

MASS CLEAN ENERGY CENTER

AUTHENTIC MATERIAL ACTIVITY · CHECKING INDOOR AIR QUALITY

Checking Indoor Air Quality

Contextualized ESOL Support Activity

ACTIVITY

Oral Communication,
Critical Thinking**90-120**
minutes

AUTHENTIC MATERIAL ACTIVITY – CHECKING INDOOR AIR QUALITY

ACTIVITY OVERVIEW

Objective	Students will be able to describe the importance of indoor air quality. Students will be able to identify HVAC system components related to indoor air quality. Students will be able to inspect and complete an HVAC checklist for indoor air quality.
Durable Skill	Oral communication, Critical Thinking
Student Interacts With Hypothetical	Supervisor and Customer
When to Use	Students need familiarity with residential and commercial HVAC systems. This activity is best for longer programs which have a focus on indoor air quality.
Activity Type	Video discussion
Time Needed	90 to 120 minutes

STUDENT MATERIALS

- Handout 1: Authentic Materials – Vocabulary Definitions
- Handout 2a or 2b: Video Viewing Handout (Choose one)
 - [2a: HVAC by Design: Indoor Air Quality \(IAQ\) \(HVAC ProBlog\)](#)
 - [2b: Indoor Air Quality \(IAQ\) Basics 3D \(HVAC School\)](#)
- Handout 3: HVAC Checklist-Long Form

Instructor Preparation

Note:

- This activity focuses on checking HVAC system components in relation to indoor air quality.
- It requires touring your training facility's HVAC system.

Activity Location

- Classroom with video capability

Material:

- Review the student handouts.
- Review and choose one video for this Activity:
 1. [HVAC by Design: Indoor Air Quality \(IAQ\)](#) (10:36 min.) (HVAC ProBlog) This video has extensive tips for technicians on what to look for and how to problem-solve.
 2. [Indoor Air Quality \(IAQ\) Basics 3D](#) (15:12 min.) (HVAC School)
- When showing the video, be sure to use closed captions and slow the speed for multilingual learners. In class, consider slowing down the video or giving time markers when to stop the video to let students write their answers. Consider providing the video to students ahead of time to preview.
- Before Part 2, tour training facility's HVAC system to identify which sections of the student Handout 3: HVAC Checklist-Long Form can be completed during Part 2. In this activity you will walk students through the building to check for debris/moisture, measure airflow, inspect filters for MERV-13 efficiency, and clean unit ventilators. As needed, inform staff when you will be bringing students to inspect the equipment. Some equipment to check may be outside.
- **Best Practice**
 - Identify any key vocabulary terms from Handout 1: Authentic Materials - Vocabulary Definitions that students should be referencing as part of the activity. Be prepared to reference these during the activity.

ACTIVITY DIRECTIONS

Part 1

1. Explain to students that either today (or over the next few days depending on time available), they will be learning about the importance of air quality to the health and comfort of homeowners, and what components to inspect in a HVAC system to assess air quality.
2. Ask students:
 - What health symptoms might poor indoor air quality cause? (Answers may include: headaches, fatigue, nausea, eye/throat irritation)
 - What are some long-term health risks of poor indoor air quality? (Answers may include: asthma, heart disease, and cancer)

3. State that assessing an HVAC system to ensure good air quality in a home or business is a key task of a service technician. Today we are going to watch a video about indoor air quality. Distribute and review either Handout 2a or 2b: Video Viewing based on the video to be shown.
4. Show the video. Debrief by reviewing students' answers on either Handout 2a or 2b: Video Viewing.

Part 2

(Be sure to read Instructor Preparation note prior to implementing Part 2)

1. Tell students they are going to take a tour of the training facility's HVAC system to inspect for potential problems that adversely affect air quality. They will use what they learned in the video.
2. Decide prior to Part 2, which sections of Handout 3: HVAC Checklist – Long Form, to focus on during the tour of the facility's HVAC system. Distribute and review the handout indicating which sections they will be completing during the tour.
3. After answering any questions, take the class on a tour of the HVAC system. As you go, note the handout section where students can write their answers.
4. When students return to the classroom, debrief by reviewing the answers to the handout and using these guiding questions as needed:
 - For each component inspected, students can mark: OK, Needs Attention, or Not Applicable. If students have different responses for a component, discuss why they chose the ranking. Discuss how to decide if something Needs Attention or is OK.
 - Which sections of the HVAC system were most challenging to inspect? Why? How might that impact your assessment of the system?
5. Wrap-up by telling students that good air quality is important to customers. As a service technician performing inspections, they may be both identifying potential problems before they happen, and trouble-shooting a customer problem.

ESOL Strategy Note

During the Part 2 facility tour, pair students who are less confident in English with a peer and encourage them to point to each component as they discuss whether it is OK, Needs Attention, or Not Applicable — pairing the physical gesture with the vocabulary reinforces the term while giving students a lower-pressure way to participate.