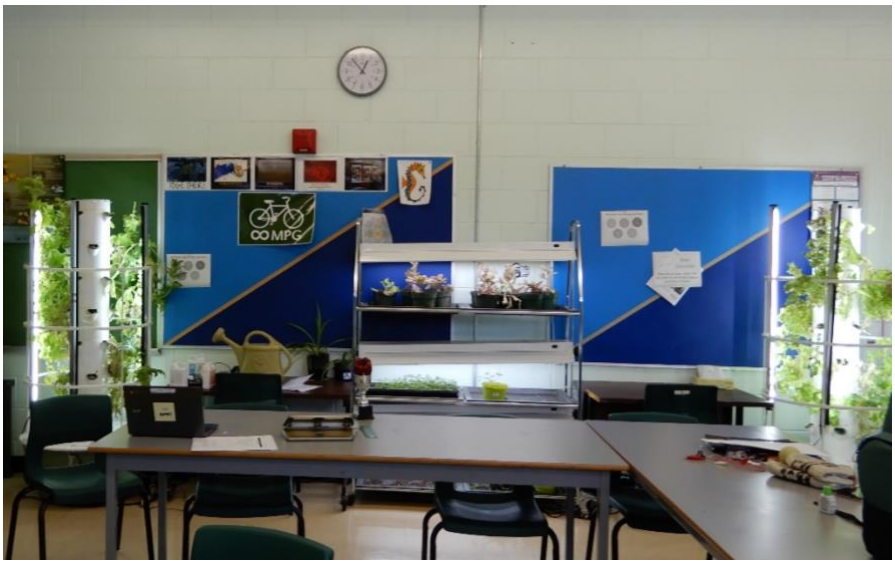
All outdoor photographs provided by Laura Cardiff



"This classroom makes me happy," says Laura Cardiff, when asked what students say in reaction to her classroom at the Norman Johnston Secondary Alternate Program (NJSAP). This is where she teaches Math, Science, Health, Physical Education, and Green Industries. If you saw her classroom, you'd be happy too. Though a thick blanket of snow surrounding the school right now, Ms. Cardiff's classroom is green with edible and ornamental plants, and warm with sunlight and grow lights. From the window, you can see part of the 360 square foot organic garden, which contains several wheelchair-accessible raised beds. Adjacent to it are the wooden seats of the outdoor classroom, and the greenhouse that the students assembled in the spring.

The NJSAP horticulture program started in 2014, when the school received a $50,000 grant from the Ontario Ministry of Health. With this grant, NJSAP was able to create a foods room, and purchase three hydroponic towers, as well as the materials that the students used to construct the first garden beds. It also funded events such as workshops by guest chefs and dietitians, and healthy eating camps. The program has since grown, both in infrastructure and instruction. Currently two gardening courses are offered—one in the spring and one in the fall. Students in a third course, on food production prepare meals using the produce that is grown on site.

The initial focus of this project was to encourage healthy eating but it's done so much more than that.

The Norman Johnston Secondary Alternate Program is for students who experienced difficulties within the traditional school setting, due to anxiety or depression, substance abuse problems, or because of scheduling difficulties—some have to work to support themselves and their siblings. At NJSAP, they spend four hours per day in the same classroom with the same teacher, participating in courses that run for approximately six weeks. Not all students can attend every day, and most do not start the same course on the same day. Within a classroom of two dozen students, teachers may manage ten different courses.

With the gardening program, the entire class works together. The students decide, as a group, which plants they'd like to grow within their square foot gardens, then calculate how many seedlings to start inside—or how many seeds to direct sow—to produce the desired harvest. They draw scale diagrams of the gardens, and use companion gardening principles to decide where all of the different types of plants belong within the grid.

Students learn more than simply gardening techniques; they learn to grow sustainably. They manage the four worm farms on site, and use worm casings to start seedlings. Water that filters through the hydroponic towers is fed back to the plants. Compost tea is made from a garden tower that houses red wiggler worms in its center tube. Students harvest lettuce from the hydroponic towers on a weekly basis—and occasionally snack on it in class! They use sophisticated techniques to take cuttings from houseplants and sell the transplants to fund the gardens. While they're enjoying tending—and later feasting on—plants, they're also putting math, science and planning skills into practice, and they're gaining confidence. Growing their own food has encouraged them to try new foods—such as kale and kohlrabi—and to invest in healthier diets. The majority of the students who were involved in the spring 2017 horticulture program started gardens in their own homes.

Each morning, a list of tasks is posted, which the students discuss and complete. Ms. Cardiff assesses her students' progress by reviewing the journals they prepare for her. They write about their gardening experiences, take photos, and record video journals. When I arrived to tour the grounds, a student proudly showed me photos of the massive dahlia blooms she had grown from seed.

One potential drawback of a school gardening program is that most of the growing and harvesting happens during the summer, when school is out. NJSAP has both technology and community partners to help with that. The school installed an irrigation system, which can be controlled by a smart phone. Local students and volunteers harvest and freeze or blanch produce, so that students in the food production course can use it to prepare meals once school resumes in the fall. Seniors from Blackburn Lodge Senior's residence and children from a nearby daycare also pitch in to water the plants—bringing several generations together to work joyfully towards a common goal.

When asked if anything surprised her about the program, Ms. Cardiff said she didn't realize at the time how much the course would mean to her students. Students that have participated in the gardening courses—and those who haven't—frequently ask her gardening questions, or offer to help. Graduates have been inspired to consider careers in food production or horticulture. A student whose anxiety made it difficult to attend school more than once a week was inspired to attend every day and stay after school to help with the gardens. The program's impact has extended far beyond the original mandate to improve student nutrition. "The students love it," Ms. Cardiff says. It's definitely a happy place.