

Inquiry Demonstration Plan

Lesson Title: <u>Plastic Pollution</u>	Lesson # <u>3</u>	Date: <u>March 31, 2021</u>
Name: <u>Deepika Arora</u>	Subject(s): <u>Environmental Science</u>	Grade(s): <u>12</u>

Rationale & Overview

Why does this topic matter to students?

This lesson of conducting surveys about plastic pollution will help students connect with their surroundings and gain indigenous perspectives about the local community's roles and responsibilities towards conserving their environment. This way the students will empathize with the current problem of plastic pollution at individual as well as societal level where they can identify their potential to deeply understand about the situation and come up with greater ideas to reduce this problem of plastic pollution. Through this guided and open inquiry, the students will achieve critical thinking and problem solving skills, further giving them opportunities to fully explore the problem, ask questions, dig deeper in their research, obtain evidences to their findings and reflect upon them; finally able to design a convincing argument regarding their data analysis and end results of their research.

How does this lesson fit within the larger inquiry project?

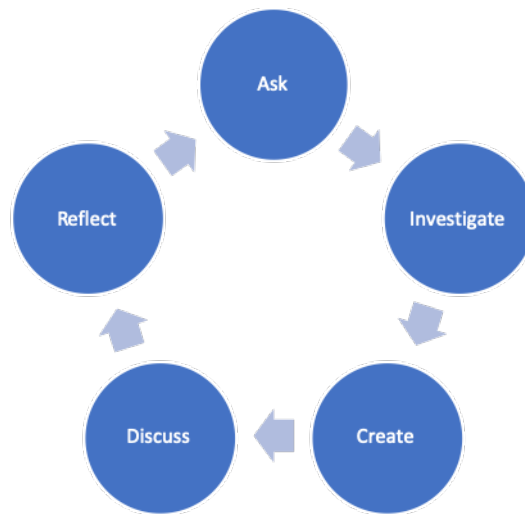
This lesson is investigate integrated with reflect part of the inquiry project, where students are given a research survey to be conducted through them, further reflecting upon their findings with convincing evidences of their end results. This way the students will act as budding environmentalists conducting research and develop a deeper understanding about the role of individual and society in reducing the problem of plastic pollution. Joseph Schwab's philosophy of multidirectional inquiry has been acknowledged through this step where the students are provided with methods and materials and they have to discover the relationships with variables through survey. This way the students will be able to develop deeper thinking skills through scientific inquiry. They will also have the opportunity to gain new knowledge that builds on their previous knowledge and adding new information learned. (Schwab, J., 1966).

How does this project incorporate the inquiry cycle?

This is the integration of investigate, create and discuss phase of inquiry cycle, where the students investigate about the topic through conducting surveys in their local surroundings, further creating presentations to share their findings through graphs, data, and pictorial representation of information collected, finally, reflecting upon their findings with relevant evidences on the end results of their research survey.

Key Questions for Inquiry

Core Question & Supporting Questions for Inquiry Project	Question(s) Addressed in This Lesson
<p>What can you do to bring awareness among the society to alleviate this problem?</p>	<ul style="list-style-type: none"> What is society's role in reducing this problem of plastic pollution? What measures are taken at an individual as well mass level to identify and resolute this problem? What alternative methods are being used for conserving our environment instead of using plastics in common households?



Inquiry Approach and Rationale

The inquiry approach used here in this lesson is mainly design thinking keeping in mind the human centered principles while keeping students in focus. The activities are planned in various stages- Empathize, Define, Ideate, Prototype, and Test. (Ramunas Balcaitis, 2019)

Ideate: While researching, the students will bring ideas from the local community on how they contribute in reducing the use of plastics, and they will generate numerous ideas to replace plastics with more eco-friendly options.

Rationale

At this stage of inquiry project, students take full control over their research and identify their individual potential to carry out research further developing analytical and collaborative skills while making connections with their local community. This activity will help the students to understand and produce provocative ideas for creating possible solutions to reduce this problem by collecting, analyzing and reflecting upon the ideas collecting from their local environment and realizing their role as equal participants in conserving their environment.

Core Principles of Effective Teaching (Sharon Friesen) Focus on one or more core principles in the lesson

<p>Core Principle 1: Effective teaching practice begins with the thoughtful and intentional design of learning that engages students intellectually and academically. <i>*What aspects of the inquiry are the most challenging and meaningful for students?</i></p>	<p>The challenge the students and teachers can face is the response rate of local community and the ability to process information by students in data handling. But, the guided inquiry approach of teachers with assimilation and stimulation will help students develop personal and social awareness about the local environment. The data representation will foster intellectual ability and among students when they will come up with their reflections and ideas by actively engaging in the tasks assigned.</p>
<p>Core Principle 2: The work that students are asked to undertake is worthy of their time and attention, is personally relevant, and deeply connected to the world in which they live.</p>	<p>Plastics are common products being used in households. This activity will connect the students to the local community which they are part of and</p>

*What makes this inquiry valuable, meaningful, and “alive” for the students and teachers?	it is important for them to understand and think about the role of individual and community in conservation of environment. The active involvement of students with their local community to discuss about the problem and their experiences will develop collaborating skills and critical ability to come up with realistic solutions.
<p>Core Principle 4: Teachers foster a variety of interdependent relationships in classrooms that promote learning and create a strong culture around learning.</p> <p><i>*How do I connect students with each other, with experts in the field, with larger communities and nature, and across disciplines?</i></p>	The students are also the part of society they live in, so understanding about the knowledge of people around them about the problem of plastics will help them gain insights about the topic further with the help of experiences shared by their peers and learned people in the community. They will be able to make connections with what they have learnt and more knowledge gained from local environment.

BC Curriculum Core Competencies

Communication	Thinking	Personal & Social
<p><u>Collaborating</u> Effectively recognize how combining others’ perspectives, strategies, and efforts with their own enhances collective understanding, use, and impact. They value the contributions of group members, interact supportively and effectively using inclusive practices, and strive for shared commitment and mutual benefit.</p>	<p><u>Critical and Reflective Thinking</u> They reflect on the information they receive through observation, experience, and other forms of communication to solve problems, design products, understand events, and address issues. And uses their ideas, experiences, and reflections to set goals, make judgments, and refine their thinking.</p>	<p><u>Social Awareness and Responsibility</u> Focuses on interacting with others and the natural world in respectful and caring ways. It contributes positively to their family, community, and environment; empathizes with others and appreciates their perspectives; resolves problems peacefully; and develops and sustains healthy relationships.</p>

BC Curriculum Big Ideas (STUDENTS UNDERSTAND)

<p>✓ Living sustainably to support the well-being of self, family and local community.</p> <p>i) How are your decisions to limit the use of plastics linked to global plastic pollution?</p> <p>ii) What changes could you make in your life that will support a sustainable living and a clean habitat for marine life?</p>
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BC Curriculum Learning Standards (STUDENTS DO)

(STUDENTS KNOW)

Learning Standards - Curricular Competencies	Learning Standards - Content
<p><u>Processing and analyzing data and information</u> Experience and interpret the local environment. Analyze cause-and-effect relationships.</p> <p><i>How can you relate population</i></p>	<p>Personal Experiences: The use of plastics in their household</p> <p>Sustainable living: Conservation of natural environment and resources, alternate eco-friendly</p>

<p><i>growth with the plastic pollution? How has the plastic disposal per family changed over 10 years?</i></p> <p><u>Evaluating</u> Exercise a healthy, informed skepticism and use scientific knowledge and findings to form their own investigations to evaluate claims in primary and secondary sources.</p> <p><i>How can you make sustainable choices to reduce the problem of plastic pollution?</i></p>	<p>methods.</p>
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BC Curriculum Indigenous Connections/ First Peoples Principles of Learning

How will I incorporate Indigenous knowledge and principles of learning?

The investigative research will bring together the ideas from different cultural backgrounds considering the first people’s principle of learning-that ‘it requires exploration of one’s identity’. The students will bring ideas and examples from their local communities through survey and will be able to explore and ideate about the different methods families and their local communities are using to reduce this problem of plastic pollution.

Respectful Relations

How will I invite students of all backgrounds, interests and skills into the inquiry?

The classrooms have a diverse environment and students not only come from different cultures and ethnic backgrounds, but also have diverse home life, experiences, and linguistic set ups. The students will conduct the surveys on the total consumption and current situation of plastic pollution in their household and share their reflections on the same at the end of their research project. This way the lesson will promote indigenous education where learners will become aware about their local community and their practices to reduce this problem.

Lesson Activities

Time Allotted		Teacher	Students
Invitation	5 minutes	The teacher will discuss the strategies to conduct surveys and guide students with the instructions for the same.	The students will note the given instructions and ask questions related to the activity.
Inquiry	1 day	The teacher will answer students’ concerns and help the ones who require extra support or accommodations with the assignment.	The students will conduct the survey with their family and friends and bring in their research findings the next day for presentation through various mediums.
Reflection & Discussion	40 minutes	The students will be asked to present their collected data with relevant illustrations or graphical representation about their findings and small group discussions will take place for peer reflections.	The students will showcase their presentation through various mediums, which will develop their interpersonal skills and creativity and give logical arguments for questions and discussions carried out in the class.

Materials and Resources

Materials Required:

Computer/Laptop

Google forms for Survey Questions

<https://forms.gle/Rp9EJFYBxfDECsPL8>

Assessment Criteria

Teacher Evaluation Checklist

Skills developed	Assessment Criteria	1	2	3	4	5
Communicative skills- Planning and execution	Discussed procedures for the task given by the teacher effectively.					
Formulation of conclusions	Formulated conclusions with relevant evidences.					
Creations of answers to questions and creative use of data presented	Formulated answers with justifications. Creative methods used to present data collected.					

Organizational Strategies

- ✓ Giving students ample opportunities to learn from their own experiences.
- ✓ Teaching as a facilitator not expert or lecture

Proactive, Positive Classroom Learning Environment Strategies

- ✓ Clear communication between teacher-student and student-student
- ✓ Building trust among the student by letting them choose the project as per their choice and creative ability.

Extensions

Prepare an inquiry organizer as per the sample attached and record your answers as given.

