sustainable Youth Challenge

PROGRAM OVERVIEW

Sustainability is an increasingly important concern in Canadian communities and around the world. Across the globe our ecosystems and the human systems that depend upon them have come under considerable stress as we strive to meet the needs of a growing population. To address this issue, United Nations Member States adopted 17 Sustainable Development Goals (SDGs) in 2015 and singled out education as one of the critical pillars for preparing present and future generations to combat inefficient natural resource use and socio-economic challenges that accompany them.

The primary goal of the Sustainable Youth Challenge is to develop key sustainability and career competencies in youth by infusing creative problem-solving and innovation within a team-oriented, problem-based learning program. In addition, participation in SYC empowers youth to make informed decisions and take responsible actions for environmental integrity, economic viability, and a just society for present and future generations.

Curriculum-linked lessons and resources for grades 9-12 will guide students through inquiries into key concepts of sustainable development, the role of agriculture as a uniting thread of the SDGs, and case studies illustrating innovative youth solutions to sustainability challenges. Students will then engage in collaborative problem-solving and design processes to innovate their own solutions to a sustainability challenge identified within their local food systems..

Why Address Agriculture?

Agriculture and food systems provide students with a universally relevant context for meaningful learning and skill development. We all need regular access to healthy foods in order to thrive in the world, and food systems and cultures play a critical role in all of our lives.

”All the goals are important if we are to achieve the final milestone of a truly sustainable world for mankind and the environment. But of course, the issues of **nutrition challenges** – also meant as the right to food and to zero hunger and **food loss and waste** – along with **sustainable agriculture** feature very widely within the 17 goals, though in different ways. We shouldn't forget, however, that all the other goals are inextricably linked to each other in a closely knit network that needs to be tackled with an all-round commitment by the various stakeholders.”
https://www.barillacfn.com/en/magazine/food-and-sustainability/sustainable-development-we-need-young-people/

Introduction: Connecting to Concepts

Students will participate in a brief visualization exercise to imagine their future selves… their 2030 selves, and the kind of world they would like to live in. Students will record their ideas with a sketch of their visualizations in their Sustainable Journals, then make connections to the SDGs as they are introduced in a brief video.

- **Toward 2030… and beyond!**

Ask students to close their eyes and imagine themselves in 2030. Guide their visualization with the following questions, pausing briefly between each one.

Close your eyes, relax, and take a journey to meet your future self!

- *You are going to imagine yourself in the not so distant future… the year 2030*
- *Imagine what you might look like. Age? Hair? Clothes? Size?)*
- *Where are you? Country? City? Room or outdoor environment?*
- *What are you doing? Work? Activity?*
- *What things do you see around you?*
- *What sounds and smells do you notice around you?*
- *How do you think you might be feeling?*
- *Now think about how you would end the phrase, "By 2030 I'd like to live in a world where…"*

When ready, students will create a small sketch/cartoon in their SSJs to represent their 2030 selves. Include speech or thought bubbles for students to identify the kind of world they want to live in by the year 2030. Invite students to share their sketches and thoughts. You may choose to make a class list of their hopes for 2030 to display.

- **We The People**

To conclude the activity view the brief Video: We the People for the Global Goals (2:58)
As a class share words and ideas noticed from the video and record in student journals.

What goals did you hear mentioned?
Were any of the goals mentioned in the video similar to students' hopes for the future?

Lesson 1: What is Sustainable Development?

Students will participate in Four Corners activity to initiate interest and assess prior knowledge on the topic of sustainable development. Students will view a brief video and complete a triple Venn diagram to record learning about the 3 dimensions of sustainability.

- **Four Corners**

Post 4 large sheets of chart paper around the room – one in each corner, along with several markers. Label the chart papers as : strongly agree, somewhat agree, somewhat disagree, and strongly disagree. Present the following statement to the class on the whiteboard:

"We can meet all needs of all people today without compromising our ability to meet all needs of all future generations"

Have students consider the statement, then select their level of agreement and move to the corresponding corner/chart paper. Once they have made their selections, groups of students in each corner will add notes to their chart paper to defend their choice. Groups will then take turns presenting their positions. Once all points have been shared/discussed give students the opportunity to change their selections and move to a different corner if they have been persuaded. Invite students to share the primary reasons why they switched or remained. Students will complete the Four Corners reflection in their Sustainable Journals.

- **Video: "What is Sustainable Development?" - Defining Key Concepts**

Review the instructions and questions for *before, during, and after viewing* in SJ's.

1. *What is Sustainable Development? (Sustainable development meets the needs of today without compromising our ability to meet the needs of future generations)*
2. *What does it mean to SEE in 3D in regards to sustainable development? (addressing social, economic, and environmental impacts) Give an example.*

During Viewing: Video: "What is Sustainable Development?" (3:40). Note key words and ideas during viewing.
After viewing share notes and complete the questions. Review video as needed. Share and discuss answers whole class to ensure all students have accurate definitions to work from.

- **Four Corners Finally**: Provide an opportunity for students to re-evaluate their choice again now that they have acquired new information. In their final corner groups have students modify the original statement into one with which they all agree by adding conditions.
  Eg. "We can meet all needs of all people…… IF…

Lesson 2: The SDGs, What and Why?

Students will be introduced to the 17 SDGs through a whole class match-up activity

- **Introducing the SDGs – Find Your Match**

Distribute one SDG icon card and one unmatching SDG descriptor to each student. Have students pair up as necessary so all students are included. Students, or pairs, will mingle and trade cards until each student or pair has two matching cards. Have each student/pair introduce their SDG. After each introduction invite students to share any ways they might be connected to the SDG.
Ex. Clean Water and Sanitation: "I need clean water to live!" "I try to conserve water!" "I like having clean water for washing/hygiene".

Debrief the activity with open discussion:

What have we learned so far?
What questions do we have?

Following the discussion students will complete the activity reflection in SCJs.
What is the purpose of the SDGs?
Which SDGs do you feel most strongly about? Why?

- **Action Towards 2030**

View the "The SDGs: Action Towards 2030" video (5:52). Pause video at indicated times to discuss and answer questions in SSJs. Video: "Action Towards 2030"
Pause video after each section for review/discussion/vocabulary

1. Why the SDGs? Why 2030? (0:00 - 1:48)
2. What are the 4 Guiding Principles to achieve the SDGs? Why are they included? You may want to stop the video after each principle to answer questions. (2:43 – end)

- **Talk it Out**

Students will read the article, "The Sustainable Development Goals" on p2-3 of Nourishing Minds Magazine SDG Issue to learn more about each goal and why the goals were created. Discuss the following questions with your group or class.

Why do these SDGs matter?
Do some matter more than others?
How will we achieve the goals?

- **Lesson 2 EXIT**: Complete the SDGs Exit slip in your Sustainable Challenge Journal

More to Explore:
United Nations SDG Main Page: https://www.un.org/sustainabledevelopment/
Explore the graphic novel "The Planet and the 17 Goals" to learn more
App: SDGs in Action (UN)

Lesson 3: The Uniting Thread of the SDGs

- **SDG Statistic Match**

  Print the activity sheet for Uniting Thread of the SDGs - Match-up and cut out the SDG icons and the statistics. Distribute one SDG Icon and one unmatching statistic to each student (pair up as necessary) Students will mingle and trade until each student has made their match. Take turns presenting each statistic. *Answer Key*

  Discuss:

  What is the Uniting Thread of the SDGs.

- **Nutrien and Sustainable Development Goals**
  Students will view the video then answer the questions in their Sustainable Challenge Journal

  Explain why agriculture can be viewed as the Uniting Thread of the SDGs
  Provide 3 examples to support your answer

- **Read the full article**, "How Does Agriculture Help us Achieve All the SDGs?" on p.8-11 of the Nourishing Minds Magazine SDG Issue

- **Lesson 3 GROUP EXIT**
  With a partner or small group complete the Triple Venn activity in your SCJ.

  Sort the 17 SDGs into the triple Venn to show whether they address social, economic, and/or environmental goals, with sustainable agriculture at the center.

  Identify 3 agriculture related challenges for each category and include them in your Venn

- **World's Largest Lesson, Part 2**

View Part 2 of the World's Largest Lesson video (5:16)
World's Largest Lesson Part 2
Students will complete the video questions in their SSJ's to identify the 3 ways of helping discussed in the video, with an example of each, and the SDGs it targets.
Invent – develop a new product ex. Bioplastic, improved toilets
Innovate – develop a new/improved process ex. Phone App, urban gardens
Campaign – develop a strategy to make people aware of the issue and modify behaviour ex. campaign for girls' education

- **World's Largest Lesson, Part 3**

View Part 3 of The World's Largest Lesson (4:39)
World's Largest Lesson, Video Part 3
After viewing, discuss the process described in the video for finding solutions and note in SJJ's

- **Exploring Innovations in Ag**

As a class view the timeline of innovations in Canadian agriculture. In pairs or groups of 3 have students select one innovation from the timeline and discuss its social, environmental, and economic impacts

FCC Interactive Timeline of Canadian Ag
https://www.fcc-fac.ca/en/ag-knowledge/agrisuccess/timeline-of-canadian-agriculture.html

Seeking out Solutions

- **Exploring Solutions: Case Study Review**

To understand the varying approaches one can take to solve food waste/insecurity problems, students will review case studies of current solutions put forth by industry, corporations, community organizations, and individuals including youth, and record one example of each in SSJs. Share in a gallery walk.

Youth Solutions Report – 50 case studies with ties to SDGs http://www.youthsolutions.report/2019report

Seeking Solutions:

- **Co-create criteria for ideal solutions**

As a class discuss and create the criteria for "an ideal solution". Remind students solutions can be inventions, innovations, or campaigns. Criteria should include:
far reaching, measurable, sustainable, big impact, realistic, resources are available
Create groups of 4 students for the Innovation portion – these students will work as a team for the remainder of the project.

- **Brainstorming: Ask "What if...?"**

Groups will work to brainstorm solutions to their local issue of Food Extremes. Consider solutions for different steps in the food system. Apply research on causes of food extremes. Get inspired by ideas of others. Remind students there is no evaluation of ideas at this point. There should be at least one idea that seems ridiculous!
Ask: “What if we could find a way to....
Challenge groups to brainstorm at least 5-10 ideas.

- **Evaluating Ideas**

Student groups will evaluate ideas from their brainstorm based on the created criteria. Further research may be required here to clarify any new questions related to the brainstormed ideas. Groups will choose the solution they would like to pursue as a proposal and identify the predicted 3D effects of their solution in their SJJ’s. Groups will informally present ideas to the class to gather feedback and suggestions before developing further.

Design Process Thinking: Create, Test, Improve

- **Create: Develop your solution proposal**

Student groups will collaborate to complete the comprehensive proposal outline in SSJ’s**.** Further research may be required here to clarify concepts specific to the selected solution.

Project Proposal: Grant Application Style (to UN)
-Rationale: Why does this problem need a solution?
-describe your solution – video, writing, sketching
-How will your innovation help? Evidence? Why do you think this is a good solution?
- Predict effects in 3D
-How would you measure effects?
-Steps/resources required? Team divides tasks, timeline
-Prepare to build or pursue your solution!

- **Test: Seeking Feedback**

Student groups will identify stakeholder groups affected by their proposal and seek feedback on ideas

- **Improve**

Consider feedback and justify changes (and non-changes) to proposal

Communicate

- **Formal Proposal Outline**

Student groups will divide tasks and set timelines for completing their formal written proposal.

- **Criteria for Creative presentation (design process applied)**

Students groups will develop a creative presentation of max 5 minutes to communicate their work in an engaging and dynamic format

- Clarify assessment tools and selection process

Alberta data re: food insecurity demographics, causes, effects, etc.
https://albertahealthservices.ca/assets/info/nutrition/if-nfs-household-food-insecurity-in-alberta.pdf

website http://www.fao.org/state-of-food-security-nutrition/en/ to gain understanding of food insecurity globally.

Food Waste and Loss

Food and Agriculture Organization of the United Nations: An article titled "Food Waste Harms Climate, Water, Land and Biodiversity" discusses the topic in a UN report. http://www.fao.org/news/story/en/item/196220/icode/

Food Waste. http://www.cec.org/sites/default/fwinteractive/index-en.html Excellent interactive graphic with key info re food loss North Am from CEC Commission for Environmental cooperation

FAO document with stats and infographics re global food waste along food supply chain
http://www.fao.org/3/mb060e/mb060e02.pdf

FAO Global Initiative on Food Loss and Waste Reduction – Excellent data, national/international
http://www.fao.org/save-food/resources/keyfindings/en/

Food Waste in Canada: Value Chain
http://vcm-international.com/wp-content/uploads/2013/04/Food-Waste-in-Canada-112410.pdf

Detailed Report North America, good infographics re: loss at different points in the food system
http://www3.cec.org/islandora/en/item/11772-characterization-and-management-food-loss-and-waste-in-north-america-en.pdf

http://www3.cec.org/islandora/en/item/11814-why-and-how-measure-food-loss-and-waste-practical-guide-en.pdf

http://www.cec.org/sites/default/files/documents/factsheets/food-waste-fact-sheet-en.pdf "Why this matters to you"

1. .

Add teacher notes/answer key of big ideas

High Adventure Science – in partner with nat geo. Interactive learning modules re sustainability. "Can we feed the growing population?" module includes ag foundations, history, innovations... http://has.concord.org/

https://learn.concord.org/has-land

https://agriculturegoods.com/why-is-agriculture-important/

Evaluates the challenges of feeding more people sustainably. Unbiased re conventional/organic
https://www.nationalgeographic.com/foodfeatures/feeding-9-billion/

Ag for Life SD Challenge	**LESSON 1: WE THE PEOPLE** **Take the Challenge! : Connecting to the SDG's**	
Summary: Students will view The Challenge PP to build excitement over the project, and view short intro videos to become familiar with the SDGs of the UN. They will work in small groups to record ideas, questions, and learning, and make personal connections to each of the SDGs.		Resources/Links
 Grade Level: 7 Time: 40min Objectives:	1. Introduce students to the Challenge by viewing the Challenge PP as a class, beginning with the video "We the People". During viewing have students make a word splash of notable concepts. Discuss reactions to the video with the class ● What did you notice? ● What is the purpose of the video? ● What "goals" did you hear mentioned? ● What questions do you have? 2. Whirl-wind Class tour of SDGs – Explore the UNs SDGs website. Post the SDGs on chart paper around room.	Link to PP Video: "We the People" https://www.youtube.com/watch?v=RpqVmvMCmp0 What is Sust. Dev? Short animation 3Dshttps://www.yout

Students will understand the scope and purpose of SDGs, and see youth/themselves as change-makers Students will connect personally to ideas of sustainability Students will perceive themselves as change-makers relative to SDGs and agriculture Materials: Student SDC Journals, 1 per student SDGs Poster	Students will tour the SDGs and write on chart paper to elicit and collect a record of prior knowledge - prior knowledge: why is it included? 2. Distribute Student Challenge Journals. View "What is Sustainable Development?". In groups, have students note ideas about sustainable development in journals using WHAT WHY SO? ● What is Sustainable Development? SDGs? ● Why were the SDGs developed? ● So? What does it have to do with me? ● 3Ds After viewing: Groups add new ideas/learning from the video and record in journals. Invite each group to share learning, and 1 question they have after watching the video. As a class, come to a good definition of SD. What are the 3Ds? Define. 3. Activity: We the People After all groups have shared, inform groups they will be creating their own We the People statement to summarize the SDGs. Re-watch video to engage students. Give students 5 minutes to develop their statements. Students may choose to use "We the Students of...." or "We the Youth..." Have them write their statements in the center of the SDG poster. Groups will take turns reading their statements in unison. Post group posters. 4. Personal Reflection Have students independently complete the reflection questions in journals. ● What is sust. Dev? ● What is the purpose of the SDGs? ● Why agriculture as the lens?	ube.com/watch?v=7V8oFI4GYMY "Action Towards 2030" Simple, intros each goal, clear description of background, goals and purpose, intro 3Ds https://www.youtube.com/watch?v=9-xdy1Jr2eg
LESSON 2: Connect as a Consumer – Learn to SEE in 3D!		
Summa		Resources/Links

	1. Activate: SDGs memory game. Challenge students individually or in groups to recall as many of the 17 SDGs as they can in 2 minutes. Review/discuss key concepts. What is Sustainable Development? What is the purpose of the SDGs? 2. Divide the SDGs among students. Present prior knowledge ideas already on the chart paper. Access the SDG info sheets on-line (or print ahead of time). Students may work ind. or in pairs to identify key stats, concepts. Add to chart paper. Share, discuss, confirm, dismiss, add 3. SEE in 3D: Pillar Sort Watch "Understanding the Dimensions of Sustainable development." Discuss, notes, whole class, record in journals 4. Activity: Pillar sort (Open Sort) In groups of 3-4, or as a class, students will sort a list of sustainability concepts as social, environmental, or economic issues. Have each group share their decision with their reason. If groups have different answers discuss reasoning and highlight the interdependence of the pillars. 4. Reflect: Journal ● Why the circle? ● Why Agriculture? *Example: SDG 4: Quality Education* ● *Social: education for all means equal access to knowledge/skills/opportunities for personal and community wellness and growth.* ● *Economic: Quality education requires funding! How do we pay for it? Better education means gaining skills to access economic opportunities.* ● *Environment: Being knowledgeable on topics of sustainable living help us become good stewards of the earth* 4. Crossing the Circle (Dinner Date) - r we compatible? Divide the SDG cards among students. Extra students can double up. Have students arrange themselves in a	Link to Pillar sort activity

	circle with their card on the floor in front of them. Does order matter? Discuss. (NO) Randomly choose 2 SDGs (dice?spinner?draw?) Students representing those SDGs will meet in the center of the circle	
Lesson 3: Food For Thought Why Ag? Food Systems as our prime connection to SDGs		
Summary:		Resources/Links
	1. Present the infographic Food Sustainability: Key to Reach Sustainable Development Goals. As a whole class discuss ● What info can be gleaned from the graphic? ● Why is Food Sustainability placed in the center? 2. Post SDG icons around room with chart paper. Students will circulate and note any prior knowledge connecting Food to SDGs. Have students access the interactive Map of Food/SDGs. Students will visit each SDG and add 1. Introduce students to the Challenge by viewing the Challenge PP as a class, beginning with the video "We the People". During viewing have students make a word splash of notable concepts. Discuss reactions to the video with the class ● What did you notice? ● What is the purpose of the video? ● What "goals" did you hear mentioned?	Infographic – food sust. At centre of all SDGs http://foodsustainability.eiu.com/wp-content/uploads/sites/34/2018/12/180810_food_sust_lines_v27.pdf

	● What questions do you have? 2. Whirl-wind Class tour of SDGs – Explore the UNs SDGs website. Post the SDGs on chart paper around room. Students will tour the SDGs and write on chart paper to elicit and collect a record of prior knowledge - prior knowledge: why is it included? 2. Distribute Student Challenge Journals. View "What is Sustainable Development?". In groups, have students note ideas about sustainable development in journals using WHAT WHY SO? ● What is Sustainable Development? SDGs? ● Why were the SDGs developed? ● So? What does it have to do with me? ● 3Ds After viewing: Groups add new ideas/learning from the video and record in journals. Invite each group to share learning, and 1 question they have after watching the video. As a class, come to a good definition of SD. What are the 3Ds? Define. 3. Activity: We the People After all groups have shared, inform groups they will be creating their own We the People statement to summarize their feelings about the SDGs. Re-watch video to engage students. Give students 5 minutes to develop their statements. Students may choose to use "We the Students of...." or "We the Youth..." Have them write their statements in the center of the SDG poster. Groups will take turns reading their statements in unison. Post group posters. 4. Personal Reflection Have students independently complete the reflection questions in journals. ● What is sust. Dev? ● What is the purpose of the SDGs? ● Why agriculture as the lens?	

- **Curricular connections – grade 7 only to start?**
- **Created vs. Directed to? Optional lessons, extensions**
- **Choice of issue related to community? Restrictions to topic? Global? Local?**
- **Collecting data re: food insecurity? Caution discussing outside communities**
- **Solution for home, school, community?**
- **Indigenous connections – require an indigenous mentor?**
- **Industry Mentor group?**
- **September presentation date?**
- **Sustainable Beef production – UN resources contradictory, recommend reduced consumption, elimination of animal product industry. Canada goal to increase demand?**

Ideas/Resources:

- FoodSpan Lessons, comprehensive activities, Johns Hopkinshttp://www.foodspanlearning.org/_pdf/lesson-plan/Foodspan-Full-with-handouts-with-slide-notes.pdf
-
- http://foodwastemovie.com/wp-content/uploads/2015/02/HD14-DFS-JustEatIt-Educational-Curriculum.pdf

- Natural Resource Match up cards, colour https://betterlesson.com/lesson/resource/3219146/natural-resource-activity-cards-pdf

- https://www.uua.org/sites/live-new.uua.org/files/unicef_wants_needs_cards.pdf

- **https://allianceforscience.cornell.edu/blog/2019/09/plant-breeding-innovations-required-weather-climate-change-report-says/**

- Commision for Environmental Cooperation – data used in food waste calculation chart provided

- Best Food Facts: We have enlisted the help of more than 200 food system experts — ranging from university-based scientists to the Registered Dietitian community to the farmers themselves where the

food cycle begins — who understand the science behind what's in your food and what it means for your health. https://www.bestfoodfacts.org/

Canadian Centre for food integrity

- org/resources-news/news-media/cultivating-food-sovereignty-and-sustainable-food-systems-north-review-and

Supermarket Sweep activity

Cycle of poverty/hunger

Idea for format of challenge – this example from Australia has students meet with food science experts for a 2 day event https://www.thewaite.org/food-sustainability-challenge/ also describes examples of student project ideas