

US EPA ARCHIVE DOCUMENT

LESSON PLANS and FACILITATOR'S NOTES

MODULE 4



MODULE 4 LESSON PLAN

NOTE: The Module 4 Facilitator's Notes following this lesson plan provides detailed instructions, a suggested script and additional resources.

Module: 4

Length of time: 2 hours (1 hour instruction 1 hour activity)

You in the Workforce: Making Your Job Green

Materials and Resources Needed:

- Flip chart or board
- Markers
- Computer with CD-ROM or TV w/ DVD Player

Objectives:

1. Students will be able to recognize and reflect upon the fact that all jobs can be "Green."
2. Students will be able to identify green business practices.
3. Students will verbalize how they can bring value to their job and their employer through green business practices.

Procedures:

SEGMENT 1

1. Get the attention of the students. Show the students the *Green Jobs: Finding Eco-Friendly Careers* clip. (4 minutes)
2. Once the students have viewed the clip discuss it briefly. What do you think that Kevin Doyle meant when he stated that "Energy, Transportation, Water, Tourism, Hospitality and Health Care, every single one of these industries have a green niche."
3. Discuss how each industry can reduce waste and conserve energy (how each industry has a green niche) and play *A Sustainable Restaurant from the Inside Out* video to demonstrate how the restaurant industry has a green niche.
4. Discuss how processes and materials can be improved and more environmentally friendly by reviewing restaurant clip.
5. Split class into a few small groups and assign them a CTT area that the center offers. Each group should brainstorm how each of those areas have a green niche or can become greener. Students should be reminded that they can also include things like green products (e.g., composite materials, pervious cement, energy audits etc.).
6. Have the students share with the class what they came up with as a group. Discuss results.

SEGMENT 2

7. There are specific business practices that employers use to make themselves more "green" that go beyond the ideas that students have been learning (the 4Rs, for example). Their future careers may benefit from the following:
 - a. Pollution Prevention
 - b. LEAN
 - c. ISO 14000
 - d. Environmentally Preferable Purchasing

e. Energy Star

8. Introduce the “Lean” concept using the restaurant example. (5 minutes)
9. Continuing the activity above, have students start to think about waste, energy use and cost savings in a business setting. They already identified how several industries can be considered green. Now have the students regroup and relate how their previous findings can reduce waste and energy costs. Make sure to include how their ideas can add value for their potential employer. (5 minutes)

SEGMENT 3

10. Conduct mock interviews with the class to demonstrate how they can communicate the value determined above to a potential employer. Pose the following questions to students, asking students at random. Remind them to focus on their particular trade of interest and provide guidance as you continue. (5 minutes)
 - What does green mean in a workplace setting?
 - What types of suggestions would you make to a company who wants to go green?
 - Have you been involved in any green activities or initiatives?
 - How would our company benefit from going green?
 - Does a company like ours have the ability to go green?
 - How would we go about finding Green Vendors for our industry?
 - Why should we hire you?
 - Explain how you would be an asset to this organization?
 - What makes you a unique candidate for this position?
11. Wrap up course by briefly reviewing each lesson.
12. Review the students’ Personal Environmental Plan. Give the students the remaining time to complete / update their environmental plans.

Terminology:

- **Composite Materials** – Engineered materials made from two or more constituent substances with significantly different physical or chemical properties which remain separate and distinct on a macroscopic level within the finished structure. Typically require little to no maintenance or upkeep.
- **Compost** – A combination of food waste and brown waste that together is being decomposed resulting in a rich black soil. The process of composting is simple and practiced by individuals in their homes, farmers on their land, and industrially by cities.
- **Green Building Materials or Products** – Products or materials made of renewable, versus nonrenewable resources. These materials and products are more environmentally responsible since impacts are considered over the life of the product. Examples of these might include Composite Materials or Pervious/Permeable Concrete.
- **Kilowatt Meter** – A device that measures the amount of electrical energy supplied to or produced by a residence, business or machine.
- **Pervious or Permeable Concrete** – Mixture of aggregate concrete, Portland Cement, water and a small amount of sand. This concrete allows water to pass through at a rate of 3-8 gallons per minute per square foot.
- **Photovoltaic** – Technology that converts light directly into electricity.

<p>Required Discussion Topics:</p> <ol style="list-style-type: none"> 1. All industries have a green niche. 2. What are some cost savings associated with going green? 3. What is the center currently doing to support this green initiative?
<p>Suggested Activities:</p> <p>To be done for the second hour of this lesson; can also supplement the curriculum and be done during structured evening programming or on the weekends. Please note: This module has one <u>required activity</u> for students, a review of the 2009 Clean Tech Job Trends PDF with students. A summary of the document will suffice. This should take approximately 20 minutes.</p> <ul style="list-style-type: none"> • Lifecycle Process (remind students of the Life Cycle of a Cell Phone) – Students will be able to work through the lifecycle process of a material or object that they will use in their given career field. For example: a colander for culinary, a chop saw for carpenters, a paintbrush for painters, a fuel pump for automotive, a trowel for cement masons, etc. • Speech – Students will be given the assignment to create a speech on how they can assist their company in going green that they could give as a tool during a job interview. Essentially a mock interview. • Job Search – Use websites to find Green Jobs that interest the students. Some websites to use include http://www.greenjobs.net/, http://www.ecoemploy.com/, http://www.greenjobs.com, http://jobs.greenbiz.com/, http://jobs.treehugger.com/ • Center Green Team – An extension of the Creation of Center Green Team from Lesson; students can conduct the energy action challenge. • World Clouds – Have students go to www.wordle.net to create word clouds about environmental awareness. • Green Marketing – Students to create a marketing plan and materials to promote awareness on center.
<p>Informal Assessment Options:</p> <ol style="list-style-type: none"> 1. Word Search 2. Personal Environmental Plan
<p>Academic Concepts:</p> <ul style="list-style-type: none"> • Reading • Critical Thinking
<p>Career Success Standards Correlation:</p> <ul style="list-style-type: none"> ☑ Personal Growth and Development ☑ Workplace Relationships and Ethics ☑ Communications ☑ Information Management ☑ Independent Living Skills ☑ Multicultural Awareness ☑ Career and Personal Planning ☑ Interpersonal Skills

MODULE 4 FACILITATOR'S NOTES

Objectives





1. Introduce the concept that *all jobs* can be considered green using the *Green Jobs* video clip and the LEAN principle.
2. Discuss Green business practices that can lead to continuous improvement and add green value to businesses.
3. Discuss and apply concepts learned to job opportunities by verbalizing potential value to an employer.

Suggested Script

Lesson Transition and Overview

ACTION	NARRATION
<p>Review Module 3.</p> <p>Review the module's purpose.</p> <p>Review the module's terminology.</p>	<p>Remember that our last class focused on the changing climate and what <i>you</i> can do to help on a personal level.</p> <p>Today we are going to expand on your environmental impact by looking at what you can do as future employees. Let's get started by looking at a short clip I think you'll find interesting. We will look at how to incorporate green practices in the workplace and how to verbalize the value of doing so to a potential employer.</p> <p>Before we begin, let's review the terminology we will encounter throughout this lesson:</p> <p><Consult the terminology found at the end of Module 4 Lesson Plan.></p> <ul style="list-style-type: none"> • Composite Materials • Compost • Green Building Materials or Products • Kilowatt Meter • Pervious or Permeable Concrete • Photovoltaic

Welcome

<p>Show "Green Jobs: Finding Eco-Friendly Careers" video and lead discussion.</p> <p> </p> <p>Show "A Sustainable Restaurant From the Inside Out" video</p> <p> </p>	<p>How many of you have heard the term, "Green Job?" Specific jobs may come to mind like Solar Installer. But, did you ever think all jobs can be considered green?</p> <p>This clip mentioned that all industries have a green niche. What do you think that means? How do Energy, Transportation, Water, Tourism, Hospitality and Health Care all have a green niche?</p> <p><Solicit student participation, focusing on how each industry can reduce waste and conserve energy; upon wrap-up, go to:</p> <p>http://www.youtube.com/watch?v=G5HqfG4XWvc to show how the restaurant industry is green.></p>
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Record these elements on white board for upcoming group activity.

Facilitate group discussion; assign a different CTT for each group; remind students of elements on white board (above).



Discuss group findings.

Remember the 4 R's we discussed in Module 2– reduce, reuse, recycle and reject – and the product lifecycle of the cell phone? If you think about it, these can be applied to jobs and the work or processes you will do on a daily basis, regardless of the industry. In the business setting, you may hear your employer talk about things like: pollution prevention, environmentally preferable purchasing, LEAN, ISO 14000. While these concepts sound different, they almost all employ the fundamental aspects of the 4R's that we discussed in Module 2. The difference in the business environment is that sometimes the 4R's are applied in a systematic way to make business more efficient, to help them save money and to actually make improvements that will help the environment. Think about things like:

- Products you will make or the services you will offer;
- Disposal and waste generated;
- Energy and water consumption;
- Materials or chemicals used;
- Time spent on processes;
- Inefficiency and
- Technology used, including computers, machines, vehicles, etc.

Then ask yourself, how can these processes or materials be improved and more environmentally friendly?

Let's consider the restaurant in the video we just watched. They:

- Buy their produce and meat from local farmers;
- Schedule equipment usage;
- Use a filtered oven hoods;
- Use recycled-content menus;
- Siphon water with no chemicals;
- Reuse old milk bottles for water pitchers;
- Recycle food waste by composting;
- Offer organic food and drinks; and even
- Built a green venue using products like reclaimed barn doors and low-fume paints.

Let's split into groups and brainstorm on specific industries. Each group will be assigned a different industry and have five minutes to compile ways in which that industry has a "green niche." Designate one person as the recorder and group representative to report on your ideas. Remember the things we talked about earlier. **<Point to elements recorded on white board; you may also want to provide a couple of specific examples to get them started; e.g., A restaurant can ensure that all lights are turned out at night**

when no one is in the building or install timers for automatic shut-off, or a construction company may choose to have their employees' car pool to construction sites in the most fuel efficient vehicle. >

<Regroup and record groups' findings on whiteboard; invite other groups to add to each list.>

Lean

**Explain "Lean."
Record concept "more value with less work by reducing waste" on white board; add the seven types of wastes to the white board.**



Apply "Lean" using the restaurant example.

Of the many green business practices we could talk about (we mentioned some of them above like pollution prevention), let's talk about LEAN. Some of the examples you just came up with can be considered "lean." Lean is centered on processes that create more value with *less work* – or how things flow – by reducing waste. The types of waste include:

- Overproduction, which means to produce too much of something
- Waiting, which refers to the time spent not working and waiting for the next step
- Transport, which refers to unnecessary moving of materials
- Extra Processing, which means reworking
- Inventory, which refers to having more items in stock than is needed
- Motion, which refers to unnecessary extra steps taken by employees
- Defects, which refers to a flaws in a product or process



Think about it. Each of these steps in the business process use resources and so everything we do has a process that can impact the environment. Let's take a look by going back to the restaurant example.

In a restaurant setting, overproduction could refer to making too much food. This not only leads to more physical waste, but also requires more energy to store the food for future use. A simple solution would be to cook smaller batches in a make-to-order fashion.

Waiting could refer to the time a cook waits for a waiter or waitress to bring them the written order slip. Depending on how many distractions he/she comes across on their way to the kitchen, the cook could be waiting longer than necessary. One way this could be improved is by using a computerized system. This would also reduce paper waste!

Transport can be tied directly back to the example we watched on the video. Instead of ordering food that would have to be shipped across states or cities, the restaurant ordered from local farmers. This saves fuel, and in turn, helps the environment.

An example of extra processing can also be tied to the paper order slip. Say the cook can't understand an order taken by a waiter/waitress. The extra work of having to explain the order to the cook is waste. Similarly, say the waitress recorded the wrong order by mistake, which leads us to "Defect." If it's not caught in time, the wrong order is cooked and food is wasted.

	<p>Inventory can be tied right back to overproduction and transport. If you cook smaller batches and buy fresh, local food, inventory will be slashed and the energy required to store inventory is decreased.</p>
<p>Benefits to Employers</p>	
<p>Facilitate group discussion to apply “Lean” to previous group activity; refer back to white board.</p>  <p>Discuss group findings.</p> <p>Conduct mock interviews to demonstrate how concepts learned applies to employability.</p> 	<p>Remember, any process can be improved using “Lean.” Imagine the value you could bring to a potential employer by applying this principle to reduce waste and save energy and money!</p> <p>Let’s get back into your groups and apply this principle to the green practices you identified earlier. Think about:</p> <ul style="list-style-type: none"> • Can you add more examples to your original list by applying the “Lean” process? • How do your examples fit in a “Lean” process? • What value can you add to a potential employer in that industry by applying this concept to the green practices you already identified? <p><Refer back to the white board and give a few examples such as cost savings, waste reduction, time savings, more productive employees, energy savings, etc.></p> <p>< NOTE: If you find students are having difficulty with this area, regroup and pick one industry to discuss with entire class.></p> <p><Regroup and continue.></p> <p>You had great examples of how you could add value to a potential employer. Now let’s work on how you’d communicate those ideas during an interview.</p> <p>Think about the trade you are interested in pursuing here at Job Corps and pretend you’re a new graduate at a job interview. I’m going to be your potential manager and will be asking you questions. I will point to you when it’s your turn. I may ask the same question more than once, but your answer should be different since you’ll be pursuing different trades.</p> <p>Some potential employers may ask specific questions related to being environmentally friendly / green, so I’ll start there. <Ask the following questions, picking students at random, and provide guidance as you continue; also, create conversation as if in a real interview.></p> <ul style="list-style-type: none"> • What does it mean to go green, it sounds so complicated? • What types of suggestions would you make to a company who wants to go green? • Have you been involved in any green activities or initiatives? • How would our company benefit from going green? • Does a company like ours have the ability to go green? • How would we go about finding Green Vendors for our industry?

- **An extension of the Creation of Center Green Team from Lesson 2** (*Develop an environmental campaign focusing on particular areas such as recycling, reducing energy use, reducing waste. Perhaps include a center audit and solicit center staff assistance (e.g., use a kilowatt meter or infrared camera)*).
 - <http://www.epa.gov/region1/green/index.html>
 - <http://www.dartmouth.edu/~sustain/dartmouth/dining.html>
 - <http://www.newdream.org/work/school.php>
 - http://www.tsl.pomona.edu/new/index.php?option=com_content&view=article&id=250:pomona-asks-students-to-pledge-to-help-environment&catid=42:pomona&Itemid=88
 - <http://www.wickedlocal.com/melrose/news/business/x1898860440/-Kill-A-Watt-and-save-a-penny-here-a-planet-there>
 - <http://www.cityofmelrose.org/departments/mec/Kill-A-Watt-spreadsheet.xls>
 - <http://www.cityofmelrose.org/departments/mec/Kill-A-Watt-meter.pdf>
- **Job Search** – Use websites to find green jobs that interest the students. Some websites to use are listed below.
 - <http://www.greenjobs.net/>
 - <http://www.ecoemploy.com/>
 - <http://www.greenjobs.com>
 - <http://jobs.greenbiz.com/>
 - <http://jobs.treehugger.com/>
- **Speech** – Students will be given the assignment to create a speech on how they can assist their company in going green that they could give as a tool during a job interview. Essentially a mock interview.
- **World Clouds** – Have students go to www.wordle.net to create word clouds about environmental awareness.
- **Similar to Module 2's Product Lifecycle Assessment** – Examine a product's lifecycle by soliciting student assessment and critical thinking; focus on the lifecycle process of a material or object used in a given career field. For example: a colander for culinary, a chop saw for carpenters, a paintbrush for painters, a fuel pump for automotive, a trowel for cement masons, etc.
 - <http://www.epa.gov/osw/education/pdfs/finalposter.pdf>

➔ MODULE 4 ADDITIONAL RESOURCES:

SECTION	RESOURCE
WELCOME	<p><i>Green Jobs: Finding Eco-Friendly Careers</i> video:</p> <ul style="list-style-type: none"> • http://www.youtube.com/watch?v=qJspjRNZMk4 <p><i>A Sustainable Restaurant From the Inside Out</i> video:</p> <ul style="list-style-type: none"> • http://www.youtube.com/watch?v=G5HqfG4XWvc <p>Pacific Northwest Pollution Prevention Resource Center:</p> <ul style="list-style-type: none"> • Supply Chain Management for Environmental Improvement <ul style="list-style-type: none"> ○ http://www.pprc.org/pubs/grnchain/intro.cfm <p>New Hampshire Department of Environmental Services:</p> <ul style="list-style-type: none"> • Pollution Prevention in Schools <ul style="list-style-type: none"> ○ http://des.nh.gov/organization/commissioner/p2au/pps/pps/p/index.htm • Environmental Fact Sheet <ul style="list-style-type: none"> ○ http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-26-14.pdf
LEAN	<p>New Hampshire Department of Environmental Services:</p> <ul style="list-style-type: none"> • Making Your Business Greener Workbook <ul style="list-style-type: none"> ○ http://des.nh.gov/organization/commissioner/pip/publications/general/green_business_wkbook.pdf • Planning for Profits...A Guide to Pollution Prevention <ul style="list-style-type: none"> ○ http://des.nh.gov/organization/commissioner/pip/publications/co/documents/co-07-5.pdf <p>Lean Books:</p> <ul style="list-style-type: none"> • http://www.markgraban.com/books.htm <p>Wikipedia:</p> <ul style="list-style-type: none"> • Lean Defined <ul style="list-style-type: none"> ○ http://en.wikipedia.org/wiki/Lean_manufacturing <p>Environmental Protection Agency:</p> <ul style="list-style-type: none"> • Lean Manufacturing and the Environment: <ul style="list-style-type: none"> ○ http://www.epa.gov/lean/energytoolkit/ch1.htm#competitive <p>Food Management:</p> <ul style="list-style-type: none"> • Living Lean and Liking It article: <ul style="list-style-type: none"> ○ http://food-management.com/fm_innovator/fm_imp_14266/