this dynamic system that we run. The big difference between this course with the rest of electives is the freedom you have to learn and work.

This course has also given me the opportunity to take a leadership role in school as the vice president of the Don Simon Coffee Club, preparing me to possibly manage my own business in the future and know how to inspire people to do their jobs in order to be as efficient as possible. The leadership role I've commanded has been one that has greatly shaped who I am as I have dedicated much time and effort into making sure that this is a success. The club is something that I plan on continuing to work on in 12th grade, to leave a solid base for the future generations of students that will be managing Don Simón.



Tomas Jaramillo depulping coffee with students from the Agricultural Science class.

The experiences I take home from the garden are always pleasant ones, in which the work and difference I see every day is noticeable after I leave.

Antonia Zuluaga - 12th grade agricultural student - Going to Univ. Arizona.

This year's Agricultural Science class has given me greater sensibility about natural life. In the field I have been subject to the various processes different plant species go through throughout experiential learning. Dr. Waliszewski has specifically designed this class to learn by doing, by getting our hands in the dirt, picking out the coffee beans that are ready to be collected, digging around the compost bin, etc. I have had the chance to explore the complexity involved in bringing food to our table, by being subject to the many steps it involves.

The flexibility our teacher has given us, whether to carry out tasks in the garden or time to complete our monographs, has granted me a sense of discipline, integrity, and autonomy skills that are very valuable as a student (especially in college).

*This course has shown me not only the beauty of bringing crops into life, but the intensity and passion farmers and agriculturists work with to sustain humanity. **I can testify that it is a privilege to participate in the development of the Bolivar Garden and giving our community a project to be proud of.***

Esteban Velasquez - 12th grade Agricultural science student - Going to University of Calgary.

*When I was little, I would help my grandmother garden in the mornings. Everyday I would wake up excited to meet her outside in the garden. We would care for orchids and other flowering plants; they are her favourites. To this day I help her and take care of my own. Those wonderful memories we created gave me the passion for nature, especially plants. Here in the garden is where I can connect with those memories again. I've been bringing plants that I planted home with my grandmother, and it's lovely to see them flourish here. I love planting, watering and being with plants. I can work, laugh and be with my friends. The garden is simply a great place to be. **It's just a magical place where we can escape the chaos of modern life and be calm with nature.** Being surrounded by coffee, plantain, mango and guava trees inspires a deep feeling of belonging since they are representatives of Colombian agriculture.*



Esteban in the nearly finished greenhouse!

Just a few steps away from my classroom, I can travel through what feels like a coffee farm in the middle of El Quindio. I'm very proud of what we have accomplished, in the land we were provided, with the people who we care for. I'm eternally grateful towards Dr. Waliszewski and the school for providing a place where I can relive memories and create new ones. I am sure that if you spend a few days down here you'll create memories of your own.

Alejandro Forero - 12th grade agriculture student

I chose this course because I wanted a small break from my responsibilities inside of school. A 12th grader needs to worry about many things and make multiple decisions that will affect his entire life; therefore, I thought a class like agricultural science -- where I do physical work but give my brain a rest -- would be a clever idea for me to take on in my final year. The course has proven to be exactly what I expected, throughout the year I have learned a lot about growing crops, building different structures from reused materials.



Alejandro selecting coffee beans for germination.

I feel that all the jobs I've done in the year, from the most complicated to the ones that are easier, have done something to improve the garden, it is the same sense of pride you get from helping out in a group project, where in the end everyone will be benefited by your work.

*This course has given me a lot of experiences that I will remember after graduation: Going to the garden has been a project that every student in my class has been involved in and **it makes me proud to be one of the people that have been working hard on this class to make the garden better every day.** Congrats on the garden Doctor W, I hope this elective can continue on after the class of 2022 graduates and every change in the garden can be implemented in the near future.*

Alejandra Camacho - 11th grade agricultural science student

*I decided to take this course because I wanted to learn how to plant, how to use the different devices that work best on planting. I can assure that this class not only has taught me that, but it has taken me out of my comfort zone and put me in a position where I have to ask for help when I don't understand; **this has allowed me to build strong friendships with people in different years, and learn about many others.***



Alejandra potting chapolas (coffee seedlings) with Tomas Jaramillo, under the watchful eye of Don Hugo

*This class is extremely challenging, but it is worth it because it leaves you with knowledge about the environment, the soil, and many other things: I even learned how to organise a shed! **I can call this course a privilege since it prepares us for the future,** for example, with the monograph I can have a view on my senior project, and it teaches me the resources that I will need for it.*

This is a very active class where you must participate in order to do well. Not only this, but the members of this class are phenomenal people, as well as Dr. Waliszewski, he has the patience to teach us all of this, which is something admirable and not easy to do.

Alumni

Juan David Aristizabal - Agric student 2016-2017: Class of 2017. Excellence award for Agricultural science 2017. Recent graduate from Loras College, IO.

I am Juan David Aristizabal, a recent graduate from Loras College 21', and former alumni of Colegio Bolivar class of 2017. During my time at Colegio Bolivar, I had the chance to experience the Agricultural Science Class which allowed me to grow in ways that allowed me to develop my hidden potential. As a student, this class allowed me to further develop my passion for nature, biology, and science. We covered a broad variety of topics allowing students to help with passion and excitement based on their personal interest. Nevertheless, the aspect that impacted me the most is having the opportunity to work on a topic that truly inspired me. This enhanced my learning abilities to a level that I never thought I was capable of. All due to the friendly structure and environment of the course, permitting me to develop the best version of myself and excellent academic work. I'll always be thankful for having the opportunity to take this course that gives so much to its community and its students.



Juan David cooking lamb burgers at the end of the first year BBQ, where students, teachers and all the gardening staff came together to share a well earned burger!

Pablo Alhach - Agric student 2016-17. Class of 2018. Music producer and student at Berklee College of Music, Boston.

I had the chance of being in one of the first agriculture classes at Colegio Bolivar. This class was a great chance of getting outside the classroom and learning about one of the most important subjects in Colombia, agriculture. Being in the class was not just about learning about agriculture itself but understanding how our region's main economic source works. I believe that making a part of the garden makes us students reflect on how so many people can make a living out of agriculture and how it is not given the importance it deserves, especially in a place like el Valle del Cauca.



Pablo Alhach setting up the germinating box for the first batch of the Don Simón coffee.

Antonio Bellini - Agric student 2017-18. Class of 2018. Northeastern University - Finance major.

*Agricultural science taught me that planting a garden is to believe in tomorrow. **The peace and joy of creating a garden was a way to escape myself from my daily routines and bring something beautiful and divine to my life.** Growing the first batch of coffee in the garden taught me that we had to have patience. As I watched every class day the plants and wished they could grow faster. I realized that we couldn't change life and that every seed would take its own course no matter how hard we tried to change it. Every harvest I found that we lost a series of plants but the plants that survived symbolized happiness and fulfilment.*



Antonio, hard at work in the garden.

Alejandra Guasto - Agric student 2018-2019 & 2019-2020. Excellence in agricultural science and distinction in senior project based on agricultural science.

The Bolivar Garden is an initiative that has brought together all members of the community. Implementing these types of programs in schools allows them to open their doors to a new way of learning, in which families and students enjoy an enriching environment that requires involvement and leadership to thrive. With such initiatives that teach sustainable outlooks through the use of conscious gardening, Bolivar Garden is able to reach all members of the community, bringing a new perspective on a deeper learning environment.

As a Bolivar alumni, who had the privilege of participating in the Bolivar Garden for two consecutive years, it was an honour to be part of a project that was able to connect not only the members of the Bolivar community but also those outside of it.



Alejandra Guasto preparing and planting sweet potato seedlings in the terrace (2018)

Jose Gomez. Agricultural Science Student 2018-2019 & 2019-2020. School Personero. Purdue University.

While I was still in Bolivar, I had the great opportunity to be a member of the Agricultural Science class and to be constantly involved in the growth of the Bolivar Garden. When I joined the class, we quickly developed a love for working in the garden and helping with different projects. During my two years in the class, we grew the first coffee crop and learned about the importance of taking care of our crops. The process of having a successful crop is very long and goes from taking proper care of the land to constantly watering the plants. We learned about the importance of different factors that also affect the growth of our crops, such as sunlight and shade, and learned how to protect crops from possible threats, such as the Broca parasite. However, there was much more to what we learned in the garden than just taking care of coffee crops. In addition to the other plants we harvested (for example corn and sweet potato) everything we did in the garden was organic and sustainable. We developed a small sustainable system with organic waste that facilitated the rapid growth of our crops.



Juan Jose with Don Hugo learning how to plant plantain.

Of course, the garden has a very important academic component that makes Colegio Bolivar's agricultural science class truly a role model for many projects. I remember with joy that there were many moments when we had a lot of fun, we even had barbecues and took a dip in the river on sunny days.

*We can really see a project that teaches about the importance of sustainable development and care for the environment, two concepts that are very important for the future of our planet. The Bolivar Garden is a project that taught me a lot and made me appreciate many different ways of learning. **Not everything is learned in a classroom, sometimes you have to go out into the field and get to work on what you want to achieve, and that is one of the great lessons I learned in Bolivar in the agricultural sciences class.***

Javier Covarrubias - Agricultural Science Student 2018-2019 & 2019-2020.

I remember the first time I went down to Bolivar Garden, I was in 11th grade, starting in agriculture class. When we got there I only saw a couple coffee plants, some citronela, and the shed of course, that's where we kept all our tools. We then started working on the famous "monograph" (ask anyone in the class, they'll know). And I can't stress enough how useful it was for me. To make it simple, the monograph consisted of choosing a plant species, and making formal research on it, throughout the whole school year. Apart from becoming an expert in bananas, Dr.W really taught us how to do formal research and citation, something we hadn't practiced as much in other classes. We would spend one

class each week at the lab working on it, the rest of it was garden work. It's amazing to me how such a bare bones project became a beautiful garden in a matter of two years. We would work on the garden every week, digging holes, bringing in new plants, and cleaning it up. And seeing all the progress coming from something we worked so hard on was pretty gratifying. I don't want to make it seem like we were tortured working digging holes every day, because we always had a great time. We would occasionally do BBQ's when we had last period agriculture class, and the doc made a great effort so we enjoyed the class, and we did. We would also do field trips, to tea companies like Agricola Himalaya, and many others, to consume knowledge, and bring it back to the garden. But apart from all the enjoyment, we really worked hard on making our projects successful. Don Simon coffee was one of the best things for us. Because it was a long, slow process, but it sure paid off. Seeing the garden start with only a couple plants, and two years later seeing them fully grown and producing enough coffee to make a brand out of it, has been one of the things I'm most proud of, in my high school years. Now that I've graduated, I never regret my last two school years in agriculture class, I would do it all again. And I am really proud that the project we helped begin, is still going, and stronger than ever.



Javier Covarrubias working in the Bolivar Garden



Left to Right: Alejandra Guasto, Wojtek Waliszewski, J.J. Gomez and Javier Covarrubias enjoying some well deserved Sushi after presenting at the Siete Rios Event (Section 3.3, page 15).

Teachers and ex-teachers

Ryan Evansen - 5th Grade science teacher and parent.

For me the Bolivar Garden will always be a very special place. My first contact with the garden came at a Teaching and Learning Forum, where the Bolivar Garden project was highlighted in one of the workshops. I had been in the process of starting a garden at the school where I was working at the time, and I was immediately impressed by how involved the entire school community was with the project. I saw that this was not just the work of one teacher's passion, but that students were writing species descriptions there, families were participating in weekend events, and it was bringing people together.



Ryan Evansen with Wojtek Waliszewski after a hard BGS session

*Even though I was not part of Colegio Bolivar, my family was invited to come and experience a Garden Saturday, and we fell in love with the school. **Through our time spent building friendships in the garden we came to be offered teaching positions within the Science Department, and now we have become a Bolivar family!** My sincere hope is that the Bolivar Garden can continue to grow and thrive and bring more families together as it did for mine.*

Alison Isaac - primary and middle school teacher (2015 - 2020)

My father died unexpectedly in 2019. Dad had a green thumb and loved nature; he had studied agriculture before becoming an academic. So, when Wojciech suggested I check out the garden one Saturday, I took him up on his offer because it felt like a nod to Dad.

I am a self-professed city lover, but that day in the Bolivar Garden is one of my fondest memories of Cali. Wojciech's enthusiasm for the project and overall passion piqued my curiosity. Wojciech showed me various crops, explained how the compost worked, and shared his hopes for the future of the garden. I even got to plant a few trees — one, in memory of my dad. By the time I went home, I was sweaty, and dirty, and my appreciation for the wonder of nature had magnified significantly.



Alison's sweaty hand and the cacao tree she planted for her father.

*I realized I knew little about how food got to my table. Over the years, I've maintained an interest in growing food and understanding the impact of our food systems. The education the Bolivar Garden provides is a practical one, with benefits that extend beyond the students. The work that Wojciech is doing with **the garden is transformational and integral to the overall health of the Bolivar community.***

Nathan Crowe - English High School Teacher (2013-2017)

Nature passively nestles into the learning of Colegio Bolivar. The striking colours, the native birds, occasional reptile and three walled classrooms that allow a picturesque view. This may satiate the appetite for nature for some, to contrast the city of Cali. What amazed me daily didn't compare to the vision that Wojtek had for what our campus could actively be.

*Taking the picturesque and creating a space of growth. Wojtek made it sound simple. I worked with Wojtek that first year of the garden, listening to his passion of what it could be. **A physical space, a social connection, a research catalyst - the vision of the garden went beyond a place to work, but a place to build a community focused on a shared practice.** Pride was the dirt on a student's face when they came to class. Research on agriculture inspired small businesses or for others, a reflection on family histories. Students, then families and the Bolivar community began to connect through the garden.*

*Seeds and ideas are peculiar cousins, they need nourishment and care, the proper environment. My English class would speak of how "one must cultivate their own garden", Wojtek's class would go beyond *Candide*, talking and thinking about how they can use a garden not as a metaphor, but as a seed for the community to grow from.*

Administrators

Robin Perskie - Head of Primary Section

*The Bolivar Garden represents a living classroom for the Primary students. They have gone to the garden to collect and compare soil types, to plant, and to learn from older students how to care for the Earth and produce well-being for the community. **The Bolivar Garden materializes the concept of sustainability and stewardship we work to develop in our classes.** An experience in the garden creates more meaning, not to mention lasting memories, than hours spent at a desk “talking about it”. **Our students, parents, and teachers feel a sense of pride that we can all point to the garden as part of the fabric of our school community.***

Jonathan Roberts - Head of Middle School Section

*As the middle school principal at Colegio Bolívar, I have been able to witness the expansion of the Bolivar Garden physically, but also how the ideas of sustainability that have spread and taken a form that students, parents, and teachers can touch and explore. Teachers have been able to bring their students to the garden to learn and contribute. Parents and children have been able to plant and care for the garden together on the weekends. I myself, two years ago, had the opportunity to plant a coffee plant and as I pass I am able to see its evolution. I also see the future as more mature plants are already providing coffee beans that are then roasted and sold at our Farmer’s Market. **There are moments in education where the physical mimics the metaphorical and the Bolívar Garden project shows the power of community when willing to work together with a common goal in mind, that it can result in growth.***

Timothy Shirk - Head of High School Section

*As the new high school principal at Colegio Bolivar, I was excited to hear about the Bolivar Garden project and its integration into both student-led clubs and our agriculture elective course. Deeper learning is a strong focus for us, and the Bolivar Garden allows students to take what they learn in the classroom and apply it in the context of a garden, with much of the learning coming through hands-on experience. Our students in the Simon Bolivar Coffee club have engaged in the entire process of bean to cup, learning the cultivation, harvest, bean selection, roasting, coffee preparation, packaging, marketing, sales, and financial management. We also hold regular farmer markets where local artisans sell goods, along with our agricultural clubs. There they sell coffee whole bean, ground, and freshly brewed coffee which is delicious. **Being that Colegio Bolivar is nestled in a coffee growing region of Colombia, this project has also connected our students with a greater sense of both national and school pride. We love our garden and are super proud of our students who care for it.***

David Fayad Ed.D. - Director of Learning

The Agricultural Science Project has created many opportunities for cross-curricular activities at Colegio Bolivar. As we foster Deeper Learning in our school, students of all ages have benefited from the transfer of concepts, skills, and dispositions from the classroom to the reality of the Bolivar Garden. Regular Science classes, special courses like Business, Finance and Digital Marketing, as well as programs like Global Issues Network, have taken advantage of this space to make important connections cognitively and in terms of relationships, both inside our educational community and within outreach efforts.

Other Bolivar Staff

Hugo Guerrero - School gardener and guardian of the Bolivar Garden

Creo que es importante que el jardín continúe hacia el futuro. Los estudiantes son los que están trabajando aquí conmigo. Disfruto poder enseñarles lo que sé y hacer que quieran aprender más. Es un trabajo duro pero veo que están trabajando con el maestro y están disfrutando el trabajo. Me siento orgulloso de que la escuela haya producido su propio café. Todavía tenemos que trabajar en cultivar más y producir más alimentos para la cafetería de los trabajadores.



Don Hugo teaching Alejandra Camacho and Maria Antonia Cardona how to transplant coffee seedlings.

Giselle de La Torre - School Communications Officer

For me the Bolivar Garden is a peaceful place to connect with nature. To return to earth what we receive each day from it. At the Bolivar Garden it has been evidenced the synergy between Dr. Waliszewski, the students, the Bolivar personnel, alumni, parents, other members of our community, as well as external experts, working together with the ecosystem to enhance Colegio Bolivar's environment and contributing for the well-being of all the people participating, including the wider community. It ensures the sustainability of our species since students and all the people involved learn how to get a well-functioning ecosystem to obtain organic and healthy food to eat and the air we breathe. In other words, the Bolivar Garden is a place for gathering, knowledge, innovation, and renewal to preserve life.

Carolina Chavez - Alumni Office & Farmer's Market Coordinator; Alumni & Parent

*I've been a direct witness of this beautiful and educational project: The Bolivar Garden. It's with pride that we talk to our Community about the Bolivar Garden because it's a hands-on class! To witness the students in action has been an enriching part of this process and not only that, to apply what they've learned in class, outside school is an example of Deeper Learning. **The students who take advantage of this class have shown the ability to become leaders after they graduate! And that's priceless for the Community.** Also, the commitment of these students is witnessed during school events, such as our 5K Race and Farmers Market. During these events, the students sell coffee and talk about the Bolivar Garden to the Community, reassuring the importance of having these types of classes been offered at school.*

Video of the project in action

<https://vimeo.com/689447994>

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Supporting statement of the sustainability of the Bolivar Garden / Agricultural Science project

The Bolivar Garden has been supported by the school since its inception in 2015-16. Essential infrastructure was put in place in the summer of 2016, prior to the start of the first Agricultural Science elective class. The Bolivar Garden grew from the agriculture science class and has now become an integral part of the school. With the integration of the Next Generation Science Standards (NGSS) in all sections of the school, the Bolivar Garden is an open resource for all teachers that can take their charges to the garden and make use of the nature and cultivation they see there. With this integration it has become sustainable.

It has also brought the community closer together. Bolivar Garden Saturday's have become a regular monthly event allowing parents, alumni, and other members of our school community - teachers, administrators, school workers - to come together on a communal project. The Bolivar Garden has supported the Bolivar Farmer's Market, inspiring students to set up the Don Simón Coffee Club.

Furthermore, the wider community that Colegio Bolivar supports have benefited from outreach projects: Cotolengo Old People's home now produces vital staple foods through the Sweet Potato Project, and Escuela Publica Trinidad ensures its students have an opportunity to experience the natural world in a safe and stimulating environment.

The project moves from strength to strength, with new student-led projects emanating from new challenges: the construction of the greenhouse is an example of how the Bolivar Garden gave students in 8th grade the impetus to develop a sustainability project that would benefit the garden. The Bee-keeping project is another example where long-term goals become a reality for our students. It took three students in grade 10 two years to develop a project following information given from, and interaction with the Bolivar Garden. Their La Colmena business, a social and environmentally focussed enterprise provides beehives with stingless bees, giving our students valuable experiences beyond what a traditional classroom could provide.

The Bolivar Garden has continued to evolve from an open space for an elective class that aimed to break down student paradigms that learning was focussed on a classroom. It let students learn to value other forms of knowledge and expertise, learning, in a vocational manner, from our teacher gardeners whom they now see in a different light. It is space where the community can come together to work on a mutual and communal project, producing food for the workers' cafeteria, whilst encouraging our community to respect and value the beautiful natural environment we have at the school.

Joseph Nagy Ed.D.

Director Colegio Bolivar