Literacy T-Chart – Concept Map (Clustering, Webbing)

CIP 47.0201 Heating, Air Conditioning, Ventilation & Refrigeration Maintenance Technology/Technician

Organize information to address a question

Program Tasks:	PA Core Standard: CC.3.5.11-12.G
705: Describe the functions of compressors. 706: Describe the functions of condensers. 707: Describe the functions of evaporators. 708: Describe the functions of metering devices.	Description: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

Program Associated Vocabulary:	Reading Associated Vocabulary:
Compressors Condensers Evaporators Metering devices Functions	Main Idea Supporting Detail Hierarchy Focus Question

Program Strategy:	Literacy Strategy:
Use the concept map strategy to ensure that students develop an understanding of the hierarchal relationships among concepts and details. It is especially helpful for visual learners so that they can see the relationships. After you have introduced the concept map strategy, present students with the scenario below. *You have been selected to serve as a student ambassador to recruit students for the HVAC program at your center. Your task is to introduce components of cooling systems, ensuring that they know that while the components are related, they have different functions.* *Develop a concept map that differentiates the components and their functions.*	*Whole Group* Review with students how important it is to differentiate main ideas and supporting details. Explain that the concept map of clustering or webbing clearly shows relationships among ideas. Show an example of a cluster map and lead a discussion of how to determine which ideas are most important or higher on the hierarchy. Provide students with a focus question: What traits do employers value? Then show them a list of related items.

Program Strategy:	Literacy Strategy:

You will use this to organize your presentation and to prepare a handout for the potential students.

This task would be completed after students have some understanding of the components and could be used as an assessment. It can be supported by manuals, website investigations or textbooks.

You may choose to have students work together as teams or work individually to develop the concept maps. If you choose to have them develop the handouts and presentations, they need to be prepared individually.

Students can choose any appropriate concept map to show the functions of compressors, condensers, evaporators and metering devices. A sample web is included as one option to organize information.

Emphasize to students that the purpose is to show the functions of each component and to allow readers to see how they compare. This should lead students to organize by function rather than component.

After the concept maps have been completed, post them in the classroom for feedback by other students.

On time	Responsibility	Friendly	Clean
Learner	Smiles	Good grammar	Follows rules
Efficient	Finishes tasks	Focused	Good manners
Respects authority	Skillful	Listens well	Works hard
Soft skills	Good worker	Good with customers	

Ask students to identify terms that could serve as group headings for others. Then have students group the remaining terms under one of the main points. Students should be able to transfer this information to a web at this point with a central circle, three to four main ideas and the remaining details spread out from each main idea.

Guided Practice
Divide students into two or more groups. Provide each group with an article that is clearly organized. Articles should be related to the same topic. Good sources would be trade publications related to your program.

Have students use sticky notes to arrange the points in hierarchal fashion. Once they are satisfied with the organization, have them transfer to a web.

Once they have completed the first version of their web, provide a video on the same topic. Have them add information to their webs from the video.

Have students compare their webs to create one web that covers all sources. This may involve adding points or paraphrasing others. Have students number their articles and use that numbering to note the source for items on the web.

Review webs with students by asking the following questions:

- Are the concepts and relationships correct?
- Are important concepts missing?
- Are any misconceptions apparent?
- Was the map laid out in a way that higher order relationships are apparent and easy to follow?
- Is it neat and orderly?

Application
As students locate articles, experiment, visit websites or watch videos related to the assigned task, they develop a concept map. Students add to maps or make additional connections as they

Program Strategy:	Literacy Strategy:
	continue to research. Well-organized maps will facilitate students completing the writing task as the organization is already evident. In debriefing, use the following questions: • How did you (your group) decide which were main ideas and which were supporting details? Think about your thinking – Why did you categorize them the way you did? • Why is it helpful to organize notes this way? • How does this make writing easier? Listen for: • Understanding why knowing the difference in key ideas and supporting details is important. • It is important to have these notes for writing and studying for tests. • This activity makes writing easier since the organization is already done.

Instructor's Script – Concept Map

Since many students are visual learners, the concept map provides a way to graphically display relationships. For students to be able to apply information, they must be able to differentiate among key ideas and supporting details. Clustering or webbing provides a structure for creating hierarchies of ideas in a visual manner.

Common Mistakes Made by Students

Students often confuse key ideas and supporting details, especially in texts that do not have the topic sentence or main idea in the first sentence in a paragraph.

At a higher level, students sometimes do not see links across similar concepts. Concept maps allow students to "see" those connections.

Students sometimes try to include too many details in their maps. It is important to demonstrate that they need only a few words to make the links.

CTE Instructor's Extended Discussion

For HVAC students, there are many systems, functions, tools and equipment that must be understood. Visual maps can help them associate the appropriate elements for each function. These maps can be preserved in notebooks for future reference.

Sample Questions

Career and Technical Concepts

Question	Answer
If you were to create an outline with the topic of condensers, which of the following sets would be the next level? A. Air-cooled, water-cooled, evaporative B. Coils, tubes, shells C. Algae, bacteria, scales D. Offices, homes, refrigerators	A. Air-cooled, water-cooled, evaporative

PA Core Reading Concepts

Question	Answer
You are researching the focus question: How do I write an effective resume? After consulting several sources on the topic of writing a resume, which of the following notes should be a key idea to organize your notes before writing? A. References B. Contact information C. Tailored to the job D. Tailored to your age	C. Tailored to the job

Sample Visual Map