Civics Education: Flint Water Crisis Lesson Plan

NRS Level(s): High Intermediate Basic Education to Low Adult Secondary Education

Lesson Title: The Flint Water Crisis	**Approximate Length of Lesson:** 1 hour and 30 minutes
Instructional Objective: After watching video clips or reading the information on lead exposure and then discussing the issues, ABE/ASE students will be able to: • Use the key details from the text/video to explain the environmental sources of lead exposure, how lead gets into drinking water, and five or more ways lead exposure affects health. • Synthesize information from multiple sources in order to explain the issues that led to water contamination in Flint, Michigan. • Expand their interpersonal skills by collaborating to research and present information on the Flint water crisis.	**Learning Target Statements** • I can explain how lead gets into drinking water and why this is harmful to our health. • Before I could …, now I can …
ELA/Mathematics/ELP Standard(s) Addressed:	**ELA/Mathematics/ELP:** **CCR Level D:** R3: Analyze in detail a series of events described in a text; determine causality. W8: Gather relevant information from authoritative sources and assess the usefulness of each; integrate the information without plagiarizing. SL1: Follow discussion rules, draw on preparation, pose questions that connect ideas, and acknowledge ideas and information shared by others.

<table>
<tr><td>Central Skills Taught:</td><td colspan="3">☑ Adaptability and Willingness to Learn
☑ Communication
☑ Critical Thinking
☑ Interpersonal Skills
☐ Navigating Systems</td><td>☐ Problem Solving
☑ Processing and Analyzing Information
☑ Respecting Differences and Diversity
☑ Self-Awareness</td></tr>
<tr><td>Language Demands:
(Include academic language, language skills, etc.)</td><td colspan="2">Academic Language Functions:
• Describing cause and effect
• Elaborating on others' ideas</td><td colspan="2">Content-Specific Vocabulary:
• lead
• corrosion
• leach
• solder
• toxic and toxins
• contamination
• emergency manager
• public health
• infrastructure
• stakeholder
• community crisis</td></tr>
<tr><td>Assessing Mastery of the Objective(s) and Central Skills:
(Indicate <u>when</u> and <u>how</u> assessment—formative and/or summative—will occur during the lesson.)</td><td>Proof of Learning:
☐ Via observation of a team task (e.g., discussion, work on project)
☐ Via team self-assessment
☐ Via individual self-assessment
☑ Via team product
☐ Via individual product
☐ Other_____</td><td>Proof of Learning Tools:
☑ Rubric
☑ Checklist
☐ Quiz
☐ Other_____</td><td colspan="2">Ongoing Formative Assessment
☐ Nonverbal responses to comprehension questions (e.g., answer cards, Kahoot)
☐ Peer-to-peer quizzing
☐ Exit/admit tickets
☐ KWL charts
☑ Other <u>T-charts or team research chart</u></td></tr>
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Adaptations and/or Accommodations: *(How will you increase access to the content of the lesson? Identify differentiation strategies.)*	**For lower-level learners,** preview key vocabulary, adapt the text in the reading materials on the infographics, use visuals and guiding questions to convey complex content, and adjust the research task sheet questions to the appropriate level (e.g. using active voice). Have students focus on the visual and caption in an infographic. They can write single words in a graphic organizer. **For higher-level learners,** use visuals and guiding questions to convey complex content. Students can read the "small print" in addition to the visual and caption in an infographic. They should use phrases and sentences in a graphic organizer.

Introduction:

How will you introduce the lesson objective and how it fits into the unit/LOI? Identify its relevance to learners' needs and goals.

Timing: 15 minutes

Warm-up

Show pictures of examples of community issues—image of child with measles, homeless tents, graffiti/vandalism, trash dumping, pot holes etc.

Teacher (for each picture): What do you see in this picture? Who has seen or experienced this issue in your own community?

Teacher: Have you been in a situation when city or state services were not provided well? Think about utilities, road and highway maintenance, school systems and school buildings, natural disaster cleanup, and so on.

Small groups with one T-chart per group:

Issue/situation you encountered	Effect on you, your family, or your community

After the students complete the T-charts, the teacher asks the following:

- How did you, your family, or your community try to solve this problem or improve the situation?
- What were the results when you, your family, or your community tried to solve the problem or improve the situation?

CENTRAL SKILLS

- Communication
- Critical thinking
- Processing and analyzing information

MATERIALS

Relevant readings:

Readings from EPA website:

- How lead gets into water:

  https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water#getinto
- Health effects of exposure to lead in drinking water:

  https://www.epa.gov/ground-water-and-

Introduction

Teacher: *Today and in other lessons in this unit, we are going to focus on Flint, Michigan, where the city water system was not working properly. Citizens were exposed to lead and other toxins and bacteria in their drinking water. We are going to discuss (1) the reasons this happened, (2) the effects on the citizens, (3) the strategies that are being used to solve the problem, and (4) how we can use this situation in Michigan to think about our own communities.*

The teacher asks the students to record any new vocabulary words in their vocabulary journals. Some terms will be defined together in class; the students may need to look up others on their own.

Teacher: *What do you already know about lead? Work in teams of three to record anything you already know.*

What is lead?	Where does it come from?	What are the ill effects of lead?

What have you heard about lead in the news related to Flint, Michigan, or another location in the United States?

Why is having lead in our water, air, and soil an important issue for Americans to think about?

The teacher provides the following definition of lead from the Agency for Toxic Substances and Disease Registry as a handout or projects it using a PowerPoint slide. The teacher reads the definition aloud, responds to questions and clarifies unfamiliar terms, or asks students who know the terms to explain them.

> Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of

drinking-water/basic-information-about-lead-drinking-water#health

- Timeline of events:

  http://www.msnbc.com/msnbc/flint-water-crisis-timeline

- Lasting effects:

  https://www.washingtonpost.com/news/wonk/wp/2017/09/21/flints-lead-poisoned-water-had-a-horrifyingly-large-effect-on-fetal-deaths-study-finds/?noredirect=on&utm_term=.9025e332850e

  https://www.michiganradio.org/post/tracking-flint-water-

		our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing. Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years. *Source.* Centers for Disease Control and Prevention (CDC): https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=22		crisis-health-effects

Explanation and Modeling: *What type of direct instruction do learners need? Are there ways for learners to access the new content independently? What types of models will you provide and when?* **Timing: 35 minutes**	**Teacher:** *Is the water coming from the water plant contaminated with lead or does the contamination happen at a different point? Where does the lead in our water come from? What went wrong in Flint? How does lead affect our health? These are questions you will explore through some research.* **Team Topics** (see the Research Task handout [Appendix A]) A. How does lead get into drinking water? See available online resources and the information graphic from the Environmental Protection Agency (EPA): https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=500025PW.txt B. What happened in Flint, Michigan? See available online resources and available videos; use this simple timeline at http://www.msnbc.com/msnbc/flint-water-crisis-timeline C. What are the ill effects of lead on our health? See available online resources and the fact sheet from the Clean Water Action website: https://www.cleanwateraction.org/sites/default/files/Lead%20and%20Drinking%20Water%20Fact%20Sheet_0.pdf Working together, teams explore their resources and make notes in their section of the chart. Each student team creates its own infographic, capturing the main points of the topic it will present to others in the class. The teacher scans or makes copies of the infographic and distributes one to each team member.	• Critical thinking • Processing and analyzing information	• Research Task handout (Appendix A) • Paper and markers or an online infographic template (e.g., Visme) • Student-created infographics

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<td>Guided Practice:

Which tasks and learning activities will you use to engage learners with the content and skills? How will you structure the tasks or other learning activities to support learners' success?

Timing: 25 minutes</td>
<td>Formation of New Groups

Each team presents its infographic while others make notes in the appropriate sections of the Research Task handout (Appendix A). To synthesize what they have learned so far, teams fill in the first four columns of the Community Problem Strategy sheet (Appendix B) for the water crisis in Flint. They can refer to this sheet throughout the unit and add to it as they learn more.

<table>
<tr><th>What is the community problem?</th><th>Who is most affected by this problem (which stakeholders)? How are they affected?</th><th>What caused the problem (which institutions, organizations, people, events, etc.)?</th><th>What has been done to solve the problem?
(If actions have been taken, who took them? How effective have those actions been?)</th><th>Who should be involved in solving the problem (which people, institutions, organizations, etc.)?</th><th>Describe two ideas for solving this problem.
Give <u>at least</u> one reason that you think each idea will work.</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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In preparation for the subsequent lessons on what actions the community took, have the students look at both the Research Task chart and this chart to think about how their ideas might compare with what their continuing research will show.</td>
<td>Communication
Interpersonal skills
Respecting differences and diversity</td>
<td>Research Task handout (Appendix A)
Community Problem Strategy handout (Appendix B)</td>
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<td>Application/Extended Practice:

What will learners do to demonstrate their acquisition of content knowledge, basic skills, and key soft skills?

Timing: 5 minutes to preview web pages and assign task.</td>
<td>Have the students visit the following websites for information on lead and its presence in drinking water.

Clean Water Action: https://www.cleanwateraction.org/features/lead-and-drinking-water

EPA: https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water#health

CDC: https://www.cdc.gov/nceh/lead/

Have the students investigate lead levels in the drinking water in their community.</td>
<td>Adaptability and willingness to learn
Processing and analyzing information</td>
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</table>

	Student Reflection on Learning Targets, Closure, and Connection to Future Learning **Timing: 10 minutes**	**Have the students complete a short checklist based on the questions from the introduction task.** 1. I can tell someone what lead is and where it comes from. Yes ☐ No ☐ 2. I can describe five ill effects of lead. Yes ☐ No ☐ 3. I can explain what happened in Flint, Michigan. Yes ☐ No ☐ **Wrap-up Questions on Wall Chart for Exit Cards (if time allows)** The teacher hands out index cards, one to each student. The students write their name on their index card, followed by the question numbers and their responses to the questions. **Teacher:** *Write your name on your index card. The questions are on this chart. Write your answers by labeling them 1, 2, and 3.* • Why do you think we discussed these topics today? • List three facts that you learned today from the video, reading, and group discussion. • What is one question that you have? Or is there something that you found confusing about the information we read or discussed today? The teacher can begin observing and taking notes in preparation for completing the Reading Comprehension rubric over the course of the entire unit.	• Processing and analyzing information • Self-awareness	

Appendix A. Research Task

Step I: Each team is responsible for gathering information about one aspect of the Flint, Michigan, water crisis. Explore the assigned materials and take notes in your section of the chart below.

Team A: How does lead get into drinking water?	Team B: What happened in Flint, Michigan, to create a crisis?	Team C: What are the ill effects of lead on our health?

Step II: Create a simple infographic representing the key points for your question.

Step III: Present your infographic and enter notes in the chart above as you learn about the two other questions explored by your classmates.

Appendix B. Community Problem Strategy

Complete the chart below based on today's discussion about the Flint, Michigan, water crisis.

What is the community problem?	Who is most affected by this problem (which stakeholders) and how are they affected?	What caused the problem (which institutions, organizations, people, events, etc.)?	What has been done to solve the problem? If actions were taken, who took them and how effective have they been?	Who should be involved in solving the problem (which people, institutions, organizations, etc.)?	Describe two ideas for how to solve this problem. Give *at least* one reason you think each idea will work.