The Minnesota Literacy Council created this curriculum with funding from the MN Department of Education. We invite you to adapt it for your own classrooms.

Advanced Level (CASAS reading scores of 221-235)

The Environment: Week 3 of 3

Unit Overview
This is a 3-week unit in which learners discover the significance of the 3 R’s; the causes and effects of global warming; and the pros/cons of nuclear energy. Learners practice categorizing and writing evidence-based essays. They explore count/non-count nouns and the use of “because/because of” to express cause and “so/therefore” to express effect.

Focus of Week 2
- Reading an article on nuclear energy.
- Interpreting data and statistics on the link between radioactivity and thyroid cancer.
- Reading, writing, and speaking scientific vocabulary in a variety of forms, or parts of speech.
- Debating the issue of nuclear energy with an assigned stance.
- Writing a short essay using evidence.
- Using count/non-count nouns appropriately.
### Objectives

**Learners will be able to...**

**Literacy:** read an article on the pros and cons of nuclear power.

**Listening/speaking:** pronounce vocabulary relevant to the sciences, understanding that with many, if different syllables are stressed the words have different functions.

**Transition & Critical Thinking:** use dictionaries to infer words of similar connotation but different parts of speech from those on their Focus Word list.

**Grammar:** determine when to use each form of Focus Word (e.g. verb, noun, adj., etc.).

### Materials

**Make Student Copies**
- Handout: *SERP: Word Generation, Unit 2.09, pp. 49, 50* (copy back to back to save paper)

**Make Single Copies or Reference**
- none

**Props, Technology, or Other Resources**
- A projector; a set of dictionaries

### Lesson Plan

**Warm up for today’s Lesson**

**Description:** Small Group Word Webs for POWER

**Materials/Prep:** none

**Activity 1:** Listening/Speaking

**Description:** Read through the Focus Words as learners chorally repeat, stressing the same stressed syllables of multisyllabic words.

**Materials/Prep:** Handout: *SERP: Word Generation, Unit 2.09, p. 49*

**Activity 2:** Literacy

**Description:** Read the passage, “Nuclear Power: Our Energy Future, or Danger to Society?”

**Materials/Prep:** Handout: *SERP: Word Generation, Unit 2.09, p. 49*

**Activity 3:** Grammar/Literacy/Critical Thinking

**Description:** Fill in the Forms/Examples Handout in pairs or small groups.

**Materials/Prep:** Handout: *SERP Word Generation, Unit 2.09, p. 50*; American English student dictionaries

**Activity 4:** Checking for Understanding

**Description:** Volunteers share example sentences containing forms of the Focus Words with the whole class.

**Materials/Prep:** a projector
Teacher Directions: Warm up: Word Webs

Learners get into small groups and create word webs for the word POWER, writing down words that span off of each other (i.e. web) as relevant to “power.” Put the images below on the board to get groups started. After about 10 min, a representative from each small group shares out with the whole class. Inform learners that they will be learning about the environment, specifically alternative forms of energy.

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Teacher Directions: Activity 1: Listening/speaking – Materials: Handout: SERP: Word Generation, p. 49; highlighters (optional)

Note: The parts of speech for each Focus Word are as they appear within the text. Inform learners that some of the vocabulary can have different parts of speech if stressed differently, or it may sound as though someone is saying a different word than he or she intends. Unfortunately, stressing the wrong syllable is often cause for misunderstandings.

Focus Words

generate | derives | advantage | consume | contaminate

Step 1: Context

Read through the Focus Words one-by-one, pointing out the stressed syllable of each multisyllabic word. For example, the fifth word is “contaminate” (v.) It is pronounced with a stressed second syllable. If the first or last syllable is stressed, it may be hard to comprehend.

1. generate (v.)
2. derives (v.)
3. advantage (n.)
4. consume (v.)
5. contaminate (v.)

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Nikki Carson-Padilla, Minnesota Literacy Council, 2013   p. 3   Advanced Environment Unit
Step 2: Guided Practice

Learners chorally repeat after instructor, clapping on stressed syllable or tapping a table/thigh. Learners denote which syllable is stressed by placing a mark above the letters on their handout or by highlighting the stressed sounds with highlighters.

Step 3: Partner Practice

Learners pair up and take turns reading the Focus Words to one another. Learners may give each other feedback on whether or not the correct syllable is being stressed. If pronunciation/stress is in question, call upon the instructor for guidance. This should take no more than 2-3 minutes.

Teacher Directions: Activity 2: Literacy—Materials: Handout: “Nuclear Power: Our Energy Future, or Danger to Society?” SERP: Word Generation, Unit 2.09, p. 49 (Continuing with the same handout)

Step 1: Independent or Pair Reading

Learners independently or pair read through the passage “Nuclear Power: Our Energy Future, or Danger to Society?” and should be encouraged to question the text as they read. Since they are reading reproducible documents, they should take advantage of the opportunity to write in the margins and to highlight or underline confusing vocabulary. Learners should strive for fluency at this point and attempt to use context clues instead of their dictionaries as much as possible.
Step 2: Guided Reading

Listen to the instructor read the passage aloud while following along to the text.

Before reading, inform learners to:

1) Follow the text, not your face—no matter how animated, concerned, etc. you might be!

2) Listen closely for the pronunciation of words they highlighted or underlined.

3) If they questioned the text, did the second reading help to answer any or did some new questions arise?

Step 3: Class Discussion

Discuss the text. Draw the answers to the following questions out of the learners; DO NOT tell the answers to the learners!

- What was the main idea?

- What vocabulary was so confusing that it hindered, or blocked, comprehension of a large part of the text? Were there any context clues or parts of the words themselves that could have helped in understanding?

- What’s the author’s attitude toward nuclear energy? How do you know?
Teacher Directions: Activity 3: Grammar, Literacy, & Critical Thinking

Materials:
SERP: Word Generation, Unit 2.09, p. 50; American English student dictionaries; a projector
Step 1: Instructor Demonstration

Place a copy of the Definitions/Forms/Examples Handout on a projector and demonstrate “generate” for learners. Be very explicit in your instructions and show learners what each line of the handout represents (i.e. definitions, parts of speech, and examples of usage in sentences).

Step 2: Pair Work

Learners partner up to find the Focus Words in classroom dictionaries. Learners may also use electronic dictionaries, but must be familiar with how the parts of speech are denoted on their personal devices.

If learners copy an example sentence from the dictionary, encourage them to add one of their own as well.

Teacher Directions: Activity 4: Checking for Understanding

Volunteers approach the projector and share one or two of their example sentences with the class as the instructor facilitates corrections.

Remind learners as they work, if the term doesn’t have the root word, it isn’t a form of the word. If they are only finding a prefix or suffix, but not the root, it is a different word. The first step in identifying forms is to be aware of the roots, or base forms. For example, if “generate” is the root of generate, then every form of the word must contain “generate,” not only “gen.”
Focus Words
generate | derives | advantage | consume | contaminate

WEEKLY PASSAGE

Pilgrim Nuclear Station sits just off the road forty miles from Boston. This power plant makes electricity by heating water with a controlled nuclear reaction. Boiling water makes steam. The steam turns a turbine to generate electricity. Power lines take electricity derived from the plant all over the state of Massachusetts.

President Obama and other politicians want to build more nuclear power plants like Pilgrim. They see nuclear power as a good alternative to expensive oil. Because we consume so much oil in America, we depend on oil from other countries. Nuclear power can be made right here so nuclear energy cannot be cut off by another country. Nuclear power has another major advantage. It does not pollute the air like gas or coal does.

People who are concerned about nuclear power point to safety issues. Some nuclear power plants have leaked radioactive chemicals. The chemicals are blown by the wind and can contaminate water in nearby communities. Doctors have found higher rates of cancer in towns near the Pilgrim power plant.

The biggest worry about nuclear power is a meltdown. In a meltdown, the nuclear reaction gets out of control inside the plant. It gets so hot, the building explodes or breaks apart. Clouds of poisonous chemicals spread over a huge area. At Chernobyl, in Eastern Europe, a nuclear plant meltdown in 1986 spread contamination all over Europe. Thousands of people developed cancer after the meltdown. After the Chernobyl disaster, the U.S. stopped building new nuclear power plants.

Supporters of nuclear power believe that safer power plants can prevent these problems. They want the U.S. to start building nuclear power plants again. Is nuclear power worth the risks?
Unit 2.09

**Nuclear power: Our energy future, or danger to society?**

**FOCUS WORDS OF THE WEEK**

*generate*: (verb) produce

FORMS:

EXAMPLES OF USE:

NOTES:

*derives*: (verb) comes from

FORMS:

EXAMPLES OF USE:

NOTES:

*advantage*: (noun) helpful quantity

FORMS:

EXAMPLES OF USE:

NOTES:

*consume*: (verb) to use up

FORMS:

EXAMPLES OF USE:

NOTES:

*contaminate*: (verb) poison; pollute

FORMS:

EXAMPLES OF USE:

NOTES:
The Environment Unit: Week 3, Tuesday

**Objectives** Learners will be able to...

**Literacy:** read data and statistics about nuclear waste; infer and make predictions.

**Listening/speaking:** discuss a problem involving the best location for nuclear waste.

**Listening/speaking:** dictate sentences to classmates and listen to others in order to write comprehensive sentences.

**Transitions & Critical Thinking:** address the question, “Where should it go?” concerning nuclear waste, with their own input based on logic and statistics.

**Grammar:** properly identify count/non-count nouns and determine use of indefinite articles a/an.

**Materials**

**Make Student Copies**
- Handout: SERP: Word Generation, Unit 2.09, p. 51 (cross off option 2 before photocopying)
- Handout: Grammar in Use Intermediate: Countable and Uncountable Nouns (1), pp. 132, 133
- Handout: Memory Cards (one set per 3-4 players)

**Make Single Copies or Reference**
- Handout: Alternative Energy Sentence Dictation (single sheet can be passed from reader to reader, no need for multiple copies)
- Handout: Alternative Energy Sentence Dictation (Parts of Speech Answers)
- Handout: Find Your Match Cards (one set per class)
- Handout: Grammar in Use Intermediate: Answers, p. 316 (for teacher reference only)

**Props, Technology, or Other Resources**

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**Lesson Plan**

**Warm up for today’s Lesson** (Review of vocabulary)

**Description:** Find Your Match or Memory (Dependent on class size—Find Your Match is suitable for 9-12 learners; whereas Memory is suitable for smaller classes of 4-8.)

**Materials/Prep:** Handout: Find Your Match/Memory Cards

**Activity 1:** Grammar

**Description:** Introduce Count/Non-count nouns.

**Materials/Prep:** Handout: Grammar in Use Intermediate: Countable and Uncountable Nouns (1), pp. 132, 133

**Activity 2:** Literacy, Listening/speaking & Critical Thinking

**Description:** Read “Problem of the Week” and address the Discussion Question.

**Materials/Prep:** Handout: SERP: Word Generation, Unit 2.09, p. 51

**Activity 3:** Listening/speaking & Literacy

**Description:** Complete a learner-given sentence dictation.

**Materials/Prep:** Handout: Alternative Energy Sentence Dictation

**Activity 4:** Grammar/Checking for Understanding

**Description:** Correct sentence dictation at the board with learner volunteers completing sentences that were dictated to them. Underline and label parts of speech of Focus Words.

**Materials/Prep:** None
Teacher Directions: Warm up: Find Your Match Cards/Memory

If the class consists of at least 10 learners, consider playing the Find Your Match version of the warm-up by giving the first 10 people to walk into the room a card with either a Focus Word or a definition on it. If there are an odd number of learners, the instructor will have to participate. Ask the learners to circulate the room and mingle until they find their matches and to stay together once they’ve found one another. As other learners enter the room, ask them to assist those who are having trouble finding their matches. Have pairs report out to the whole class, so everyone can determine whether the matches are accurate or not. What were the key words in the definition that told the two people they were a match?

If the class consists of fewer than 10 learners, consider playing the Memory version of the warm-up by making one or two sets of the cards to be placed face down on a table in two rows of five. Learners take turns turning over two cards at a time, being careful to keep them in the exact same position and making sure all players have an opportunity to view the two cards before turning them back over. If a learner turns over a Focus Word and its definition, he/she can take the pair. The learner with the most pairs wins!

Note: You may also play this version with a larger class, but it will require more prep, because every 3-4 learners must have a set of cards.
Teacher Directions: Activity 1: Grammar


Step 1: Context

Explain to learners that they will be studying how to identify countable and uncountable nouns. This doesn’t necessarily mean that the items cannot be physically counted, but rather that they are grammatically uncountable. Examples are given below. Share these on the board with learners as an introduction to the concept.

I put $100 dollars into my savings account. (countable)

I put some money into my savings account. (uncountable)

Also, consider the following examples:

Oil and coal are examples of non-renewable resources. (countable) — Oil and coal are two non-renewable resources.

Nuclear power appears safe, but its waste is a problem. (uncountable) — Nuclear power is one form of power.

Volunteers read through sections A-C on p. 132 of the handout. Address questions as they arise.

Step 2: Practice

Complete the three exercises on p. 133 of the handout “Countable and Uncountable Nouns (1)” independently. Pair up to compare answers before correcting together as a class.
Teacher Directions: Activity 2: Literacy, Listening/speaking & Critical Thinking
Materials: SERP: Word Generation, p. 51 (cross off option 2 before photocopying)

Note: If learners ask why they are not completing Option 2, inform them that it involves algebraic thinking and that it is optional homework. Learners must be familiar with scientific notation in order to complete option 2.

Step 1: Context
A volunteer learner reads the paragraph aloud as the whole class follows along. Make sure learners understand what “opponents” and “mining” are. These vocabularies are essential to the background knowledge of the controversy around nuclear waste. Check for comprehension by asking individual learners to re-explain, or rephrase, the word problem to the class.

Step 2: Think-Pair-Share
Learners re-read option 1 and think about the correct response, then pair up and share their ideas. Teacher should circulate to address questions as necessary. Correct together as a whole class. (Option 1 involves only basic division.)

Step 3: Whole Class Discussion
A volunteer reads the Discussion Question found at the bottom of the handout aloud. Hold a class discussion to address, “The Obama Administration has cut government funding for the Yucca Mountain facility. Meanwhile, the nation’s nuclear power plants continue to generate nuclear waste. Where should it go?” Encourage learners to explain why they would choose a certain place for nuclear waste over the Yucca Mountain, or if they opt out of using nuclear power altogether, what is the suggested alternative energy source and how is it more manageable? Where does it come from and how much does it cost? What are the disadvantages to using this alternative energy source? Do they outweigh those of nuclear power?
**Teacher Directions:** Activity 3: Grammar, Literacy & Listening/speaking – Materials: Handout: Alternative Energy Sentence Dictation

**Step 1: Dictate to Class**
Individual students volunteer to stand in front of the class and read sentences so those listening can write them down in their notebooks. If a learner dictates a sentence to the class, remind him/her to leave a space in his/her notebook, numbering it so as not to lose track of which sentence is next. (In other words, when students dictate, they are not responsible for writing down the sentences that they read. Tell them they will get their sentences during corrections.)

Convey the following rules for dictation before beginning:

1. Listeners should **not interrupt** mid-sentence. This is discouraging to the reader and rude to fellow classmates as well.
2. Listeners should **not have side conversations**.
3. Readers need to **read with teacher voices**. Every person in the room should be able to hear them.
4. Readers should **read slowly, but naturally**, not stopping after each word and not reading punctuation signs.
5. Readers should repeat each sentence for **a total of three readings**.

**Step 2: Focus Word Practice**
Learners underline the Focus Words or key words in each dictated sentence in their notebooks as you call them out. These are the underlined words on the dictation handout. Learners label the part of speech (e.g. verb, noun, adjective, etc.) above each.

**Teacher Directions:** Activity 4: Grammar/Checking for Understanding

Correct sentence dictation at the board with learner volunteers completing sentences that were dictated to them. Underline and label parts of speech of Focus Words. Teacher should serve as facilitator of discussion of what was done well and what could be changed or added to improve each sentence at the board (i.e. spelling, word order, punctuation, etc.). Correct parts of speech of Focus Words are provided here for teacher reference.
### Find Your Match/Memory Cards

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>generate (v)</td>
<td>To produce</td>
</tr>
<tr>
<td>derives (v)</td>
<td>To come from</td>
</tr>
<tr>
<td>advantage (n)</td>
<td>Helpful quantity</td>
</tr>
<tr>
<td>consume (v)</td>
<td>To use up</td>
</tr>
<tr>
<td>contaminate (v)</td>
<td>Poison; pollute</td>
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</tbody>
</table>
Unit 2.09

Nuclear power: Our energy future, or danger to society?

PROBLEM OF THE WEEK

Americans consume more energy each year, and we are looking for cleaner, greener ways to produce it. Nuclear power has many advantages. It doesn’t pollute the air, and it can be produced in the U.S. But nuclear opponents raise several concerns. One is nuclear waste. Nuclear waste derives from the nuclear reactions that create nuclear energy, as well as from the mining and enrichment of nuclear fuel. If nuclear waste is not stored properly, it can contaminate soil and water. Some nuclear waste will remain dangerous for thousands of years.

Yucca Mountain in Nevada has been proposed as a site for long-term storage of nuclear waste. But this has generated a lot of controversy. Many Nevada residents don’t want a nuclear dump in their home state. In 2001, the Environmental Protection Agency set safety standards for Yucca Mountain for the next 10,000 years.

**Option 1:** The average American lives about 80 years. How many lifetimes is 10,000 years?

A) 125 lifetimes  
B) 130 lifetimes  
C) 135 lifetimes  
D) 210 lifetimes

**Option 2:** An appeals court ruled that the 10,000-year safety standards for Yucca Mountain were inadequate. After all, some nuclear waste may be dangerous for hundreds of thousands of years. The new EPA safety standards cover the next million years. Write 10,000 and 1 million in scientific notation. How many orders of magnitude separate the two numbers?

**Discussion Question:** With violence in the Middle East and worries about global warming, traditional energy sources like oil and coal are falling out of favor. The advantages of nuclear power seem increasingly appealing. Many experts say nuclear power is safe. They say that many of the fears people have about nuclear power derive from misinformation and from the confusion of nuclear power with nuclear weapons. But nuclear waste remains a problem. A long-term, ultra-secure facility is needed. But, given the fact that leaks could contaminate the local environment, no one wants this facility to be in his or her backyard. The Obama Administration has cut government funding for the Yucca Mountain facility. Meanwhile, the nation’s nuclear power plants continue to generate nuclear waste. Where should it go?
Alternative Energy Dictation

INSTRUCTIONS: Volunteer to stand in front of the class and read a sentence so those listening can write it down in their notebooks. When you dictate a sentence to the class, leave a space in your notebook, numbering it so as not to lose track of which sentence is next. Use a teacher voice! Repeat twice, so the sentence is read a total of three times.

1. Some politicians see nuclear power as a good alternative to expensive oil.

2. Nuclear plants can generate electricity using steam.

3. Americans consume a lot of oil from other countries.

4. One advantage of nuclear power is that it doesn’t pollute the air.

5. Radioactive chemicals can leak and contaminate nearby water.

6. The biggest concern about nuclear power is the risk of a meltdown.

7. The United States has 5% of the world’s population, but uses 24% of its energy.

8. On average, one American consumes as much energy as 6 Mexicans or 13 Chinese, or 370 Ethiopians!
1. Some politicians see nuclear (adj.) power as a good alternative to expensive oil.

2. Nuclear plants can generate (v.) electricity using steam.

3. Americans consume (v.) a lot of oil from other countries.

4. One advantage (n.) of nuclear power is that it doesn’t pollute the air.

5. Radioactive chemicals can leak and contaminate (v.) nearby water.

6. The biggest concern about nuclear power is the risk of a meltdown (n.).

7. The United States has 5% of the world’s population, but uses 24% of its energy (n.).

8. On average, one American consumes (v.) as much energy as 6 Mexicans or 13 Chinese, or 370 Ethiopians!

Data for statements 7 & 8 taken from www.worldpopulationbalance.org/pop/energy
### The Environment Unit: Week 3, Wednesday

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Materials</th>
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<tbody>
<tr>
<td><strong>Objectives</strong> Learners will be able to...</td>
<td><strong>Materials</strong></td>
</tr>
</tbody>
</table>
| **Literacy:** read a stance on nuclear energy and write 2-3 pieces of evidence in support of that stance. | Make Student Copies  
  - Handout: SERP: *Word Generation, p. 52* |
| **Listening/speaking:** orally share a stance drawn and the evidence determined to support the stance with the entire class. | Make Single Copies or Reference  
  - Handout: Teacher Prompts for Flyswatter Game  
  - Handout: Noun Prompt Slips (cut out one slip per learner) |
| **Transitions & Critical Thinking:** provide evidence for a stance even if it is not of their personal opinion. | Props, Technology, or Other Resources  
  - Two flyswatters |
| **Transitions & Critical Thinking:** reflect on a scientific experiment. Decide if the results support or disprove the hypothesis. | |
| **Grammar:** identify nouns as either countable or uncountable; properly use non-count nouns in complete sentences. | |

### Lesson Plan

**Warm up for today’s Lesson (Review of grammar)**

**Description:** Flyswatter Game to review  
**Materials/Prep:** Teacher prompts for flyswatter game; two flyswatters

**Activity 1:** Literacy, Listening/speaking & Critical Thinking  
**Description:** “Debating the Issue”  
**Materials/Prep:** Handout: SERP: *Word Generation, p. 53*

**Activity 2:** Literacy, Listening/speaking & Critical Thinking  
**Description:** Science Activity: The experiment was already completed by others; learners answer questions to draw on the conclusion.  
**Materials/Prep:** Handout: SERP: *Word Generation, p. 52*

**Activity 3:** Grammar & Checking for Understanding (Exit Tickets)  
**Description:** Draw slips of papers with a noun pertaining to energy on it. Write and share a sentence properly using the noun showing whether it is count or non-count.  
**Materials/Prep:** Handout: Noun Prompt Slips
Teacher Directions: Warm up: Count/Non-count Flyswatter Game

Materials: Teacher prompts for flyswatter game and 2 flyswatters

Handout:

Set up:
Write each “correct swat” for the flyswatter game randomly around the classroom board, but within student reach. If learners with disabilities, such as those who use wheelchairs or other mobility supports play the game, lower all correct responses for accessibility. Make sure there is plenty of space between each “correct swat,” so it isn’t too crowded and it is obvious which response they are swatting. If board space is too limited, consider using a large open wall space. If this is your only option, you will need to write the correct swat responses on sheets of paper and tape them up.

How to play:
Divide the class into two teams and assign one learner from each team to hold a flyswatter. Inform the teams that they must speak only in English during game time. If they choose to shout out the location of the answer, the other team’s player may also hear and get to it first, so it is probably best to remain quiet or develop a secret strategy for advising one another. Read a prompt aloud and ask the flyswatter holders to swat the correct answer. Afterwards, the two players go to the back of their team lines and two new players from each team come forward as the teacher reads a new prompt.

How to score:
Whoever swats the correct answer first and leaves the flyswatter on the answer gets a point for his/her team. If a learner removes the flyswatter from the correct answer and the learner from the other team swats it, the team with the flyswatter on the correct answer gets the point, not simply the team that touched it first. If both teams swat the correct answer at nearly the same time, the team with the flyswatter on the bottom gets the point. (In other words, the team that swats first, but with certainty, gets the point.)

Note: After reading four prompts, it may be necessary to repeat a couple in order to keep players on their toes. Otherwise, the last two opponents will predict which answers are left to swat. Make sure everyone is actively listening and thinking critically!

Cut out stance A, B, C, and D. These will be drawn by small groups as assigned positions/stances.

**Step 1: Context**
Explain to learners that nuclear power is a **controversial issue** because many people feel that nuclear power is clean and useful as well as a means to remove ourselves from dependency on foreign energy resources. On the other hand, many people fear nuclear power is dangerous and will cause environmental harm and damage quality of life due to its contaminating waste. Something that is controversial is a public dispute or argument.

**Step 2: Assign Stances**
Learners pair up or form small groups of no more than 4. One person from each group draws a stance from options A-D. Learners should be **un**aware of the specific positions A-D at this point. Once all groups have drawn, ask one person per group to be the designated reader and to slowly, loudly and clearly read the stance aloud to his/her group. **Even if members of the group disagree with what is stated, that is the stance the group must support!**

**Step 3: Group Discussion/Preparation**
Pairs or small groups work together to choose at least two pieces of evidence to support their stance. Evidence does not have to be researched for today’s in-class mini-debates. “Evidence” should be any fact from daily life or from in-class reading that supports the group’s stance. Be sure learners understand that statements such as, “We believe this is true,” or “We support this,” are not considered evidence. Evidence **shows** that something is true or provides an example of support. If the statement, “We believe this is true,” is followed by “because...” and the reason is strong and logical, the team making that statement will get credit. If not, no evidence was provided and no credit will be given to that group.

“**Why would I want to defend a position that I don’t personally support?”** A couple of responses might be:

- **To learn empathy** (to be understanding of how it would feel to be in the opposition’s shoes)
- **To play devil’s advocate** (to know what attacks might come at your personal stance in the future and to be prepared for them)
Step 4: Report Out

One person from each group stands and reports out its stance and evidence.

As a class, discuss:
- Which team had the strongest evidence?
- Did your personal opinion change in any way, or if you didn’t have one, do you now?
- Do you have a new appreciation or any empathy for another view on nuclear energy/alternative energy?

Teacher Directions: Activity 2: Literacy, Listening/speaking & Critical Thinking –


Step 1: Context

Explain to the class that the next activity deals with scientific inquiry; however, the experiment has already been completed by others, because it required studying the effects of radioactive exposure. The class will be reading the background for the experiment, the scientific question, the hypothesis made, and the results. Then the class will be discussing what conclusions they can make from the results. Scientific inquiries are important, because without the results of inquiries, we wouldn’t be able to make reliable conclusions to support ourselves when we debate!

Step 2: Read Together

Learner volunteers read aloud the background, the scientific question, and the hypothesis. Check for understanding before moving on to Step 3. Do learners understand the purpose of the experiment? Do learners understand the difference between a scientific question and a hypothesis (prediction of outcomes)?

Step 3: Pair Discussions

Complete the three conclusion questions in pairs. When answering question 1, “Can you conclude that being exposed to radioactive iodine causes thyroid cancer in children and adolescents?” learners should include a reason to explain their yes/no response. What data supports the hypothesis? Or, what data disproves it? For question 3, “Do you think this study is relevant to decisions about how we generate electricity in the United States?” if they answer yes or maybe, they must explain how, or in what way.
Step 4: Report Out
Volunteers share their responses to the conclusion questions with the whole class. Allow for some Q/A.

Teacher Directions: Activity 3: Grammar & Checking for Understanding—Materials:
Handout: Noun Prompt Slips

![Noun Writing Prompt Slips](image)

Give each learner a slip of paper cut from the handout “Noun Prompt Slips” and ask that learners complete the prompts with logical complete sentences before leaving class today. These are their “exit tickets.”

For example, if a learner gets a slip with the word “power” on it, he/she needs to write a statement with a clause, not just a noun or prepositional phrase. That clause must be an independent clause using “power” as a non-count noun.

**Acceptable:**
Nuclear power is clean, but can be dangerous.
The United States uses nuclear power to generate electricity.

**Unacceptable:**
United States uses a lot powers every day.
Power are necessary to use cars and machines.

Each learner must share out his/her sentence with the class before leaving. Identify the noun prompt. As a class, determine if it was used correctly.
Teacher Prompts for Flyswatter Game

INSTRUCTIONS: Read prompts aloud to challengers as they swat the correct answers written randomly on the board. There are a total of 8.

Prompt 1: They monitored the health of victims of radioactivity for 25 years. What type of word is “victims”?
   Correct swat: (count)

Prompt 2: Hydro power is generated electricity from river flow. What type of word is “electricity”?
   Correct swat: (non-count)

Prompt 3: Doctors have found higher rates of cancer near the power plant. What type of word is “doctors”?
   Correct swat: (count)

Prompt 4: We consume a lot of oil in the U.S. What type of word is “consume”? 
   Correct swat: (not a common noun)

Prompt 5: We consume a lot of oil in the U.S. What type of word is “oil”?
   Correct swat: (non-count)

Prompt 6: They monitored the health of victims of radioactivity for 25 years. What type of word is “health”?
   Correct swat: (non-count)

Prompt 7: Some people believe safer power plants can prevent problems. What type of word is “safer”?
   Correct swat: (not a common noun)

Prompt 8: Doctors have found higher rates of cancer near the power plant. What type of word is “cancer”?
   Correct swat: (non-count)
Unit 2.09
Nuclear power: Our energy future, or danger to society?
DEBATING THE ISSUE
Get ready...
Pick one of these positions (or create your own).

A
Nuclear power is too risky and should not be used. We cannot risk contaminating the air, earth, and water.

Get set...
Be ready to provide evidence to back up your position during your class discussion or debate. Jot down a few quick notes:

B
Nuclear power will save us from pollution and conflict over foreign oil and should be used as much as possible.

C
The advantages of nuclear power are worth the risks as long as we pay attention to safety issues.

D
We can solve our energy problems by conserving energy and using safe sources like solar power.

E

GO!
Be a strong participant by using phrases like these.

I believe that...
I agree with you, but...
You make a good point, but have you considered...
Can you show me evidence in the text that...
THINK SCIENTIFICALLY

Ms. Kahn’s class is discussing the connection between nuclear power plants and cancer.

“Cancer is a terrible disease,” says Erin. “Many people suffer from cancer as a result of nuclear power plants contaminating their surroundings. That’s why I don’t think we should use nuclear energy.”

“But think about all of the terrible pollution and political problems caused by other sources of energy,” says Kristopher. “If there is a way that we can both generate clean energy and gain a political advantage, then I think we should consider it.”

“Besides,” suggests Lucinda, “cancer is a very complicated disease with many different causes. How sure are we that exposure to nuclear power plants really causes cancer?”

“That’s a good question, Lucinda,” says Ms. Kahn. “Let’s take a look at the cancer rates around Chernobyl after the nuclear power plant accident there in 1986.”

Ms. Kahn searched the Internet and found the following information about some of the effects of the Chernobyl meltdown.

Thyroid Cancer Study Following the Chernobyl Accident in Ukraine:
The thyroid gland uses iodine to control how quickly your body uses energy and delivers important hormones to the rest of your body. However, when nuclear power plants melt down or just leak a little bit, they release a radioactive version of iodine into the environment that can get into the water and food supplies of the local community. When people consume these contaminated foods, their thyroids collect the radioactive iodine instead of regular iodine. This collection of radioactive material in the thyroid gland can cause thyroid cancer to develop, especially in children and adolescents.

After the Chernobyl meltdown in 1986, researchers began tracking over 13,000 children and adolescents who were exposed to high doses of radioactive iodine. They monitored the health of these young people over the next 25 years and found the following relationship between how much radioactive iodine they were exposed to and how likely they were to develop thyroid cancer.

![Graph showing Exposure and Thyroid Cancer Risk](http://chernobyl.cancer.gov/studies.html)

Within this group of 13,000 people, scientists recorded three times as many incidents of thyroid cancer in comparison to a typical group of people who were not exposed to radioactive iodine.

Data Source: [http://chernobyl.cancer.gov/studies.html](http://chernobyl.cancer.gov/studies.html)
Noun Writing Prompt Slips

INSTRUCTIONS: Cut out a slip per learner. Ask learners to use the word on their slip in a complete sentence before leaving class today. If a learner has incorrectly used the noun in a sentence, help guide him/her to use an appropriate clause to finish writing the sentence. There are multiple possibilities, not just one correct answer. There are 9 prompts provided here. If there are more than 9 learners present, make a duplicate and give some learners the same prompts. Their sentences should differ.

power
energy
environment
gasoline
waste
garbage
wind
sunshine
oil
The Environment Unit: Week 3, Thursday

**Objectives** Learners will be able to...

**Literacy:** write an essay on the topic of nuclear power using evidence and Focus Words.

**Listening/speaking:** listen and take notes on criteria for exemplary writing. Ask clarification questions as they arise.

**Transitions & Critical Thinking:** consider counterarguments as they write their essays while incorporating Focus Words.

**Grammar:** identify nouns as count or non-count by the context in which they are used, as many can be either or (such as hair, chicken, basketball, paper, etc.).

**Materials**

<table>
<thead>
<tr>
<th>Make Student Copies</th>
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</thead>
<tbody>
<tr>
<td>• Handout: <strong>SERP: Word Generation, p. 54</strong></td>
</tr>
<tr>
<td>• Handout: <strong>Alternative Energy Crossword Puzzle</strong></td>
</tr>
<tr>
<td>• Handout: <strong>Grammar in Use Intermediate, Countable and Uncountable Nouns (2), pp. 134, 135</strong> (Section A, Exercise 67.1)</td>
</tr>
<tr>
<td>• Handout: <strong>Suggestions for Exemplary Criteria Improvements</strong> (can be copied back of <strong>SERP, p. 54</strong>)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Make Single Copies or Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Handout: <strong>Count/Non-count Listening Prompts</strong></td>
</tr>
</tbody>
</table>

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<tr>
<th>Props, Technology, or Other Resources</th>
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<tr>
<td>Computers (optional)</td>
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**Lesson Plan**

**Warm up for today’s Lesson (Review of vocabulary)**

**Description:** Crossword Puzzle

**Materials/Prep:** Handout: **Alternative Energy Crossword Puzzle**

**Activity 1:** Grammar & Critical Thinking

**Description:** Understand that some nouns can be either countable or uncountable depending on the context in which they are used.

**Materials/Prep:** Handout: **Grammar in Use Intermediate, Countable and Uncountable Nouns (2), pp. 134, 135** (Section A, Exercise 67.1)

**Activity 2:** Listening/speaking & Critical Thinking

**Description:** Discuss criteria for exemplary writing.

**Materials/Prep:** Handout: **Suggestions for Exemplary Criteria Improvements**

**Activity 3:** Literacy

**Description:** Write an essay on whether nuclear power is the energy of the future or a danger to society following criteria for exemplary writing.

**Materials/Prep:** Handout: **SERP: Word Generation, p.54; computers (optional)**

**Activity 4:** Checking for Understanding

**Materials/Prep:** Handout: **Count/Non-count Listening Prompts**
Teacher Directions: Warm up: Crossword Puzzle-Materials: Handout: Alternative Energy

Crossword Puzzle

Demonstrate the first response to the puzzle for the whole class at a projector, so all learners understand that one letter must go in each box, even boxes containing numbers. Make sure that learners understand the across and down system. In addition, be sure that learners understand that this is a vocabulary and spelling exercise, in no way is it a copying exercise, so the answers are not embedded within the clues/definitions. Learners must generate the answers on their own.

Correct together as a class, either by having volunteers come up to the projector and fill in the correct answers or by having volunteers spell out the correct answers.

Teacher Directions: Activity 1: Grammar & Critical Thinking-Materials: Handout: Grammar in Use Intermediate, Countable and Uncountable Nouns (2), pp. 134, 135 (Section A, Exercise 67.1 only)

Step 1: Context

Inform learners that they are going to expand their knowledge of countable and uncountable nouns. Explain that there are several nouns in English that can be either countable or uncountable depending on how they are used. For example, “basketball” is a non-count noun when it is used as the name of a sport, but when it is a piece of sporting equipment, it is countable. You can have two or three basketballs. Likewise, “chicken” is a non-count noun when it is used as a meat, but when it is a bird, it is countable. The farmer can have ten or twelve chickens, but you probably had chicken for dinner, not two or three chickens for dinner! Ask volunteers to read aloud the examples found in Section A on p. 134 of Grammar in Use Intermediate.
Step 2: Pair Work

As pairs collaborate to complete Exercise 67.1, the teacher should circulate the room and ask questions or give hints when learners appear to be off track. For example, ask questions like, “Do you read the news in one newspaper, or on any general sheet of paper?” But, DON’T simply point out, “This is wrong. You should choose the other option.”

Step 3: Corrections

Correct together as a class. Ask learners to read and share their choices.

Teacher Directions: Activity 2: Listening/Speaking & Critical Thinking - Materials:
Handout: Suggestions for Exemplary Writing Criteria Improvements

Step 1: Context

Explain to learners what a rubric is and how it is used to grade objectively. The GED, college entrance, and licensure writing tests usually use some form of rubric. The Word Generation curriculum uses a very interesting writing rubric and the suggestions made can help learners as they prepare for the GED, college entrance, or those tricky open-ended job application questions. Unfortunately, there is some overlap between the number of Focus Words required and the number of supportive arguments (examples, etc.) Therefore, a more straightforward rubric has been provided here with the handout Suggestions for Exemplary Writing Criteria.

Step 2: Read and Discuss

Learner volunteers read each grading criteria aloud. Discuss as a whole class.

Step 1: Prewrite

Learners brainstorm on scratch paper or in their notebooks before writing on the Write about It handout. Learners should brainstorm a thesis statement and ideas to support it. They may choose to list or to draw a word web/diagram, but some pre-writing should be encouraged. If learners try to organize their ideas as they develop them, it will be more difficult to incorporate the Focus Words and concentrate on staying on topic (avoiding irrelevant comments).

Step 2: Write

Learners write a short essay on the prompt “Nuclear Power: Our Energy Future, Or Danger to Society?” striving for exemplary writing. Remind learners to refer to the Suggestions for Exemplary Writing Criteria handout. A short essay may be 1-5 paragraphs depending on the learner’s ability and the amount of class time remaining. If computers are available to learners, word processing the essays and printing them is an option.

Approximately 8 minutes are needed for the final Checking for Understanding activity, including instruction time.
**Teacher Directions:**  Activity 4: Checking for Understanding - Materials: Handout: Count/Non-count Listening Prompts (for teacher use only)

**Count and Non-count Listening Prompts**

INSTRUCTIONS: Ask learners to write their names at the top of a piece of scratch paper. Below their names, they should list their responses (count or non-count) after they listen to each prompt. They should write their responses silently, so as to give each learner a chance to decide for himself/herself. Responses should be turned in as “exit tickets” to check for understanding of the count/non-count grammatical concept.

1. The super hero Spider Man has multiple powers. What type of word is “powers” as used in this sentence?

2. I can’t go to the party, because I have a big paper due tomorrow. What type of word is “paper” as used in this sentence?

3. Coffee is a popular drink in the United States. What type of word is “coffee” as it is used in this sentence?

4. I pulled a gray hair this morning. What type of word is “hair” as it is used in this sentence?

Learner instructions are provided on the **Count and Non-count Listening Prompts** handout. Ask learners to turn in their responses before they leave. This is their “exit ticket.”
Alternative Energy Crossword

1. harm or risk
2. another option
3. produce
4. helpful quantity
5. people living together in an ordered community
6. to use up
7. poison; pollute
8. disease caused by uncontrolled division of abnormal cells

Across

Down
9. comes from
10. power from physical or chemical resources

Alternative Energy Crossword Puzzle

Answers

Down
1. danger
2. alternative
4. advantage
5. society
8. cancer

Across
3. generate
6. consume
7. contaminate
9. derives
10. energy
Suggestions for Exemplary Writing Criteria

INSTRUCTIONS: Read aloud. Check off each criterion you meet after you write to know your level of essay development. The criteria do not include sentence-level considerations, such as grammar and punctuation. This does not mean that grammar and mechanics are not important. They are still highly considered when grading essays.

**Good Start**
- Stated position
- Included one Focus Word

**Pretty Good**
- Stated position clearly
- Included 1-2 supportive arguments
- Included 2 Focus Words

**Exemplary**
- Stated position clearly
- Included 3 supportive arguments
- Refuted a likely counterargument
- Included 3-5 Focus Words
Unit 2.09

Nuclear power: Our energy future, or danger to society?

WRITE ABOUT IT

Support your position with clear reasons and specific examples.
Try to use relevant words from the Word Generation list in your response.

Focus Words
generate  |  derives  |  advantage  |  consume  |  contaminate
Count and Non-count Listening Prompts

INSTRUCTIONS: Learners write their names at the top of a piece of scratch paper. Below their names, list responses (count or non-count) after listening to each prompt. Write responses silently, so as to give each learner a chance to decide for himself/herself. Responses should be turned in as “exit tickets” to check for understanding of the count/non-count grammatical concept. The teacher may repeat the sentence containing the key word a couple of times, if necessary. Learners should not interrupt the teacher.

1. The super hero Spider Man has multiple powers. What type of word is “powers” as used in this sentence?

2. I can’t go to the party, because I have a big paper due tomorrow. What type of word is “paper” as used in this sentence?

3. Coffee is a popular drink in the United States. What type of word is “coffee” as it is used in this sentence?

4. I pulled a gray hair this morning. What type of word is “hair” as it is used in this sentence?

5. Could I get a clean glass, please? What type of word is “glass” as it is used in this sentence?

6. I had pasta and he has chicken for lunch yesterday. What type of word is “chicken” as it is used in this sentence?

7. The copy machine is out of paper. What type of word is “paper” as it is used in this sentence?

8. She got her hair cut yesterday. What type of word is “hair” as it is used in this sentence?