Regenerative agriculture fights climate change

Teaching Guide

Regenerative School Bus

EDUCATIONAL GARDENS

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6-9 yrs
SLOW FOOD

Slow Food is a way of living and a way of eating. It is a global, grassroots movement with millions of supporters in 164 countries that links the pleasure of food with a commitment to community and the environment.

**Slow Food seeks to steward a dramatic and lasting change in the food system.**

At Slow Food Barbados we reconnect locals with the people, traditions, plants, animals, fertile soils and waters that produce our food while protecting the rich heritage, traditions and culture that food makes possible. Furthermore, we want to reinvigorate the youth's interest in food and bestow on them the knowledge of where it comes from.

EDUCATIONAL GARDENS

Regenerative School Bus

Slow Food identified educational gardens and working with youth as a key to developing Good, Clean and Fair food systems. Slow Food's physical Educational Gardens at schools and institutions island wide instill a love of Good Clean and Fair in students, while integrating garden activities into the school curriculum and building school community. The Regenerative School Bus is a way of taking students on a virtual field trip, bringing gardens and farms to so many more students than our existing gardens can reach.

Exposing students to possibilities and inspiring youth, with a hope of instilling a life long love for regenerative agriculture, health and wellbeing.

PROJECT BACKGROUND

With rising rates of non-communicable diseases (NCDs) like diabetes, hypertension, heart disease and stroke; and with the increasing rates of childhood obesity in the Caribbean, the “Improving Household Nutrition Security and Public Health in CARICOM” or Food and Nutrition (“FaN”) project focuses on improving dietary diversity to help in lowering the burden of NCDs in the region. The project is generously funded by the International Development Research Centre, Government of Canada.

In collaboration with CARICOM Secretariat and other partners, the FaN project created the Health and Family Life Education (HFLE) curriculum at the Early Childhood Development level and revised the curriculum at the Primary Education Level to include more information on unhealthy diet and physical inactivity as risks for NCDs.

PROJECT RESOURCES

The FaN project partnered with CARICOM Secretariat to develop digital ‘edu-tainment’ materials to help deliver the revised HFLE curriculum in classrooms. These include a collaboration with Slow Food Barbados' educational consultants to deliver (3) three educational videos, filmed on farms in Jamaica, St. Kitts & Nevis, and St. Vincent & the Grenadines which focus on regenerative agriculture/farming, nutrition, and cooking. The videos are accompanied by worksheets, games, and challenges designed for students aged 6-9 years old and students aged 10-12 years old. Paired with a teaching guide, each video and the corresponding lesson has been designed for use in a fully virtual situation or an in-person hands-on setting in the classroom.
WHY REGENERATIVE AGRICULTURE?

One of the most pressing topics of our time, climate change. Also referred to as global warming, is an often under taught and misunderstood concept. A concept with the potential to significantly impact our lives and the lives of today's youth, if adequate education is provided covering the WHYs and HOWs.

Regenerative agriculture is a method of producing food, on a small or large scale, which does not deplete the health of the environment. By design, regenerative agriculture increases the health of the environment, biodiversity and humans with every harvest.

**Regenerative agriculture produces healthy soil, biodiverse ecosystems, abundant organic harvest, nutrient dense food and healthy people.**

Regenerative agriculture seeks to keep the soil structure intact (no till / no dig farming); keep the soil covered (cover crops or mulch), does not introduce chemicals (synthetic fertilisers, pesticides or herbicides), invites beneficial insects to create a biodiverse system.

By creating systems of regenerative agriculture we have the potential to: Draw down carbon through photosynthesis, and capture and store water in the soil structure, diverting run off to the oceans by infiltrating clean, chemical free water into the water table.

The United Nations Sustainable Development Goals suggest that major mindset shifts and action must be taken by the year 2030. Slow Food Barbados believes, that through education, a generation of regenerative youth will evolve, who will have far greater impact on this earth, than any adult will be able to make by the year 2030. Our health and the health of our planet depends upon the issues that we choose to educate the next generations on.

SLOW FOOD ETHOS

Slow Food envisions a world in which all people can access and enjoy food that is good for them, good for those who grow it and good for the planet.

Our approach is based on a concept of food that is defined by three interconnected principles: good, clean and fair.

- **GOOD:** quality, flavoursome and healthy, nutrient dense food
- **CLEAN:** production that does not harm the environment or humans
- **FAIR:** accessible prices for consumers and fair conditions and pay for producers
JAMAICA: FARMER JULIAN
Bees, interdependence of elements in the environment, and processed foods.
Farmer Julian: 
JULIAN SPENCE APIARIST IN JAMAICA:

HFLE Themes:
Self and Interpersonal Relationships
Managing the Environment
Appropriate Eating and Fitness

Topic A - Interdependence of elements in the environment.
Topic B - Processed and whole foods

Overarching Fact statement:
"Many people don't like bees, but everyone likes to eat!"

Vocabulary:
Bee, Pollen/Pollinate, Nectar, Honey, Whole Food, Processed, Ecosystem,

LESSON PROGRESSION:
*All student pages are presented at varied engagement and skill levels - Students should only have 1 sheet or prompt given for each lesson segment for optimal engagement. Teachers should select the sheets or prompts given based on the skill level of their own class.

Lesson one: Video content
- Prep students and/or gauge prior knowledge by having an open discussion of the vocabulary words prior to watching the video.

- Each lesson series should minimally involve viewing the video content and utilizing the corresponding pages for parts 1-4 below.

1: "While you watch" 1 sheet or prompt can be used while viewing the video. Feel free to pause the video, re-watch it twice, or utilize the worksheets only after the video has been fully watched.

2: "Viewing Comprehension / Discussion Question" sheet.

3: "Take it to the next level" sheets (can be executed individually or in small groups and presented orally back to the class)

4: "Extension Discussion Question" sheet can be used supplementary - if student ability allows and engagement is high
- as a group assignment or homework assignment
Lesson two: Group Work

1: Begin each lesson by re-watching the video to deepen understanding.
   - Other options: Hold a group discussion about the video with a topic such as: *The favorite thing you remember, retelling the storyline, recalling key vocabulary words, or recapping by utilizing the "viewing comprehension/discussion questions".*

2: If the "Extension Discussion Question" sheets have not been used prior this is a good place to start the lesson with an oral discussion in a large group.

3. Use the "Reading Comprehension: A day in the life of bees" to curate knowledge about bees and their roles. Either read the passage orally and ask questions to the whole group or have students complete one of the passages provided and answer the questions individually or in pairs.

3: The "Brainstorm" session allows students to work in small or large groups to discuss orally, draw pictures or make a written list. Provide students with an age-appropriate version of the brainstorm sheet.

   *Differentiated learning ideas can include research utilizing available technology, library resources, or older students/teachers.*

   *Make this lesson more tactile by including cut and glue from magazines and newspapers to create a "mood board" brainstorm.*

   *Take this lesson outside by drawing the brainstorm hexagons on an outdoor hard surface with chalk and having groups rotate around to add index cards to each topic with their ideas on it.*

4: Invite smaller groups or individuals to share with the larger class.
Lesson three: Gamification

The student resource contains printable .pdf files with 14 pages of dominoes + 2 Bee Lifecycle Information cards.
- Ideally, print these on cardstock in color, laminate and cut out.
  Alternately, have students help reproduce these: use recycled cardboard and create oversized dominoes. Use pallet wood to build "lawn dominoes".

Game A: "Investigation - Bee lifecycle"

Use the 2 printed "Investigation - Bee Lifecycle" cards and read through the information provided at least twice with the whole class.

1. Start by having the students complete one or all of the accompanying Lifecycle worksheets. (matching, cut and paste, drawing)

   Instead of printing all of the worksheets - recreate them large on a hard surface outside, the chalkboard or whiteboard, or have students make posters.

2. have students devise a hand signal (or alternately research the sign language sign) for each lifecycle stage. (Suggested: Fist for egg; first finger wiggling like a worm for larva; two hands cupped together creating a cocoon for pupa, crisscrossed hands and interlocked thumbs (like a butterfly sign) for adult bee).

3. Play "rock paper scissors" utilizing the 4 lifecycle terms. The more grown-up version in the bee lifecycle always supersedes (or wins). In pairs, students will motion up and down with their fists saying "egg, larva, pupa, adult" then on the 5th motion they will 'draw' their choice of stage. whichever child has the more grown-up bee wins and goes on to play with another child.

When playing baseball or rounders (or similar game) have students use the names of the lifecycle stages instead of first base, second base etc.
1. Choose the most appropriate size dominoes for your students (Small, large, XL) you will need printed (or recreated) versions of each of the sheets in that size range (i.e.: if you choose 'small' you will need to print 1 page of the "Bee dominoes#1 - Small" and 1 page of the "Bee dominoes #2 - Small"; if you choose to print the XL dominoes you will need to print 8 pages in all, 4 "Bee Dominoes #1" and 4 "Bee Dominoes #2".

2. Begin by using only the first set of dominoes#1 to teach the game. As students advance add in the #2 set of dominoes.

NB: The first set of dominoes contains 21 cards (or tiles). This is a typical set of 'double six' dominoes, except that it contains no blank tiles (a true set would contain 28 cards) the game can be played exactly the same way as any domino game usually played locally.

3. Three or four players share out the cards evenly without showing their opponents the cards (placing the left over card to one side face down if there are 4 players).

4. Students take turns, clockwise, and must match the ends of the dominoes to the same picture (encourage students to use the terms for the lifecycle stages). Play only goes in 2 directions and if a player doesn't have a match for an end of the domino trail they skip a turn. The first player to get rid of all their cards wins.

Extension: The game can evolve with different rules as the students get comfortable. For example: allowing play to travel in 4 directions; adding in the Bee Dominoes#2 set to the game; allowing 6-8 players in a single game.
Extension: Now evolve the game to allow mismatched tiles to touch. Allow students to put tiles with different pictures together as long as they can verbally rationalize why.

Examples: "larva can touch egg because it is next in the lifecycle"
"Queen can touch worker because workers feed queens"
"Pollen can touch workers because workers collect the pollen"
"Beekeeper can touch orange because he will eat the orange"
"Orange can touch flower because flowers produce fruit"

Note: Some images will be able to match with lots of options depending on how you rationalize it. Students should be encouraged to verbalize their reasoning each time they put down a card.

Example: Honey can touch queen, or worker, or drone, or beekeeper or pollen. But students will have a hard time getting rid of their spray cards. The spray could touch the beekeeper (but you will find that students quickly understand the problem with this through play and won't want to be a bad beekeeper). The spray will become a hard end on the end of the domino trail most of the time.

Extension: Students may be advanced enough to begin to strategize getting rid of their spray cards early in the game.

Extension: Challenge students to see if they can create a full loop with their dominoes (a square or rectangle which matches up perfectly all the way around (ie: everything is interconnected in the ecosystem)

Moral: environmental toxins have a big impact on insect + human health. Everything is connected, so this affects the food we eat too.
Game C: (Advocacy challenge)

1. Use the advocacy challenge chart which is most age-appropriate for your students. Print on cardstock or redraw on recycled cardboard. Use something rewarding as a check box: stickers, glue and paste, or use something recycled like bottle tops.

- have students either perform this as a small group, class or individually.

2. Re-read the information cards and the reading comprehension sheet on bees (or have these on hand for older students to research with). Refer back to the brainstorm pages for help too. Have students select what they think are the most important things that other people need to know about bees. Fill in the blanks on the chart with the facts or write a letter or create a poster showcasing these facts and create a list of the people who they will educate about bees importance. Once they have finished one task students can tick off each box using an age-appropriate method and establish what the 'reward' will be for completing the advocacy chart as an extra fun incentive that is both healthy and promotes environmental stewardship (eg: the class will be allowed extra outdoor playtime, the student will win a jar of honey etc.

Facts could follow a "what, where, why" or "who what where when why" structure. Or what do they do for us, what do we do for them, what can we do better?

For people to talk to, send the drawings or letters to, and have students think about impact. "If I tell my baby sister, what can she do about it? But if I tell my principal, or the lady next door who uses lots of sprays..." "Who is the most influential person we could tell?"

Get the whole school involved but make sure that no one educates the same person twice, determine the multiplier factor (if 20 students tell 5 people each)
Farmer Julian:  
JULIAN SPENCE APIARIST IN JAMAICA: 

Additional Resources / Research Assistance / Extension Resources 

Video (cartoon) explanation - first 1.30 mins.  
Blipi Wonders - Honey Bees - You Tube Video  
https://www.youtube.com/watch?v=IfaItDqFr-w 

Read-aloud video book:  
Mrs Ota’s Class  
“Give Bees a Chance” - YOUTUBE 

Activity: Build a bee house  
Sci Show Kids - You Tube 

Read-aloud video book:  
Save the Bees by Bethany Sthil - You Tube 

earth day .org Conservation Toolkit:  
https://www.earthday.org/bee-conservation-toolkit/ 

earth day .org Fact sheets:  
https://www.earthday.org/fact-sheet-bees/ 

Google Expeditions - Polination  
https://artsandculture.google.com/story/KAVRPBX8qiUKbQ
Information is like compost, It does no good unless you spread it around.
~ Eliot Coleman
Regenerative School Bus
Resources produced in collaboration with

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