Secondary Cycle One
Core and EESL

EDIBLE INSECTS:
COMING SOON TO A TABLE NEAR YOU!

Learning and Evaluation Situation
STUDENT BOOKLET

ANSWER KEY

EDIBLE INSECTS: COMING SOON TO A TABLE NEAR YOU!

Introduction

- Would you be willing to add insects to your diet?
- During the upcoming tasks, you will learn more about edible insects.
- Some experts say that we might soon have to include insects in our eating habits for many reasons.
- After previewing some key vocabulary words, reading texts and viewing videos, you will individually create a public service announcement (PSA) to raise awareness among your peers to eat or not to eat edible insects.

Track your use of strategies in the chart on p.15 as you carry out each of the tasks.

Constructs Meaning of Texts (C1-C2)

1. A) **How likely are you to eat insects?** Draw an arrow (↗) to indicate the number that best represents your opinion.

Possibly

No Way! **Certainly**

Because: _____

B) Take a look at the picture(s) your teacher shows you.

	What do you notice?	What do you think?	What do you wonder?

Students' answers will vary depending on the pictures provided.

2. A) Read the words below.
B) Match each word to its definition. Write the corresponding letter in the *Answer* box.
C) For information about nutrients, visit[1]: https://bit.ly/389zsp4

A- Words	Answers	Definitions
1-cricket	E.	A. B. C. D. E. F.
2-earthworm	B.	
3-silkworm	C.	
4-mealworm	F.	
5-livestock	D.	
6-cochineal	A.	
B- Words	**Answers**	**Definitions**
1-fry	C.	to cook in hot water
1-boil	A.	to cook in the oven
2-roast	B.	to cook in fat or oil
3-palatable	E.	safe to eat
4-edible	D.	having a pleasant or agreeable taste
5-enticing	F.	interesting, good looking display
C- Words	**Answers**	**Definitions**
2-food colouring	B.	element found in salt
3-protein	I.	a substance used for changing the colour of pastries
4-sodium	A.	a substance found in the body which contains a lot of fat. It can cause heart problems.
5-vitamin B12	H.	substances found in certain foods (such as bread, rice, and potatoes) that provide your body with heat and energy
6-iron	E.	mineral that carries oxygen throughout the body so cells can produce energy. It can be added to grain products to increase the intake.
7-vitamin C	G.	a type of fat found in meat, eggs, milk and cheese
8-carbohydrates (carbs)	D.	vitamin found in fruits and vegetables such as oranges and peppers. It contributes to the regeneration of tissues.
9-cholesterol	C.	vitamin important for the normal formation of red blood cells and the health of the nerve tissues; an insufficient amount can lead to anemia.
10- saturated fat	F.	nutrient often found in meats and eggs. Legumes are an excellent source
D- Words	**Answers**	**Definitions**
1-entomophagy	C.	a set of instructions for preparing a particular dish, including a list of the ingredients
2-farming	G.	synonym of problems
3-benefit	I.	the practice of eating insects
4-household	J.	cereal made from oats and generally eaten at breakfast or used to bake muffins
5-woes	B.	a group of animals or plants that are similar
6-species	E.	a unit to measure weight
7-coffee beans	H.	the job or business of running a farm
8-oatmeal	D.	seeds of a tropical tree or bush from which coffee is made
9-pound (lb)	F.	a good or helpful result or effect
10- recipe	A.	people living together in one house

[1] Full URL: https://www.canada.ca/en/health-canada/services/nutrients.html

3. A) Place the previous vocabulary words in the mind map below.
B) Regroup these words under categories (e.g. insects, nutrients, adjectives).
C) Add more words as you carry out each activity.

Use semantic mapping

Students' answers will vary.

4. How much do you know about the topic?

A) Read the statements below.

B) Complete the Fact Sheet below (*Before Reading* column only).

FACT SHEET					
	STATEMENTS	**Before Reading**		**After Reading**	
		TRUE	**FALSE**	**TRUE**	**FALSE**
	1- Billions of people eat bugs as part of their regular diet. _____			✓	
	2- People in over 100 countries, 20 of which are in America, eat insects. … 23 of which are in America				✗
	3- Entomophagy is the science of studying dead insects. Entomophagy is the practice of eating insects.				✗
	4- Over 200 insect species are being eaten on a regular basis around the world. There are over 200 insect species that are being eaten on a regular basis in South-East Asia only.				✗
	5- Insect fragments can be found in cocoa beans and coffee beans. _____			✓	
	6- Some food colouring is made with cochineal shells. _____			✓	
	7- There are many health benefits to entomophagy. _____			✓	
	8- There are no environmental advantages to eating insects. Cricket farming takes up less space and water and emits less greenhouse gasses.				✗

C) Discuss your answers with a peer. Use the language below:

- I think it is true because . . . / I think it is false because . . .
- I agree because . . . / I disagree because . . .
- Statements number . . . surprised me the most because . . .

D) Visit:
http://bugsonthemenu.com/

E) Scan the texts on the website to complete the *After Reading* Column (not the video).

F) Using the line provided in each box, correct the false statements as needed.

5. **Using the Jigsaw structure, you will learn more about farming insects.**
   A) In teams of four, choose who will learn how to raise (1) ants, (2) crickets, (3) yellow mealworms, (4) praying mantids
   B) To find the information, visit: https://espacepourlavie.ca/en/raising-insects
   C) Compare your findings in expert groups.
   D) Jot down your notes in the chart below.
   E) Share your notes with your team to learn about what each of you discovered.

Ants (materials, caring tips, important facts)

Materials and food:
- A trowel to dig up the soil
- A container to hold the soil
- A spoon to catch the ants
- A container to carry the ants
- Black cardboard
- Tape
- A wetted sponge
- Ant food (bread, bits of banana or apple, thumb-size bits of cookies or cake, dandelion flowers, sugar cubes)

Tips:
- Put ants in the fridge for ten minutes to calm them.
- The cardboard must completely cover the part of the jar holding the soil.
- Add food and water regularly.
- Return ants where you found them when your project is finished.

Others: _____

Crickets (materials, caring tips, important facts)

Materials and food:
- Egg cartons make excellent shelters
- Some plastic containers about 5 cm deep
- Cardboard
- A 40 W bulb or heating pad
- A thermometer
- Sand (first sterilized for a few minutes in the microwave)
- Food: grains (oatmeal, wheat germ) and bits of fresh fruit and vegetables.
- Water is essential.

Tips:
- Purchase several breeding pairs of adults from a pet store.
- Keep your vivarium in a calm and stable spot where it will get from 12 to 14 hours of light a day. Don't place it in full sunlight.
- Keep the temperature in your vivarium constant at about 30°C.

Others: _____

Yellow mealworms (materials, caring tips, important facts)

Materials and food:
- Sixty larvae obtained from a pet store
- Three plastic containers with lids covered with net
- Food:
  - 10 parts whole oats or wheat
  - 10 parts rolled oats or whole wheat flour
  - one part wheat germ or powdered milk
  - one part yeast (important to prevent dietary deficiencies in insects)
  - cut up vegetables (cabbage, carrot, potato, lettuce) or fruit (preferably apple)
  - water
- A 40 W bulb or heating pad

Tips:
- Find a dimly lit, dry, well-ventilated area.
- Replace food and water regularly.

Others: _____

Praying mantids (materials, caring tips, important facts)

Materials and food:
- Food: insects (catch them or buy them at the pet store)
- A container covered with mosquito netting.
- A branch for the insect to rest on.

Tips:
- Keep the temperature of the container around 20 to 25°C.
- Give it water by spraying the inside wall of the container about once a week.
- If you can't catch a female, collect oothecae clinging to the stems or branches of plants.
- They can bite.
- They can eat one another if they do not have enough food.

Others: _____

6. A) View the *Bugs on the Menu movie trailer available at:* http://bugsonthemenu.com/ (click on *The Film*)
B) Fill in the chart below.
C) Discuss your answers with a partner.

Regular			Enrichment
What do you notice?	**What do you think?**	**What do you wonder?**	**Why do people eat insects?**
			People eat insects because…

Students' answers will vary.

7. Enrichment

A) Complete the T-Chart below with information comparing different proteins.
You can refer to the following texts:

- http://bugsonthemenu.com
- https://artifactsjournal.missouri.edu/2015/04/insects-its-whats-for-dinner/ (see green table)

Insect Protein	**Other Types of Protein (chicken, pig, cow)**
Farming Info	
• **Farming crickets requires 6, 8 m^2 of land and 4,73 litres of water.**	• **Farming hens requires 45 m^2 of land and 3 569 litres of water.** • **Farming pigs requires 45 m^2 of land and 4 947 litres of water.** • **Farming cattle requires 45 m^2 of land and 17 481 litres of water.**
Environmental Info	
• **Cricket farming requires fewer resources and is better for the environment.** • **Crickets can survive off food that is "expired" which reduces food waste.**	• **Other types of protein farming requires more resources which is worse for the environment.**
Costs	
• **Cricket protein can be more affordable than animal protein.**	• **There are greater environmental costs due to the amount of resources (land, water) required.**
Health Info	
• **Crickets: 20,5 grams of protein,** • **Crickets: more B12, iron and calcium than other proteins** • **Ants: 13,9 grams of protein** • **Mealworms: 23,7 grams of protein** • **Termites: 14,2 grams of protein**	• **Poultry: 23 grams of protein** • **Pork: 30 grams of protein** • **Beef: 19 grams of protein**

B) How would life be different if edible insects were part of the North American diet?
Students' answers will vary.

Demonstrates Understanding Through the Response Process (C2)

8. **Explore some risks about eating insects.**
   Read the texts[2] and answer the questions using keywords.

Discuss: What risks do you think are associated with eating insects?

Students' answers will vary.

Explore

Article 1: Insects: It's what's for Dinner?

https://bit.ly/3niQ3xa

Why are farmed insects safer than the ones you would find in your backyard?

There is more control over what they eat to make sure they have a clean intestinal tract and also to make sure they are raised in sanitary conditions.

Article 2: Is it dangerous to eat insects?

https://bit.ly/3abpVjR

What are the risks mentioned about eating insects?

1) Some insects are poisonous
2) Some could be contaminated by bacteria and toxins
3) Some have venom sacs
4) Some insects eat decaying matter which can cause toxins to build up
5) Some can trigger an allergic reaction
6) Pesticide and herbicide use may make them toxic to humans and ecology

Connect

Article 3: The truth about eating insects

https://bit.ly/37Ydsxc

Which guideline do y
most helpful for som
want to eat insects?

Generalize

Based on all the texts you have read/seen, do you think the risks of eating insects outweigh the benefits? Why?

Students' answers will vary.

[2] Article 1: https://artifactsjournal.missouri.edu/2015/04/insects-its-whats-for-dinner/, Article 2 : http://www.bugsfeed.com/are_they_dangerous
Article 3 : https://willowhavenoutdoor.com/featured-wilderness-survival-blog-entries/the-truth-about-eating-insects-can-you-eat-bugs-to-survive/

Demonstrates Understanding Through the Response Process (C1-C2)

9. A) Visit http://bugsonthemenu.com/ and click on *Meet the Chefs*.

B) Choose one chef and answer the following questions.

Explore

a) Chef's name:_____ Recipe:_____

b) I learned a cooking tip:

_____

c) What I remember about the ch

_____

Students' answers will vary.

d) **How likely are you to eat ins** te the number that best represents your opinion.

Possibly

No way! **Certainly**

Because: _____

Connect

e) Which family recipe could you modify in order to add insects to it? How?

_____

_____

Generalize

f) Which actions should be taken for insects to become part of the North American diet?

_____

g) How important will it be in the future to consider protein sources other than meat? Explain.

_____

Students' answers will vary.

C) Discuss your answ

1- How are your answers similar? *We both chose . . . / agree that . . . / wrote . . .*

_____

_____

2- Write something you disagree on: *We have a different opinion on . . .*

_____

_____

3- Which idea still puzzles you? *We don't understand . . .*

_____

_____

Constructs Meaning of Texts - Text Components (C1-C2)

10. Now that you know more about edible insects, create a public service announcement (PSA) to inform peers about this important topic.

Refer to[3]:

Text	Video	Video
https://bit.ly/37kqxBW	https://bit.ly/3rceYEK	https://bit.ly/3pie4Ff

A) **Definition:**

As opposed to a commercial break, the purpose of a public service announcement is to raise awareness about an issue of public interest. A PSA may be in print (e.g. newspapers, magazines, flyers, pamphlets), audio (e.g. radio) or audiovisual (e.g. television, Internet).

Based on the texts provided, what information can be added to this definition?

- A PSA presents facts about a problem in order to persuade, inform or change behaviours.
- A PSA can be created by the government (federal, provincial, local) or a non-profit organization.

Student answers may vary.

B) **Characteristics:**

1. Based on the texts provided, what are the characteristics of a PSA?

_____short_____ ___accurate_____

_____convincing_____ ___current_____

_____clear_____ ___considers target audience_____

_____catchy_____ ___ethical_____

[3] Full URLs: https://www.govtech.com/education/news/How-to-Create-the-Perfect-Public-Service-Announcement.html, https://www.youtube.com/watch?v=eywBa0xfQFw and https://www.youtube.com/watch?v=tdG1GCg1inI

2. In your opinion, when designing a PSA for teens, which characteristic would be more important to consider? Explain.

Students might say: using visual effects and humour, triggering an emotional response or surprise, keeping the PSA short, etc.

Student answers may vary.

C) Let's watch a few examples to compare various PSAs.

Comparing Various PSAs	
What do I notice?	
What do I think?	
What do I wonder?	

Students' answers will vary.

D) **Enrichment**

1- Name 3 types of organizations that might create PSAs.

a. ___not-for-profit organizations___

b. ___government organizations_____

c. ___businesses_____

2- After watching various PSAs, would you say they all serve the same purpose? Explain.

(Answers will vary.) After viewing a few PSAs, students may notice that some PSAs are short and catchy and others are longer and present more facts. Therefore, some PSAs aim at creating an emotional reaction and while others aim at informing**.**

3- In your opinion, what are some relevant issues that could be addressed in a PSA?

(Answers will vary.) Health (drugs, drinking and driving, smoking, texting while driving, etc.), environment, education, etc.

4- In your opinion, should we be exposed to more PSAs? Explain.

(Answers will vary.)

5- What is the difference between a PSA and a commercial?

PSAs contain facts to inform and educate viewers whereas commercials advertise products or services.

6- In your opinion, are commercials and PSAs of equal importance? Explain.

(Answers will vary.)

Reinvests Understanding of Texts (C2)

11. What do you think people need to know about edible insects?

- Which are the most popular edible insects?
- What are the advantages to eating insects?
- What are the risks related to eating insects?
- How can edible insects be incorporated in the North American diet?

What Should People Know about Edible Insects?	
Level	Secondary Cycle One (Core and Enriched)
Meaningful/ Authentic Task	**Create a public service announcement (PSA) on edible insects**
Purpose	To raise awareness
Audience	Peers
Evaluation Criteria	• Use of knowledge from texts in a reinvestment task • Use/management of strategies and resources* **The teacher provides students with feedback, but this is not considered when determining students' marks in the report card.*
Reinvestment Task Requirements: Select, organize and adapt knowledge from text provided in light of purpose and audience	• Select relevant knowledge from the texts provided and notes taken (e.g. Student's Booklet) to gather information for the task, which could include: ○ **edible insects** ○ **advantages** ○ **risks** ○ **ways to incorporate insects in North American diet** ○ **theme-related vocabulary words** • Organize knowledge from texts in a coherent manner. Use a planning tool to help you: ○ **adjust notes** ○ **regroup ideas using a PSA planner** ○ **take into account text components of the text form you selected** ○ **consider target audience** • Adapt knowledge from texts in view of the task in order to deliver a personalized final product individually (e.g. a PSA in the form of a **video, podcast** or **stop motion**) ○ **combine accurate and appropriate information/ideas and language from texts with your own words and ideas**

12. Choose the format of your final product (e.g. video, podcast or stop motion).

A) Ask your teacher for the PSA planner that corresponds to your choice of final product.
B) Complete the PSA planner.
C) Create your final product individually

Reflects on Learning (C1-C2)

13. Complete the chart to track the strategies that helped you carry out each task.

Targeted Strategy	Definition	Date	How did it help you?

Students' answers will vary.

Reflects on Learning (C1-C2) – Definitions provided

13. How do strategies help you carry out tasks?

Targeted Strategy	Definition[4]	Date	How did it help you?
	Note significant similarities and differences.		
	Work with others to achieve a common goal.		
	Identify the necessary elements to carry out a task.		
	Make hypotheses bas knowledge, topic, task components or glancin text.		
	Construct a meaningfu by putting together kn and expressions in a		
	Look for specific information in a text.		
	Read through a text quickly to get a general overview.		
	Write down relevant information in an organized way.		
	Push oneself to experiment with language and ideas without fear of making errors.		
	Group ideas in meaningful clusters to visually represent relationships between concepts.		

Students' answers will vary.

4 The definitions provided come from the: *Progression of Learning in Secondary School,* English as a Second Language, Core Program, Cycle One