BIOMASS POWER

Worksheet

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Exercise 1

Match the first part of each sentence with the correct ending.

1. As crops grow,	a) to a power station.
2. When the crops reach the right size,	b) which produces electricity.
3. This biomass is taken	c) they are harvested and turned into straw or 'biomass'.
4. The biomass is burned at very high temperatures to generate heat,	d) this fuel does not add to climate change.
5. This steam is used to turn a turbine and generator,	e) they absorb carbon dioxide from the air.
6. Burning biomass releases carbon dioxide,	f) which is used to turn water into steam.
7. So as long as we keep growing new crops to replace those turned into biomass,	g) but growing new crops absorbs carbon dioxide.

Exercise 2

Use the prompts to write sentences.

1. As crops grow, …

absorb, carbon dioxide, air

2. When the crops reach …

size / harvest, turn into, straw, biomass

3. This biomass…

take, power station

4. The biomass is burned …

very high temperatures, generate, heat / used, turn, water, steam

5. This steam is used …

turn, turbine, generator / produce, electricity

6. Burning biomass releases …

carbon dioxide / grow, new crops, absorb, carbon dioxide

7. So as long as we keep growing …

new crops, replace, turn into, biomass / fuel, add, climate change

Teacher's Notes

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Objectives

Science

Students learn how biomass is used to generate electricity.

Language

Skills: Speaking, listening, reading and writing
Grammar: Present simple tense; present simple passive
Vocabulary: Nouns: *crops, carbon dioxide, size, straw, biomass, power station, temperature, heat, steam, turbine, generator, electricity, fuel, climate change*
Verbs: *grow, absorb, harvest, turn into, generate, produce, release, replace, add to*

Activities

Activities	Language skills
Students say what they know about using biomass to make electricity	Speaking; vocabulary; present simple tense
They watch the animation and check if they were correct	Listening; reading; vocabulary
(Whole class only) They talk in a group and discuss whether they were correct	Speaking; vocabulary; present simple tense
They do a matching activity to make sentences about the process	Reading; vocabulary; present simple tense; present simple passive
They make sentences about the process using prompts	Writing; vocabulary; present simple tense; present simple passive
(Groups only) They give an oral commentary on the animation	Speaking; vocabulary; present simple tense; present simple passive

Procedure

With the whole class

(Typical situation: whole class watching the presentation and animation on an interactive whiteboard or projector.)

1 *[Slide 1]* Introduce the topic and some key vocabulary (see above). Show students the questions on slide 1 and ask them to work in groups to answer the questions. Monitor and help, but do not give students the answers.

2 *[Slide 2]* Play the animation. Tell the students to listen for the answers to the questions from slide 1. (They can make notes if they wish.)

3 *[Slide 3]* Students talk in groups and check their answers to the questions from slide 1. When they have finished, ask them whether they answered the questions correctly before watching the animation.

4 *[Slide 4]* Working in pairs, students do exercise 1 on the worksheet by matching the first part of each sentence with the correct ending. When they have finished, play the animation once more so students can check their answers. Then check answers with the whole class. (See answer key below.)

5 Grammar focus (optional – see below).

6 Tell students not to look at exercise 1 while they do the next exercise. Students work individually and do exercise 2 on the worksheet: they use the prompts to write sentences.

7 Students check their answers in pairs. Then briefly check answers with the whole class. (See answer key.)

With groups (one group studies biomass power and then presents it to the class)

(Typical situation: students arranged in groups around computers eg, in a language lab)

1 *[Slide 1]* Show students the questions on slide 1 and ask them to work in their group to answer the questions.

2 *[Slide 2]* Play the animation. Tell the students to listen for the answers to the questions from slide 1. (They can make notes if they wish.)

3 *[Slide 3]* Students talk in their group and check their answers to the questions from slide 1.

4 *[Slide 4]* Students do exercise 1 on the worksheet: they match the first part of each sentence with the correct ending. When they have finished, they can play the animation once more to check their answers and/or use the answer key.

5 Grammar focus (optional – see below).

6 Tell students not to look at exercise 1 while they do the next exercise. Students do exercise 2 on the worksheet: they use the prompts to write sentences.

7 Students check their answers. (See answer key below.)

8 *[Slide 5]* The group gets ready to give an oral commentary on the animation. They may like to rehearse it once or twice. Play the animation without sound while students provide the commentary.

Grammar focus (optional): present simple passive

1. Focus on sentence 2 from exercise 1: *When the crops reach the right size, they are harvested and turned into straw or 'biomass*'. Write the sentence on the board or ask students to highlight it on their worksheet. Underline the passive verb forms *are harvested/turned into*. Ask students to identify whether these verb forms describe an active process or a passive process. Is the sentence describing what the subject (the crops) do, or what happens to them?
2. Explain to the students that scientific processes are often expressed using the present simple passive, because the most important thing is the event and not who or what carried it out.
3. Write the structure of the present simple passive on the board: *am/are/is* + past participle.
4. If you wish, give students further grammar exercises practising the present simple passive to describe processes.

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Biomass power

Worksheet answer key

Exercise 1

1	e
2	c
3	a
4	f
5	b
6	g
7	d

Exercise 2

1. As crops grow, they absorb carbon dioxide from the air.
2. When the crops reach the right size, they are harvested and turned into straw or biomass.
3. This biomass is taken to a power station.
4. The biomass is burned at very high temperatures to generate heat, which is used to turn water into steam.
5. This steam is used to turn a turbine and generator, which produces electricity.
6. Burning biomass releases carbon dioxide, but growing new crops absorbs carbon dioxide.
7. So as long as we keep growing new crops to replace those turned into biomass, this fuel does not add to climate change.