

MASS CLEAN ENERGY CENTER

MODULE 3 · INTRODUCTION TO RESIDENTIAL HEAT PUMP SYSTEMS

Defining Heat Pump Components

Contextualized ESOL Support Activity

ACTIVITY

Oral Communication, Collaboration

60

minutes

ACTIVITY OVERVIEW

Objective	Students will build their capacity to define the heat pump components.
Durable Skill	Oral Communication, Collaboration
Student Interacts with Hypothetical	Not Applicable in this Activity
When to Use	After students complete Amatrol Module 3 Lab, Skill 1. Or, after completing a similar activity where students have identified component names on heat pump training equipment.
Activity Type	Small group work
Time Needed	60 minutes

STUDENT MATERIALS

- Handout 1: Module 3 - Vocabulary Definitions
- Handout 2: Module 3 – Defining Heat Pump Components

Instructor Preparation**Activity Location**

Classroom

Material Preparation

- Review student handouts. Make one copy per student.
- As needed for background, review any of the videos listed in Video Resources.
- **Best Practice**
 - Identify any key vocabulary terms from Handout 1: Module 3 -Vocabulary Definitions that students should be referencing as part of the activity beyond those noted in Handout 2: Module 3 – Defining Heat Pump Components. Be prepared to reference these during the activity.

VIDEO RESOURCES

Video Title	Time	Description
<u>Heat Pumps Explained - How Heat Pumps Work HVAC</u>	9:42 min.	This video discusses how heat pumps work starting from the basics to help students learn HVAC engineering. It covers air to air heat pumps, air to water heat pumps, ground source heat pumps, water source heat pumps, working principles, system schematics, and working animations.
<u>HVAC System Basics and Terminology for New Technicians!</u>	21:41 min.	This video shows the most common system types, how they work, and how they differ. A good introduction to heating and air conditioning for new hires.
<u>Heat Pump Component Tour (In 3D)</u>	20:50 min.	This video covers all of the components that are common to a heat pump air conditioning system as well as some of the basics of how they operate and what they look like. This is a good introduction to heat pumps for a new student or apprentice to get a sense of all the components and where they are located.

ACTIVITY DIRECTIONS

1. Ask students:
 - Why is it important to learn the specific terms for the technical skills associated with Heat Pump Service Technicians?
 - What happens if you don't use the correct terms?
 2. If not already identified by the students, note the points below as to why technical vocabulary matters:
 - **Precision and Safety:** Technical words describe exact tools, measurements, or processes. In specialized fields, confusing a generic term for the proper one can lead to critical errors, wasted time, or even safety hazards.
 - **Efficient Communication:** Using industry shorthand reduces the need for lengthy, clunky explanations. It allows you to relay complex ideas instantly to peers, making your instructions clear and actionable.
 - **Better Troubleshooting:** When you know the exact names of components, or methods, you can search for solutions or ask targeted questions.
 - **Professional Credibility:** Speaking the technical language fluently demonstrates competence, builds trust with clients, and shows you belong to the specialized community of that trade.
 3. Explain that they will have an opportunity to practice and reinforce their technical vocabulary for heat pumps.
 4. Distribute and review Handout 2: *Module 3 – Defining Heat Pump Components*. Assign each student four words. Each student will have a different set of words. (Note: Adjust the number of words assigned to each student depending on the size of the class. The goal is to assign the twenty definitions among a group of roughly 4-5 students.) Ask if there are any questions.
 5. Divide students into small groups of 4-5. Remind students that before working with their partners, individually each student will review and learn the definitions assigned to them. Allow students five to seven minutes to work individually. Then tell students to work with their group to complete #3 and #4 of the directions in Handout 2: *Module 3 – Defining Heat Pump Components*. Allow 15-20 minutes.
 6. Debrief as a class, asking students to share what was easy and challenging about the activity.
 7. Next, the 4-5 student groups will compete to correctly define the terms.
 8. The instructor starts with the first group by naming a term and asking them to define it. If they correctly define it, the group gets a point. If they are unable to correctly define the term, the instructor moves to the next group. The instructor continues doing this until the groups have defined all the terms.
 9. Ask students if they have any questions. Wrap-up by congratulating all the students. Remind them that knowing technical vocabulary prepares them to work on the job with experienced service technicians, their supervisors, and vendors.
-

POST-ACTIVITY RECOMMENDATIONS

Share the Video Resources and encourage them to watch them individually or with another student to reinforce their comprehension of residential heat pump systems.

ESOL Strategy Note

Encourage multilingual learners to sketch, label, or add a translation for each of their four assigned vocabulary words before the group activity begins, so they have a personal reference to lean on when explaining the term aloud.

The individual-review-then-group-teach structure of this activity gives multilingual learners a low-pressure first pass at new technical vocabulary before they are asked to define terms in front of the whole class.