**Lesson 1: Environmental Impacts of COVID-19**

**Problem statement:** School was cancelled in mid-March. Everyone was told to stay home to keep from spreading a new virus: the COVID-19. Teachers try to keep school going online. Spring sports, prom and graduation ceremonies are cancelled. Essential businesses such as grocery stores, pharmacies, health care are open in a limited capacity, with vastly altered requirements such as social distancing. Most non essential businesses across the state (and around the world) are closed and when possible, employees can work from home. In the past month, 25 million unemployment claims have been filed and no one knows how far the unemployment rate will climb. You are about to graduate. Even though you had a HSBP, now everything has changed. **How has this impacted the environment?** How does this impact your future and the career you choose? How do we use what we have learned during this pandemic to inform others?

**Learning objectives:** Students will be able to describe the environmental impacts of COVID-19.

**Lesson standards (NGSS, CCSS, CTE):**

**CCSS Math:**

MP1 Make sense of problems and persevere in solving them.

**CCSS Reading:**

R.7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

**NGSS:**

MS.ESS.3.3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

**CTE Common Career Technical Core Skills:**

5 Consider the environmental, social and economic impacts of decisions

**Soft Skills:**

Critical Thinking

Problem Solving

Communication

**Locally and/or personally relevant for students:**

Students (as of 2020) experienced impacts of COVID-19 as they became at-home learners. This lesson explores ways in which they and/or their families and friends were impacted environmentally. Given the stay-at-home order, our skies were bluer and our water clearer. Students will explore these environmental impacts through data and images to determine the true impacts, and in lesson 5 they have the opportunity to create a PSA urging people to continue the behaviors that created these positive changes that benefited our environment.

**Connections to career and educational pathways:**

Students will explore these connections in the next three lessons.

**Materials:**

Observation charts or [Google slides](https://docs.google.com/presentation/d/1Jtz6CnrMyxL5hUzTmZi5m6L-n1_LCOtWQ_IHISFGu54/edit#slide=id.g8113cb48c0_1_5) and projector with images for Before-and-now

Air Quality Data (progression or comparison to last year)

Pictures of Air (Before-and-now)

**Lesson preparation:**

Have powerpoint set up with observations charts OR print images of the following groups/themes and paste onto chart paper by group/theme (laminate for easy re-use to aid visual learners) and post around the room:

Air Quality Data Images

Air Quality Images

**Time required:**

1 50-minute class period

**Grouping of students for instruction:**

Students will be in pairs of trios, with at least one student having a strength with writing, and at least one who is strong verbally. Roles include: recorder, speaker, facilitator

**What is the instruction? Consider the PBL Procedure that is being addressed here:**

**Understanding the Problem: How has COVID-19 impacted the environment?**

|  |  |
| --- | --- |
| **Teacher** | **Student** |
| Introduce the lesson:  Play this video: [Pandemic Lockdowns Leads to Cleaner Earth](https://www.cbsnews.com/news/coronavirus-photos-decline-air-pollution-lockdown/) | Watches video |
| A/B Share:  Ask students to share with their partner:  What did you see?  What did you hear?  What does this make you think?  What impacts did/does COVID-19 have on the environment? | Shares their response to each question.  Listens to their partner’s response to each question. |
| Activity set-up:  Point to observation charts and explain to students that they will be recording qualitative and quantitative data / observations for the images posted around the room (or on the powerpoint). Inform students they will be using their notebooks to record observations, questions, and predictions regarding what they see from the pictures on the observation charts. The goal is coming to conclusions about the impacts COVID-19 has had/is having on the environment, which the presenter will explain to other groups. | Listens and follows along to activity instructions. Determines recorder, presenter, and facilitator. |
| Facilitate Activity:  Direct students to their beginning observation chart. Set a timer for 5 minutes. Walk around and listen to what groups are saying, taking note on what they don’t know and misconceptions.  Probe students to deepen their discussion by asking:   * What catches your attention? * What do these images tell us? * What do they not tell us? * What do we think the problem is?   Provide students with 1 to 2 more rounds, having them rotate counterclockwise.  At the end of the rounds, ask students to return to their desks to work in their groups to draw conclusions based on the data they’ve seen.. | Complete activity:  Explore the impacts of COVID-19 on the environment by analyzing observation charts. Record observations in your notebooks. Include observations, questions, and predictions.  Analyze the images on the observation chart to create a title for the last poster you are at. |
| Class Discussion:  Facilitate a class discussion by having each trio of students present their findings to another trio of students. Complete two 4-minute rounds so that students are hearing about a variety of data that is displayed around the room.  Provide groups with 5 minutes to synthesize/summarize the new information they heard and relate it to the information they observed in their assigned observation chart. The goal is to brainstorm ideas about how all of the images are related together and to come to a consensus as a class. Display prompts or guiding questions for students to use as discussion points:   * What were differences you saw across all of the observation charts? * What were similarities you saw across all of the observation charts? * How are all of these images related to each other? * What story do these images tell? | Recorders share their observations from their group while facilitators help guide the conversation and the writer scribes new thoughts or ideas to consider.  .  Brainstorm ideas about why they think each set of images is related to each other and come to a consensus as a class. |
| Introduce the problem statement:  Hand out the problem statement to each student and ask them to tape it into their notebooks. Read the problem statement allowed and ask students to annotate as they read. | Tape the problem statement into their notebook, listen to the teacher read it aloud, and analyze what the problem is by annotating as they listen. |
| Connection to Future Lessons:  Let students know they will continue to learn about the impacts of COVID-19 and the end product will be a call-to-action PSA relating to something they’ve learned throughout the unit. | Students listen. |
| If more time:  Provide students with a rose and a thorn exit ticket.  A rose and a thorn - What is one thing you now understand? What is one thing you have a question about? What is your question? | Have students do a whole class whip. Record questions so you can answer them at a later point in time, or assign to students to research/find the answer. |
| Exit Ticket:  Describe how you think COVID-19 impacted the economy? (Jobs, earning and spending money) | Complete the exit ticket. |

**Accommodations:**

Pictures are enlarged for students with visual impairments.

Intentionally place posters and groups of students in an order so that students receiving special education services can access the posters they are assigned and traveling to.

ASL interpreters are utilized to support students with hearing impairments communicate with their partner(s).

Organize the room so that students with physical impairments may move between charts with ease.

Observation charts help build background for students by using visual aids and cooperative groups to make the content comprehensible and provides EL’s with opportunities to practice using (and hearing) academic language related to climate change in a low-risk environment. The visuals and small demand for writing also support learning needs of students with special needs.

Higher level questioning should be utilized with students categorized as highly capable.

**Extensions:**

Explore air and water quality data around your nearest airport. How does it change daily, weekly, monthly, or yearly? What are contributors to this?

Create a classroom graph and plot the [air](https://www.iqair.com/us/) and/or water quality index for your city over the duration of the unit. If there are spikes in air or water quality, take time to see connections between what is happening at that point in time that may be contributing.

Connect to green jobs / career pathways. or connect each student’s passion to how they can be an environmentalist through their passions (How can they, as an artist, be an environmentalist? How can they, as a singer, be an environmentalist?)

Invite environmental professionals into the classroom to talk about their work during the pandemic.

**Assessment:**

Formative Assessment in the Lesson: Informal observation of group and class discussions.

**References/Resources:**

Instructional Plan Consultant (not responsible for the content of this instructional plan: Nicole Flynn. Instructional Plan Created by Angela Nguyen