

## **Lesson 7: Biology Meets Technology** (associated with EiE<sup>®</sup> Lesson 2)

**Lesson Topic:** Bioengineers look to the natural world to get ideas for technologies that they design.

### **DESIRED RESULTS (教学目标)**

#### **Academic Content Objectives: Students can...**

##### ***Chinese Language Arts***

- Recall and use story text to define character traits
- Skim and scan paragraphs for specific information

##### ***Science and Engineering***

- Recall information about the basic needs of humans, frogs, crayfish, and Bess beetles
- Identify the functions of familiar animal body parts and plant structures
- Become familiar with tropical rain forest animals, insects, mammals and plants
- Distinguish between objects found in the natural world and those designed by humans
- Compare and contrast the functions of objects found in the natural world with human-designed technologies
- Recognize that bioengineers look to the natural world to get ideas for technologies that they design
- Recall features of “technology” as previously discussed in Prep Lesson 1

##### ***Social Studies and Culture***

- Compare and contrast functions of several common objects used in the US and China

#### **Learning Strategies: Students can...**

- Use visualization to activate prior knowledge
- Make analogies
- Work cooperatively with each other

**Chinese Language Objectives: Students can...*****Functions and Forms*****Content-obligatory (CO)**

- Identify something using numbers and appropriate classifiers
- State use/function of something using nominalization and purpose verb phrase, 来 + verb + object
- State use/function of a thing or an action using purpose verb phrase, 来 + verb + object
- State or identify what/who something is or is not
- Describe attributes of something using nominalization within a 是 .... 的 sentence structure
- Describe attributes of something/someone using a predicative construction with the main noun modified by a relative clause
- Express location using 在 [zài] in a locative phrase
- Identify similarities and differences between two things using topic as noun/verb phrase at sentence beginning
- Support ideas/opinions using compound sentences with adverb 因此
- Ask and answer questions using question words

**Content-compatible (CC)**

- Express agreement/disagreement

**Vocabulary**

	了解 Recognize	识记 Produce
Content-obligatory	<p><b>STEM Words</b> 功能 function</p> <p><b>Cross Cultural Chart</b> tools for eating (e.g., 筷子 chopsticks, 钳子 serving tongs ,etc.)</p>	<p><b>Engineering</b> 技术 technology, 设计一种技术 to design a technology, 解决问题, to solve problems, 生物工程师 bioengineer, 天然的 natural/from nature, 人造的 human-made</p> <p><b>Basic Needs of Living Things</b> 水 water, 空气 air, 食物 food, 栖息地 shelter</p> <p><b>Animals</b> 人类 human, 青蛙 frog</p> <p><b>Body Parts</b> 舌头 tongue, 皮肤 skin, 鸭蹼 webbed feet, 牙齿 teeth, 四肢 legs, 脚 feet</p> <p><b>Action Words</b> 舌头 to catch insects, 夹住食物 to catch food, 喝水 to drink water, 吸入空气 to take in air, to find shelter, 保护 to protect, 游泳 to swim, 游动 to move, 保护自己 to defend oneself</p> <p><b>Cross Cultural Chart</b> 大陆 continent, 气候 climate, 语言 language, 食物 food, 流行的运动 popular sports, 运动偶像 sports idol, 人口 population, 首都 capital city, 热带雨林 rain forest</p>

	了解 Recognize	识记 Produce
Content-compatible	<p><b>Instruction Activities</b> 思考—配对—分享 Think-Pair-Share, “四角”游戏 “Four Corners”, 专家 expert, 配对的卡片 matching cards, 全班 whole class, 小组 small group, 伙伴 partner, 天然的物体、东西 natural object</p> <p><b>Technologies</b> 雨衣 raincoat, 耙子 rake, 机翼 airplane wings, 降落伞 parachute, 网 net, 脚蹼 flippers, 钳子 serving tongs, 开壳器 nutcracker, 魔鬼毡 Velcro</p> <p><b>Animals</b> 蜂鸟 hummingbird, 飞狐 flying fox, 食人鱼 piranha, 蜥蜴 lizard, 鹰 eagle, 鹦鹉 parrot</p> <p><b>Body Parts</b> 鸭嘴 bill, 嘴 beak, 相互连接到的翅膀 webbed wings, 鳍 fin, 爪子 paw, 壳 shell, 钳子 pincers, 角 antennae, 小龙虾的爪子 crayfish claw, 蜘蛛网 spider web</p> <p><b>Plants</b> 木棉树 kapok tree</p> <p><b>Plant Parts</b> 蜡叶 waxy leaves, 铆钉 burr, 茎、秆 stalk/shoot (as in bamboo stalk/shoot)</p> <p><b>Action Words</b> 吸水 to take in water, 排水 to repel water, 变换方向 to change direction, 游动 to move, 倒挂 to hang upside down, 吸收阳光进行光合作用 to absorb sunlight for energy, 把东西拉近 to pull things toward oneself, 在飞行中减慢速度 to move slowly through the air, 抓住物品 to grab things, 夹住食物或选夹食物 to break or crack, 固定物体 to stick things together, 爬行 to crawl, 夹起某物 to pick something up, 感触 to feel</p>	<p><b>Animals</b> 鸭子 duck, 蝴蝶 butterfly, 蝙蝠 bat, 狗 dog, 蜘蛛 spider, 小龙虾 crayfish, 蜣螂 Bess beetle</p> <p><b>Plants</b> 竹子 bamboo</p> <p><b>Body Parts</b> 翅膀 wings, 尾巴 tail</p> <p><b>Plant Parts</b> 树干 trunk, 叶子 leaves</p> <p><b>Action Words</b> 吃东西 to eat, 飞 to fly, 吸水 to take in water</p>

**Note:** In the **Language-Function-Form-Vocabulary Connection** section you will find additional vocabulary that is directly supportive of the various language functions. The particular words and phrases you choose to target will depend on your students’ proficiency levels. Because of

*this, we have not included all vocabulary here. At the end of this lesson, you will find a table that provides more detailed information about the lesson vocabulary identified above.*

**PREPARATION (教学准备)****Materials Needed for Instruction**

- *Engineering is Elementary*® (EiE®) binder, Lesson 2
- MMIC *Juan Daniel* CH: Mandarin Chinese version of the *Juan Daniel* story
- Interactive whiteboard pages for Lesson 7: MMIC 7-IWB
- Handouts:
  - a. MMIC 7-1: *Picture Cards*, cut into individual cards, one per student
  - b. MMIC 7-1-TG: *Picture Cards*, Teacher Guide
  - c. MMIC 7-2a and MMIC 7-2b: *Matching Cards*, cut into individual cards. Nature cards should be rubber banded together and technology cards should be rubber banded together separately. Both sets of cards should be placed in one Ziploc bag—one bag for each pair
  - d. MMIC 7-3 (EiE® {2-7}): *Technology Match-Up Homework*, one per student

## LEARNING ACTIVITIES (教学活动)

### Preview Phase—“Intro” Activities

Students will review the functions of some familiar animal body parts and plant structures to revisit the concept of “function.” They will review the meaning of the terms “technology” and “bioengineer.”

**Time:** Learning Activity 1—40 minutes  
Learning Activity 2—20 minutes

### Learning Activity 1

1. Ask students to think back to the “Four Corners” activity from Lesson 5 and talk with a partner to answer the following questions (displayed on page 1 of MMIC 7-IWB):

中文	English
所有生物体的基本需要是什么? (水、空气、食物、和栖息地)	What are the basic needs of all living things? (water, air, food, shelter)
我们所学的四种生物是什么? (人、小龙虾、蜣螂、和青蛙)	What were the four animals that we learned about during this activity? (human, crayfish, Bess beetle, frog)
从小龙虾、蜣螂和青蛙中选一种动物，说一说它身上哪些部位可以满足这四种基本需要。 _____用于_____。	Choose one of these animals: Crayfish, Bess beetle or frog. What body parts does this animal use to meet its four basic needs? _____ use their _____ to _____.
人类是如何保证这四种基本需要? 人用_____喝水/呼吸/吃饭/找住处。	How do humans meet their need for water/air/food/shelter? Humans use their _____ to drink water/take in air/eat food/find shelter.

2. Ask pairs to share answers with the class.
3. Using what students were able to recall, discuss the concept of “功能 (function).” A function is something a person/thing does that is part of its nature.
4. Use the reasons for which we use various parts of the body as examples for students.
5. Continue to give examples of body part “functions” using other animals and plants that students have studied. Begin reviewing rain forest animal and plant vocabulary in the following manner:
  - a. Show colorful images of animals and plants found in rain forests like *El Imposible* in El Salvador (page 2-13 of MMIC 7 IWB), one at a time, with a specific part or parts

highlighted. Ask students to first identify the animal or plant, then to identify the highlighted part:

中文	English
这是什么动物/植物? 这个部位叫什么?	What is this animal/plant? What do we call this part?

- b. Next, depending on the body/plant part, ask one of these questions:

中文	English
它的功能是什么? 这个部位怎样能帮助这个动物/植物? 它是用来做什么的? 对某个动物/植物来说, 它起什么作用?	What is its function? What does this body part help this animal/plant do? What is it used for? What does X animal/plant use it for?

- c. Label each image/part with the corresponding character(s).  
d. Have MMIC 7-1: *Picture Cards*, ready to distribute.

**Teacher tip:** Sort them in advance so that cards picturing the same animal/plant are together.

- e. After presenting each image on the whiteboard, tell students that the class will now get ready for a role-play activity using the rain forest picture cards. Each student will become the “expert” about their card and be able to tell others who/what they are, what the name of their highlighted body part is, what function or purpose that part serves for them (i.e., what basic need it meets).
- f. Ask students if anyone would like to be the experts of the rain forest animal/plant displayed on page 2-13 of MMIC IWB. Choose two students who express interest and give them two cards from MMIC 7-1: *Picture Cards* that correspond with the picture on the whiteboard; give one student a card with one part circled, and the other student a card with a different part (of the same object) circled. Remind students that these are their cards and that they will be the experts about the names and parts of this rain forest animal/plant for the role-play.
- g. Display the following exchange on page 14 of MMIC 7-IWB and invite the pair to tell each other about the rain forest animal/plant on their picture cards by saying:

中文	English
<b>互动框架 #1</b> <u>学生 1</u> 我是个_____, 所以我有_____。  <u>学生 2</u> 你的_____ 用来做什么?	<b>Interaction Frame #1</b> <u>Student 1</u> I am a _____, so I have a _____.  <u>Student 2</u> What do you use your ____ for?



<p><u>学生 1</u> 我的 _____ 用来(动词)_____。你呢?  (交换角色重复练习。)</p>	<p><u>Student 1</u> I use my ___ to ___. Who/what are you?  (Repeat interaction starting with Student 2.)</p>
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- h. Introduce the next rain forest animal/plant image on the whiteboard, choose a different pair of students who express interest in being the “experts,” and ask them to tell each other about their cards using the following dialogue:

中文	English
<p><b>互动框架 #2</b> <u>学生 1</u> 我是个 _____, 我有 _____。  <u>学生 2</u> 你的 _____ 用来做什么?  <u>学生 1</u> 我的 _____ 用来(动词)_____。你呢?  (交换角色重复练习。)</p>	<p><b>Interaction Frame #2</b> <u>Student 1</u> I am a _____, and I have a _____.  <u>Student 2</u> What can you do with your _____?  <u>Student 1</u> I can _____ with my _____. Who/What are you?  (Repeat interaction starting with Student 2.)</p>

**Note:** See *MMIC 7-1-TG: Picture Cards, Teacher Guide*, for a complete list of the rain forest animal/plant cards and their parts and functions.

- i. After all images and parts are presented and all students have received cards, ask students to stand up and find a new partner for the role-play activity. Ask them to look at their cards and use one of two modeled interaction frames above to role-play the rain forest animal/plant on their card.
- j. Allow only a brief period of time for this exchange. Then, give students a cue (i.e., flash the lights or ring a bell) that it is time to change partners. Invite students to sing a short familiar song (Try a song that is about a rain forest animal!) as they roam the room looking for a new partner. Tell them that when the song ends, they are to turn to the student closest to them, who will be their new partner. Continue this activity until students have had a chance for multiple exchanges.

**Teacher Tip:** Keep the oral interaction frames on the whiteboard so that students can refer to it if they need it during the activity. Once students have had enough practice with the exchange, challenge them to continue the interactions without the support of the model interactions.

- k. After students are seated, discuss how remarkable it is that animals and plants have evolved and developed so many different ways to meet their basic needs. Then ask the questions below. This discussion serves as a way to connect to Activity 2, a discussion about the concept of “technology” as human-made tools that help solve everyday problems.

中文	English
想想看, 如果蝴蝶的翅膀受伤了, 或者种在沙漠中的木棉树, 会有什么可能发生? (它们或者演变, 或者死去。)	What do you think happens if a butterfly's wing is broken or Kapok tree that needs a lot of water is planted in a desert? (They will either adapt or die.)
人类有没有办法帮助它们?	Is there anything that people could do to help solve the problem?

Language Function-Form-Vocabulary Connections (Activity 1)		
CO LP 7.1.1	Identify something using numbers and appropriate classifiers	
<p>For example:            这是一架飞机。 This is an airplane.            蜂鸟有一对翅膀。 The hummingbird has a pair of wings.            这是鸚鵡的喙。 This is a parrot's beak.</p>		
Approaching	Attaining	Expanding
个 (gè) people and general object 家 (jiā) families and business establishments 件 (jiàn) clothing 棵 (kē) plants 只 (zhī) insects and animals 支 (zhī) rod-shaped objects, e.g., pencil, Chinese paint brush 把 (bǎ) small objects and objects with a handle, e.g., scissors, chair 本 (běn) journals, books and files	张 (zhāng) thin and flat objects, e.g., aluminum foil, coffee filter 块 (kuài) pieces of small things, e.g., felt, sponge 位 (wèi) persons of status, e.g., professor, engineer 碗 (wǎn) things that come in bowls mostly, e.g., noodles, rice, water 场 (chǎng) events and happenings such as episode, e.g., soccer game	滴 (dī) a drop/a drip used for liquid items 对 (duì) couple/pair: modifies anything that comes in pairs 架 (jià) planes and large vehicles and a few smaller electric objects such as radios
Form Focus: Number + Classifier + Object (noun)		
<p>Classifiers are used when counting objects (nouns). Almost all nouns have a corresponding classifier. When learning a noun it is always good to learn its classifier.</p> <p>If you identify the number of specific objects (e.g., 这是一架飞机。 This is an airplane.), you will need to use the classifier. However, if the number of objects is not specified, the classifier will not be used. For example, 这是鸚鵡的喙。 This is a parrot's beak.</p>		
Noticing and awareness spotlight		
1. The difference between 二 and 两		
二	两	
1) Counting: e.g., 一、二、三..... 2) Used in ordinal numbers: e.g., 第一 (first)、第二 (second)、第三 (third) 3) As last part of any higher number that ends in two: e.g., 十二 (12)、八十二 (82)	Used whenever a classifier is used to indicate “two of something”, see: Subj. + Verb + 两 + Classifier + Noun	

## 2. Use of “noun + 的 + noun” to express possession

To indicate ownership/possession, the structure is “noun + 的 + noun”, for example, 鸚鵡的喙 means “one kind of soccer player.”

CO LP 7.1.2	State use/function of something using nominalization and purpose verb phrase, 来 + verb + object		
Approaching	Attaining	Expanding	
钳子夹住食物。 Pincers grab food.	钳子是用来夹住食物的。 Pincers are used for grabbing food.	钳子的功能是用来夹住食物的。 The function of pincers is to grab food.	
Subject + verb + object.	Subj. + verb 是 + nominalization [用来 + verb + object + 的].	Noun phrase [Noun + 的 to indicate possession + noun] + verb 是 + nominalization [用来 + verb + object + 的].	
Form focus: Nominalization using 的			
A verb/verb phrase can become a noun by placing the particle 的(de) after it. For example, the verb phrase 你说 (you say) can function as a noun phrase 你说的, meaning “what you say” in 你说的是 (What you say is...).			
<ul style="list-style-type: none"> <li>If the subject is expressed in the verb phrase 你说 (you say), it is likely that the noun phrase,你说的 (what you say), will function as the direct object in the sentence, in this case, the “what” you say.</li> <li>If the direct object is expressed in the verb phrase, e.g., 种水果 (grow fruit), it is likely that the noun phrase, 种水果的, will function as the subject of the sentence, as that is the information that is lacking.</li> </ul>			

CO LP 7.1.3	State use/function of a thing or an action using purpose verb phrase, 来 + verb + object		
Approaching	Attaining	Expanding	
鸟用翅膀飞。 A bird uses its wing to fly.	鸭子用有蹼的脚来游泳。 The duck uses its webbed feet to swim.	鸚鵡需要用它的喙来啄开种籽。 A parrot needs to use its beak to crack seeds.	
青蛙用皮肤喝水。 A frog uses its skin to drink water.	青蛙用皮肤来喝水。 A frog uses its skin to drink water.	青蛙需要用皮肤来喝水。 A frog needs to use its skin to drink water.	

Subj. + Verb <sub>1</sub> + Object <sub>1</sub> + Verb <sub>2</sub> + Object <sub>2</sub> [Verb <sub>1</sub> and Verb <sub>2</sub> are parallel verbs. They are both actions performed by the same Subj.]	Subj. + Verb <sub>1</sub> 用 + Object <sub>1</sub> + purpose verb phrase [来 + Verb <sub>2</sub> + Object <sub>2</sub> ]	Subj. + Verb <sub>1</sub> 需要 + Verb <sub>2</sub> 用 + Object <sub>1</sub> + purpose verb phrase [来 + Verb <sub>3</sub> + Object <sub>3</sub> ]
<b>Form focus:</b> 来 (lái) + verb phrase [verb + object], indicating purpose		
Here, the verb 来 (lái) no longer functions as a verb meaning “to come/go”, rather it becomes a marker that takes on the meaning of “for the purpose of” and helps to connect two verbs. For example, Juan Daniel 用水杯来喝水。Juan Daniel uses a water bottle for the purpose of drinking water. 我们需要足球场/球队来踢足球。We need a soccer field to play soccer (for the purpose of playing soccer).		

<b>CC LP 7.1.4</b>	<b>Express agreement/disagreement</b>	
For example:		
<b>Approaching</b>	<b>Attaining</b>	<b>Expanding</b>
好。 Good.	你说得对。 You are correct.	我的想法跟你的一样。 I share your thoughts.
我同意。 I agree.	你完全正确。 You're absolutely right.	我赞成。 I agree (more formal).
我也是/同意。 I also + verb (am/agree).	我也是这么认为的。 I think so too.	我完全赞同。 I agree with you entirely.
对。 Exactly/Correct.	我也不这么认为。 I don't think so either.	
不。 No.	我不是这么认为的。 I don't think so.	我的意见跟你的不同。 My suggestions are different from yours.
不好。 Not good.	是, 可是你不觉得.....? Yes, but don't you think...	我想和你讨论讨论..... I must take issue with you on that.
不同意。 I don't agree with you.	我觉得我不同意。 I'm afraid I have to disagree.	
不对。 Not exactly.		然而 However

## Learning Activity 2

1. Write the word “技术 (technology)” on the whiteboard. Ask students to take a minute to think about this word and to get ready to tell a partner what they imagine when they see this word.
2. What are some examples of technology? Ask pairs to share some of their ideas. Remind students that technology is not just electronics! Can they think of examples that are not electronic?
3. Invite students to help construct a definition for the word “technology.” Ask the following guiding questions:

中文	English
技术是人类发明的还是在自然界里发现的?	Is technology made by humans or found in nature?
技术可以在哪些方面帮助我们?	What can technology do for us?
“技术”准确的定义是什么? 说说看。 (技术是人类的发明, 用来帮助我们解决实际问题的。)	What is a good definition of “technology”? Let’s create a definition together. (Technology is anything that is made by humans to solve problems.)
哪一类专业人员设计新的技术? (工程师)	What type of professional designs a new technology? (An Engineer.)

**Note:** The concept of “technology” was introduced in Lesson 1, Prep Lesson. Perhaps the definition is posted on the classroom wall.

4. Next, guide students to make a connection between technology and engineers and the specific type of engineer introduced in the *Juan Daniel* story. Ask the following questions:

中文	English
谁能说出上一课里 Juan Daniel 遇见的那位生物工程师的名字吗?	Who remembers the name of the bioengineer that Juan Daniel met in the last chapter that we read?
谁能说出生物工程师是做什么的吗?	Who remembers what a bioengineer does?
谁能在 Juan Daniel 的故事里找出 Peters 女士在哪儿讲到生物工程师? (第四章的结尾)	Who can find the part of the <i>Juan Daniel</i> story where Ms. Peters talks about bioengineers? (*at end of Chapter 4)

5. On page 15 of MMIC 7 IWB, show the paragraph from p. 21 in the story that starts “I have an idea...” and ends with “help us solve problems.” (p. 28 in the Chinese version of the story: 从“我有一个想法, .....”到“解决问题的东西或者过程。”)

Then ask students:

中文	English
Juan Daniel 决定怎样来找到帮助青蛙的方法? (他决定去热带雨林走一走。)	What did Juan Daniel decide to do to help him find a solution to his problem with his frog? (He decided to go to the rain forest.)

6. Tell students that in the next activity, they will practice thinking like a bioengineer as they play a matching game.

Language Function-Form-Vocabulary Connections (Activity 2)		
CO LP 7.2.1	State or identify what/who something is or is not	
For example:		
Approaching	Attaining	Expanding
这(不)是技术产品。  这(不)是工程师/技工/工匠/艺人。	这个东西(不)是技术产品。  这个人(不)是工程师/技工/工匠/艺人。	这个东西(不)是技术产品。  这位女士/男士(不)是工程师/技工/工匠/艺人。
This is/is not technology.  This is/is not an engineer/technician/craftsman/artisan.	This object is/is not technology.  This person is/is not an engineer/technician/craftsman/artisan.	This object is/is not technology.  This lady/gentleman is/is not an engineer/technician/craftsman/artisan.
Pronoun (这) + Verb (是) + noun.	Pronoun (这) + (CL + subj) + Verb (是) + noun.	Pronoun (这) + (CL + subj.) + Verb (是) + noun.
Form focus		
<p>不 (bú) is an adverb that means “not.” Like most adverbs, 不 (bú) always appears before the verb, in this case, 是.</p> <p>这是 a pronoun and means “this, these.” It may or may not be followed by a classifier (CL) and a noun, for example,</p> <p>这个人 是 工程师。(This person is an engineer.) 这是 工程师。(This is an engineer.)</p>		
Noticing and awareness spotlight: 个人/东西 vs. 位女士/男士		
The classifier 个 is the most commonly used classifier when referring to people or things. To indicate more respect for the person being referred to, use 位女士/男士, a more formal classifier + noun for people.		

CO LP 7.2.2	Describe attributes of something using nominalization within a 是 ... 的 sentence structure	
Approaching	Attaining	Expanding
塑料做的(plastic-made) • 钢筋做的(steel-made) 布做的(cloth-made) 毛做的 (hair-made) 木头做的(wood-made)	用塑料做的 用钢筋做的 用布做的 用毛做的 用木头做的	球鞋所用的



石头做的(stone-made) 竹子做的 (bamboo-made) 泥做的 (clay-made) 橡皮做的 (rubber-made) 天然的 (nature-made) 人造的 (human-made)	用石头做的 用竹子做的 用泥做的 用橡皮做的	
技术是人造的。  A technology is human-made.	热带雨林是天然的。  The rain forest is nature-made.	球鞋所用的材料是人工的。 The material that the soccer shoes use is human-made.
Subj. + verb 是 + adj. [noun + verb 做] + 的.	Subj + verb 是 + nominalization [verb phrase( 用 + noun + 做) + 的]。	Relative clause [noun + 所 + verb + 的] + head noun + verb 是 + adj. + 的.
<b>Form focus</b>		
1. Use of nominalization within a “是 ...的” sentence structure		
The “是 + adj. +的” structure is commonly used to describe something or someone. For example, 这个物件是天然的。(This object is natural.)		

<b>CO LP 7.2.3</b>	<b>Describe attributes of something/someone using a predicative construction with the main noun modified by a relative clause</b>	
For example:		
<b>Approaching</b>	<b>Attaining</b>	<b>Expanding</b>
生物工程师学习生物学和工程学。  A bioengineer studies biology and engineering.	工程师是设计新技术的人。  An engineer is someone who designs a new technology.	用生物科学来设计新技术的生物工程师是工程师的一种。  A bioengineer who uses the science of biology to design a new technology is one kind of engineer.
Subject noun + verb phrase (action verb + direct object)	Main noun + “be” verb + modifying phrase [verb + object + 的] + noun	Relative clause as modifying phrase for subject [verb + object + 的] + subject noun + “be” verb + noun phrase [noun + 的 + noun]

**Form focus:** Use of verb phrase or relative clause to describe main noun

There are several ways to describe persons/places/things. One way is to use a verb phrase and tell what the person/thing does. For example,

蜥蜴和青蛙一起住。 A lizard and a frog live together.

前锋 + 射门得分。 A forward kicks the ball and scores goals.

水瓶 + 盛水。 A water bottle carries water.

Another way to describe something/someone is to use a relative clause: a nominalized verb + object + 的 clause placed in front of the noun being modified.

For example,

蜥蜴和青蛙住的 + 地方 - The places that a lizard and a frog live in...

一个设计科技的 + 人 - "someone who designs technology"

设计宇宙飞船的 + 航空工程师 - "An aerospace engineer who designs spaceships"

**Noticing and awareness spotlight:** Use of "noun + 的 + noun" to express possession

To indicate ownership/possession, the structure is "noun + 的 + noun", for example, 工程师的一种 means "one kind of engineer."

### Focused Learning Phase-- “Through” activities

Students will compare and contrast different human-made technologies with natural things that have similar functions.

**Time:** Learning Activity 3—30 minutes  
Learning Activity 4—20 minutes

#### Learning Activity 3

**Note:** This is an adaptation of the matching activity in the *EiE®* binder, pages 64-67 {*EiE®* 2-7}. For the Chinese version for this activity, use MMIC 7-2 CH: Matching Cards. Some of the items in the *EiE®* version of the matching activity handout have been replaced with things that would be found in China so as to introduce culture into the lesson. The object of this activity is to have students try to match human-made technologies with objects found in nature that have the same function. See MMIC 7-2-TG: Matching Cards, Teacher Guide, for the answer key to the matching activity.

1. Place students in pairs and give each pair a Ziploc bag with two sets of cards from MMIC 7-2a and 2b: *Matching Cards*. There are a total of 20 cards: 10 are images of natural objects, ten are human-made technologies. Ask students to take the stack of natural object cards and lay them neatly on the table, **face up**. Then have them take the stack of technology object cards from the bag and ask them to lay them on the table (without looking at them) **face down**. Instruct student partners to take turns turning over the cards that are face down (one card at a time), and matching them to the natural object cards that are face up. When a student finds a match, s/he must say **how** the two objects perform the same function.
2. Put this interaction frame on page 16 of MMIC 7-IWB as a guide, and model the activity for the class before having them begin.

中文	English
_____是在大自然里找到的。	The _____ is found in nature.
_____是人类发明的技术来解决问题。	The _____ is a human-made technology to solve a problem.
两者都是用于_____的。	They are both used to _____.

**Note:** Students do not always recognize what Velcro is, and may need to see an example on a student’s pair of shoes or clothing.

3. Use the image of chopsticks and ask students to think of a technology in American culture that is used for the same purpose (e.g., fork, tongs). Lead them in a discussion of cultural practices that are related to the use of chopsticks (e.g., sharing food from a common bowl; eating as a communal activity). Record this information on the cross-cultural chart in a new category: tools for eating food.
4. Have the student pairs put their cards back into two stacks (natural objects and technology objects), put a rubber band around each of the two stacks, put them into the Ziploc bag and return the bag to the materials table.
5. Before students transition to the next activity, ask them to turn to a neighbor (not their partner for the previous activity), recall one pair of “matching functions” and describe them using the same sentence models still displayed.

Language Function-Form-Vocabulary Connections (Activity 3)		
CO LP 7.3.1	State or identify what/who something is or is not	
For example:		
Approaching	Attaining	Expanding
这(不)是技术。	这个东西(不)是技术。	这个东西(不)是技术。
这(不)是工程师/技工/工匠/艺人。	这个人(不)是工程师/技工/工匠/艺人。	这位女士/男士(不)是工程师/技工/工匠/艺人。
This is/is not technology.	This object is/is not technology.	This object is/is not technology.
This is/is not an engineer/technician/craftsman/artisan.	This person is/is not an engineer/technician/craftsman/artisan.	This lady/gentleman is/is not an engineer/technician/craftsman/artisan.
Pronoun (这) + Verb (是) + noun.	Pronoun (这) + (CL + subj) + Verb (是) + noun.	Pronoun (这) + (CL + subj.) + Verb (是) + noun.
Form focus		
<p>不 (bú) is an adverb that means "not." Like most adverbs, 不 (bú) always appears before the verb, in this case, 是.</p> <p>这 is a pronoun and means "this, these." It may or may not be followed by a classifier (CL) and a noun, for example,</p> <p>这个人 是 工程师。 (This person is an engineer.)</p> <p>这是 工程师。 (This is an engineer.)</p>		
Noticing and awareness spotlight: 个人/东西 vs. 位女士/男士		
The classifier 个 is the most commonly used classifier when referring to people or things. To indicate more respect for the person being referred to, use 位女士/男士, a more formal classifier + noun for people.		

CO LP 7.3.2	Describe something using nominalization within a 是 ... 的 sentence structure	
Approaching	Attaining	Expanding
_____是人类发明的技术。	_____是在大自然里找到的。	两者都是用于_____的。
The _____ is a human-made technology.	The _____ is found in nature.	They are both used to_____.

Subj. + verb 是 + adj. [noun + verb] + 的 + noun.	Subj + verb 是 + nominalization [verb phrase (locative phrase {在 + noun + 里} + verb) + 的].	Subj. + adv. + verb 是 + nominalization [verb 用于 + verb + 的].
<b>Form focus</b>		
1. Simple descriptive sentence (Subj. + 是 + verb + 的)		
The “是 + verb + 的” structure is commonly used to describe something or someone. For example, 这个物件是妈妈做的。(This object is made by mom.)		

<b>CO LP 7.3.3</b>	<b>Express location using 在 [zài] in a locative phrase</b>	
For example:		
<b>Approaching</b>	<b>Attaining</b>	<b>Expanding</b>
在这儿 (here [vernacular]) 在这里 (here, this place) 在那儿 (there [vernacular]) 在那里 (there, that place) 在家 (home) 在饭馆儿 (restaurant) 在足球场 (soccer field) 在这个部分 (this section)	在...前边/面/头 (in front of) 在...后边/面/头 (behind) 在...上边/面/头 (above) 在...下边/面/头 (below) 在...里边/面/头 (inside) 在...外边/面/头 (outside) 在大自然里 (in nature)	在这两个部分的中间 (in the center of these two sections/parts/areas)  在又热又干燥的足球场上 (on the hot, dry soccer field)
在 (zài) + adverb of location (here, there)/noun (home, restaurant, soccer field, country)	在 (zài) + noun + locative particle	在 (zài) + modifying phrase + 的 + noun OR 在 (zài) + modifying phrase + 的 + noun + locative particle
<b>Form focus</b>		
1. Formation of locative phrase: “在 (zài) + noun + locative particle”		
To express location Chinese speakers use a locative phrase that begins with the coverb 在 (zài). For example, “在 zai + concrete noun + locative particle”  在守门员后面: behind the goalie 在大自然里: in nature		
2. Placement of locative phrase		
Unlike in English, a locative phrase is placed either at the beginning of the sentence or before the main verb, NOT at the end of the sentence.		

A locative phrase, e.g., “在 zai + concrete noun +locative particle,” can be placed in a sentence as follows:

1. Directly before the main verb. (Typical placement)  
我们在咖啡过滤纸上放了一块海绵。We put a sponge on the coffee filter.  
(Subj + locative phrase + verb + past tense marker + object.)
2. At the beginning of the sentence and set off by a comma. (for emphasis)  
在咖啡过滤纸上，我们放了一块海绵。On the coffee filter, we put a sponge.  
(Locative phrase, subj + verb + past tense marker + object.)
3. After main verb in a 把-construction (giving emphasis to the direct object)  
我们把一块海绵放在咖啡过滤纸上了。We placed a sponge on the coffee filter.  
(Subj + 把-construction [把 + object + verb + complement] + past tense marker.)

CO LP 7.3.4	Identify similarities and differences between two things using topic as noun/verb phrase at sentence beginning		
For example:			
	Approaching	Attaining	Expanding
	钳子的功能跟筷子的功能一样。	说起功能，钳子和筷子一样。	说起功能，钳子和筷子大同小异。
	Pincers' function and chopsticks' function are the same.	Speaking of functions, pincers' and chopsticks' are the same.	Speaking of functions, pincers' and chopsticks' are generally the same but a little bit different.
	A + 和/跟 (and) + B + 一样 (same)/不一样 (different)	Topic as verb phrase (verb + object + “,”) + sentence (A 和/跟 (and) B + [是 assumed] + adj.).	Topic as verb phrase (verb + object + “,”) + sentence (A 和/跟 (and) B + [是 assumed] + four-character idiomatic expressions.
<b>Form focus:</b> Topic as noun/verb phrase at sentence beginning			
In Mandarin, expressing the topic (what the sentence is about) is very important. The topic usually refers to something that the speaker and hearer already know about. The topic of the sentence does not need to have a direct relationship with the main verb as would a subject.			
The topic or that which is being discussed is usually placed at the beginning of the sentence and set off by a comma. It can be either a noun phrase or a verb phrase.			
For example,			
<b>Noun phrase:</b> 人们喜欢的运动，在中国和在美国很相似/不同。(The sports people enjoy in China are similar to/different from the sports people enjoy in the U.S.)			

**Verb phrase:** 运用工程设计程序，工程师们需要遵循这些步骤。(Using the engineering design process, engineers need to follow these steps.)

### Noticing and awareness spotlight

#### 1. Use of “noun + 的 + noun” to express possession

To indicate ownership/possession, the structure is “noun + 的 + noun”, for example, 钳子的功能 means pincers’ function or the function of pincers.

#### 2. Use of four-character idiomatic expressions

Four-character idiomatic expressions are commonly used phrases that carry a great of meaning beyond the four characters themselves. They have their origins in traditional Chinese stories, myths and historical facts and are best understood within these contexts. There are about 5,000 such expressions in use. A few commonly used four-character idiomatic expressions that can be found in *Juan Daniel’s Fútbol Frog* are:

小心翼翼 (very carefully)

一泄千尺 (fall down one thousand feet, fall far down, cascade down)

To pique student curiosity about these idiomatic expressions, teachers will need to research their origins and discuss the historical context with students.



### Learning Activity 4

1. Lead students in another interactive matching activity in which they will be matching technologies and natural objects by function. Take one set of the 10 natural object cards and the 10 technology object cards from MMIC 7-2a and 2b: *Matching Cards* and give one card to each student. Using the following interaction frame (displayed on page 17 of MMIC 7 IWB), model the activity for students with another student or teaching assistant playing the role of Student B.

中文	English
<b>模型: 小龙虾的钳子 + 筷子</b>	<b>Model: crayfish pincers + chopsticks</b>
<u>学生 A</u> 我是一只小龙虾, 所以我有钳子。	<u>Student A</u> I am a crayfish, so I have pincers.
<u>学生 B</u> 你的钳子用来做什么?	<u>Student B</u> What do you use your pincers for?
<u>学生 A</u> 我的钳子用来夹东西。	<u>Student A</u> I use my pincers to grab things.
<u>学生 B</u> 我也能夹东西。我是一双筷子, 人们用我来夹东西。我们可以配对。	<u>Student B</u> I can also grab things. I am a pair of chopsticks. People use me to pick up food. We are a match!
或者	<b>OR</b>
<u>学生 B</u> 我不能夹东西。我们不可以配对。	<u>Student B</u> I cannot grab things. We are not a match.

2. Show students that when they make a match, they must also link arms together until the rest of the students find their matches, too. Students may need to move through the interaction several times before finding their match. Once partnered, they must talk together to identify the basic need that the natural object and the technology meet for the plant/animal.

**Expansion Phase-- “Beyond” activities**

Students make a personal connection during the activity of matching a part of the natural world with a human-made technology used in everyday living.

**Time:** Learning Activity 5—20 minutes

**Learning Activity 5**

1. In a Think-Pair-Share format, ask students to think of other natural object/technology matches not on the matching cards. They should then share their ideas with a partner, and the pairs may share ideas with the whole class.
2. Distribute MMIC 7-3 CH (EiE<sup>®</sup> {2-7}): *Technology Match-Up Homework*, one per student.
3. Assign students the following task to complete at home:

中文	English
想出两项这一课中没有的技术并把它们画在讲义上或从杂志/网络上找到它们的图片，贴在讲义上。	Think of two examples of technologies that we have not already seen in this lesson. Draw a picture or tape magazine/Internet images of these two technologies on the handout.
在自然界中找到与上述技术具有相似功能的东西，把它们画在或贴在旁边。	Identify an object in the natural world that performs a similar function as each of the technologies you have chosen, and place or draw pictures of those natural objects next to the matching technology object on the handout.
用一句话描述两者的共同点。	Write a sentence saying what function the two objects have in common.

4. Provide a model (using objects/technologies on the matching cards) so that students may copy down the sentence model to help them at home.
5. Begin the next lesson by having students read aloud what they wrote for their homework in small groups, then invite a few groups to share one example with the class. Collect MMIC 7-3 CH (EiE<sup>®</sup> {2-7}): *Technology Match-Up Homework* as evidence of learning.

Language Function-Form-Vocabulary Connections (Activity 4-5)		
CO LP 7.4-5.1	Support ideas/opinions using compound sentences with adverb 因此	
For example:		
Approaching	Attaining	Expanding
我是....., 因为.....。	这个生物有钳子, 因此, 它是.....	由于这个生物有钳子, 因此, 它是.....
I am a ....., because....	This living thing has pincers, as a result it is a .....	Due to this living thing having pincers, as a result it is .....
....., 因为 (because)..... 因为 (because)....., 所以 (so).....	....., 因此 (as a result, therefore), .....	由于 (due to)....., 因此 (as a result, therefore), .....
<b>Form focus:</b> ....., 因此 (as a result, therefore), .....		
因此 (as a result, therefore) is an adverb that can be used instead of the conjunction 因为 in the second clause.		
<b>Noticing and awareness spotlight:</b> Use of 由于 (due to)		
由于 (due to)....., reflects a more formal register and is more likely to be used in written communication.		

CO LP 7.4-5.2	State use/function of something using nominalization and purpose verb phrase, 来 + verb + object	
Approaching	Attaining	Expanding
钳子和筷子夹住食物。	钳子和筷子是用来夹住食物的。	钳子和筷子的功能是用来夹住食物的。
Pincers and chopsticks grab food.	Pincers and chopsticks are used for grabbing food.	The function of pincers and chopsticks is to grab food.
Subject + verb + object.	Subj. + verb 是 + nominalization [用来 + verb + object + 的].	Noun phrase [Noun + 的 to indicate possession + noun] + verb 是 + nominalization [用来 + verb + object + 的].

<b>Form focus: Nominalization using 的</b>
<p>A verb/verb phrase can become a noun by placing the particle 的(de) after it. For example, the verb phrase 你说 (you say) can function as a noun phrase 你说的, meaning “what you say” in 你说的是 (What you say is...).</p> <ul style="list-style-type: none"> <li>• If the subject is expressed in the verb phrase 你说 (you say), it is likely that the noun phrase, 你说的 (what you say), will function as the direct object in the sentence, in this case, the “what” you say.</li> <li>• If the direct object is expressed in the verb phrase, e.g., 种水果 (grow fruit), it is likely that the noun phrase, 种水果的, will function as the subject of the sentence, as that is the information that is lacking.</li> </ul>

CO LP 7.4-5.3	Ask and answer questions using question words		
For example:			
<b>Approaching</b>	<b>Attaining</b>	<b>Expanding</b>	
..... 吗? Use of ma ..... 是不是.....? Is or is not?	谁.....? (Who) 什么.....? (What) 哪里.....? (Where) 什么时候.....? (When) 怎么.....? (How) 为什么.....? (Why)	几/多少? (How many) 哪(些).....? (Which)	
Form focus: Placement of question words			
<p>Most question words in English occur at the beginning of a sentence. However, question words in Chinese occur in a variety of positions. Generally, question words appear in the same position as the grammatical function they serve in the sentence.</p> <p>For example:            它的首都是什么? (What is the capital city? [“What” occurs in predicate position])            萨尔瓦多的北边有几个国家? (How many countries are north of El Salvador? [“How many” is in the # position of the noun phrase [# + classifier + noun])</p>			
Noticing and awareness spotlight: Use of 吗? 吧? 呢?			
<p>A few particles are commonly used at the end of questions.</p> <p>吧? is used to invite agreement.</p> <p>呢? is a tag question meaning “, and you?”</p> <p>吗? is a question particle that is used when one expects a “yes” or “no” response.</p>			

CC LP 7.4-5.4	Express agreement/disagreement	
For example:		
<b>Approaching</b>	<b>Attaining</b>	<b>Expanding</b>
好。 Good.  我同意。 I agree.  我也是 / 同意。 I also + verb (am/agree).  对。 Exactly/Correct.	你说得对。 You are correct.  你完全正确。 You're absolutely right.  我也是这么认为的。 I think so too.  我也不这么认为。 I don't think so either.	我的想法跟你的一样。 I share your thoughts.  我赞成。 I agree (more formal).  我完全赞同。 I agree with you entirely.
不。 No.  不好。 Not good.  不同意。 I don't agree with you.  不对。 Not exactly.	我不是这么认为的。 I don't think so.  是，可是你不觉得.....? Yes, but don't you think...  我觉得我不同意。 I'm afraid I have to disagree.	我的意见跟你的不同。 My suggestions are different from yours.  我想和你讨论讨论..... I must take issue with you on that.  然而 However
<b>Noticing and awareness spotlight: Repetition of verb</b>		
Repetition of a verb, e.g., 讨论讨论 (to discuss), can be used to soften the tone of voice.		

**Evidence of learning**

- Oral exchanges role-playing rain forest animals, body parts and their functions using picture cards
- Oral contributions to the co-construction of the definition of “technology”
- Correct matches and use of Mandarin in the matching card activities
- Completed handout:
  - MMIC 7-3 (EiE<sup>®</sup> {2-7}): *Technology Match-Up Homework*

## Vocabulary List

### Content-obligatory (CO)

了解 Recognize			
Pīnyīn	Characters	English meaning	Parts of speech
gōng néng	功能	Function	noun
kuài zi	筷子	Chopsticks	noun
qián zi	钳子	serving tongs	noun
识记 Produce			
Pīnyīn	Characters	English meaning	Parts of speech
bǎo hù	保护	to protect	verb
bǎo hù zì jǐ	保护自己	to defend itself	verbal phrase
dà lù	大陆	Continent	noun
hē shuǐ	喝水	to drink water	verbal phrase
jiá zhù shí wù	夹住食物	to catch food	verbal phrase
jiǎo	脚	Feet	noun
jiě jué wèn tí	解决问题	to solve problems	verb
jì shù	技术	Technology	noun
kōng qì	空气	Air	noun
liú xíng de yùn dòng	流行的运动	popular sports	noun
pí fū	皮肤	Skin	noun
qì hòu	气候	Climate	noun
qī xī dì	栖息地	Shelter	noun
qīng wā	青蛙	Frog	noun
rè dài yǔ lín	热带雨林	rain forest	noun
rén kǒu	人口	Population	noun
rén lèi	人类	human	noun
rén zào de	人造的	human-made	adjective
shè jì yī zhǒng jì shù	设计一种技术	to design a technology	verb
shé tóu	舌头	tongue	noun
shēng wù gōng chéng shī	生物工程师	bioengineer	noun
shí wù	食物	food	noun
shí wù	食物	food	noun
shǒu dū	首都	capital city	noun
shuǐ	水	water	noun
sì zhī	四肢	legs	noun
tiān rán de	天然的	natural/from nature	adjective

xī rù kōng qì	吸入空气	to take in air	Verbal phrase
yá chǐ	牙齿	teeth	noun
yā pǔ	鸭蹼	webbed feet	noun
yóu dòng	游动	to move	verb
yóu yǒng	游泳	to swim	verb
yǔ yán	语言	language	noun
yùn dòng ǒu xiàng	运动偶像	sports idol	noun

### Content-compatible (CC)

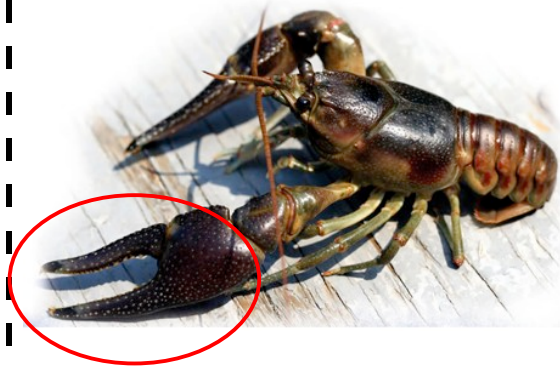
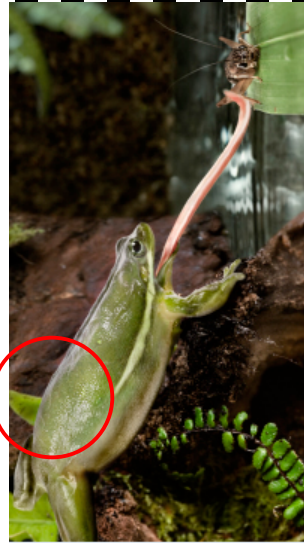
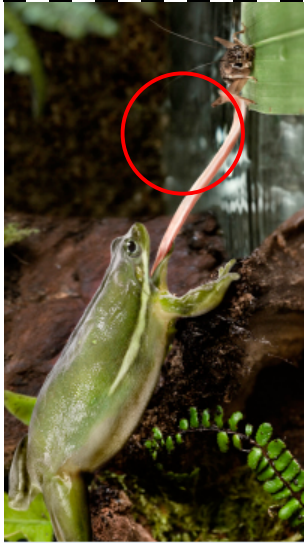
了解 Recognize			
Pīnyīn	Characters	English meaning	Parts of speech
bǎ dōng xi lā jìn	把东西拉近	to pull things toward oneself	verbal phrase
biàn huàn fāng xiàng	变换方向	to change direction	verbal phrase
dào guà	倒挂	to hang upside down	verb
fēi hú	飞狐	flying fox	noun
fēng niǎo	蜂鸟	hummingbird	noun
gǎn chù	感触	to feel	verb
gù dìng wù pǐn	固定物体	to stick things together	verbal phrase
huǒ bàn	伙伴	partner	noun
jī yì	机翼	airplane wings	noun
jiǎ qǐ mǒu wù	夹起某物	to pick something up	verb
jiǎ zhù shí wù huò xuǎn jiá shí wù	夹住食物或选夹食物	to break or crack	verbal phrase
jiàng luò sǎn	降落伞	parachute	noun
Jiǎo	角	antennae	noun
jiǎo pǔ	脚蹼	flippers	noun
jìng, gǎn	茎, 秆	stalk/shoot (as in bamboo stalk/shoot)	noun
kāi kě qì	开壳器	nutcrackers	noun
kě	壳	shell	noun
là yè	蜡叶	waxy leaves	noun
mǎo dīng	铆钉	burr	noun
mó guǐ zhān	魔鬼毡	velcro	noun
mù mián shù	木棉树	kapok tree	noun

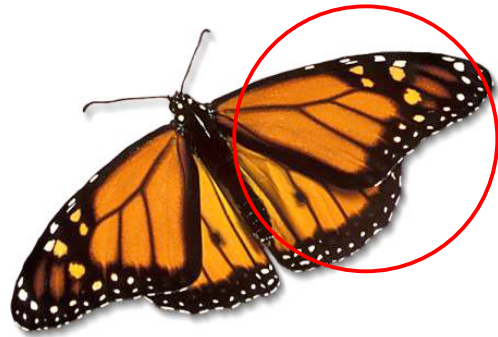
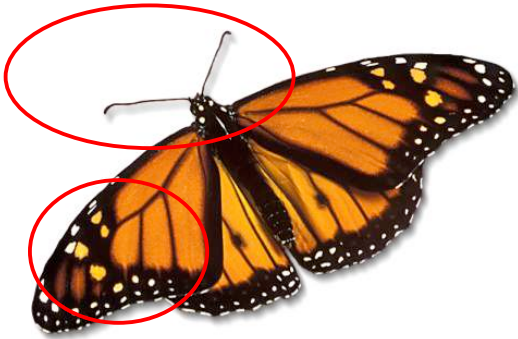
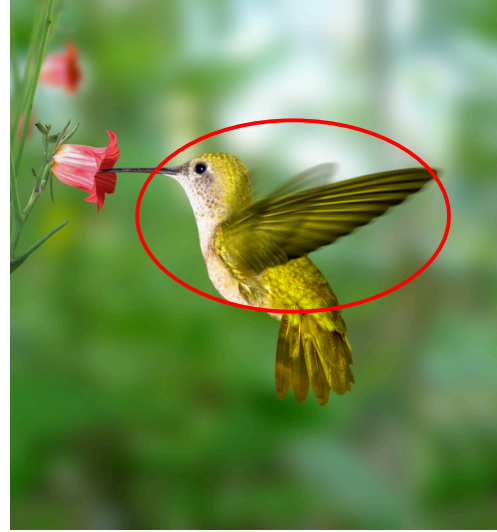
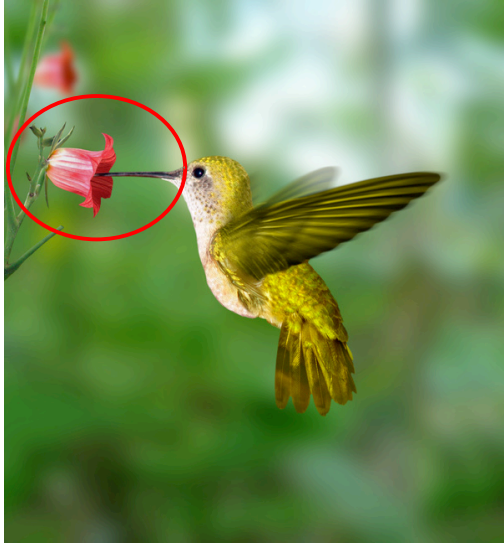


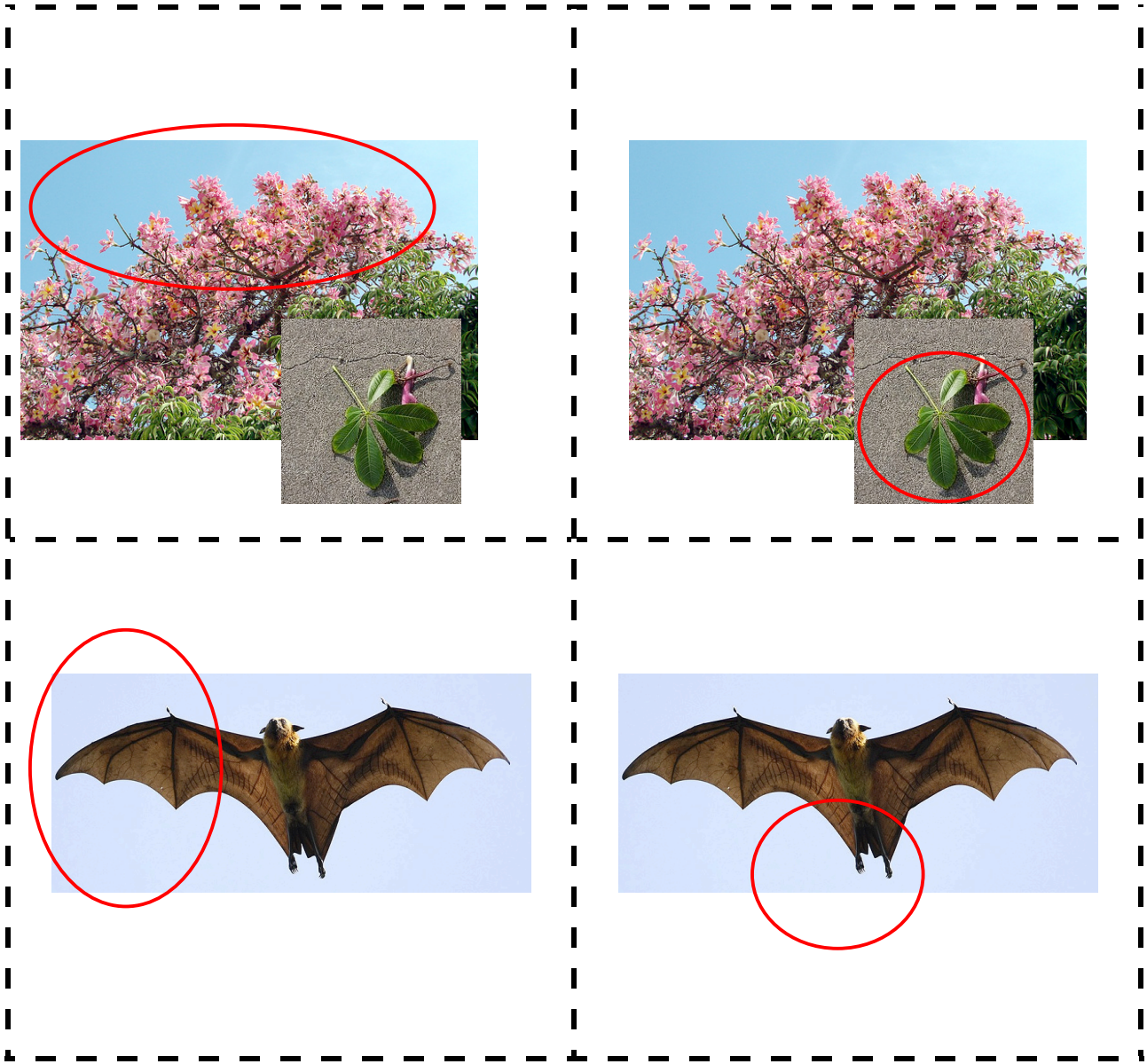
nǎ lǐ	哪里	where	question word
pá xíng	爬行	to claw	verb
pá zi	耙子	rake	noun
pái shuǐ	排水	to repel water	verbal phrase
pèi duì de kǎ piàn	配对的卡片	matching cards	noun
qí	鳍	fin	noun
qián zi	钳子	serving tongs	noun
qián zi	钳子	pincers	noun
quán bān	全班	whole class	noun
shí rén yú	食人鱼	piranha	noun
sì jiǎo yóu xì	四角游戏	'Four Corners'	name
sī kǎo-pèi duì-fēn xiǎng	思考—配对—分享	Think-Pair-Share	verb
tiān rán de wù tǐ, dōng xī	天然的物体, 东西	natural object	noun
wǎng	网	net	noun
wèi shén me	为什么	why	question word
xī shōu yáng guāng jìn xíng guāng hé zuò yòng	吸收阳光进行光合作用	to absorb sunlight for energy	verbal phrase
xī yì	蜥蜴	lizard	noun
xiāng hù lián jiē dào de chì bǎng	相互连接到的翅膀	webbed wings	noun phrase
xiǎo lóng xiā de zhuǎ zi	小龙虾的爪子	crayfish claw	noun
xiǎo zǔ	小组	small group	noun
yā zuǐ	鸭嘴	bill	noun
yīng	鹰	eagle	noun
yīng wǔ	鹦鹉	parrot	noun
yóu dòng	游动	to move	verb
yǔ yī	雨衣	raincoat	noun
zài fēi xíng zhōng jiǎn màn sù dù	在飞行中减慢速度	to move slowly through the air	verbal phrase
zěn me	怎么	how	question word
zhī zhū wǎng	蜘蛛网	spider web	noun
zhuā zhù wù pǐn	抓住物品	to grab things	verbal phrase
zhuǎ zi	爪子	paw	noun
zhuān jiā	专家	expert	noun
zuǐ	嘴	beak	Noun

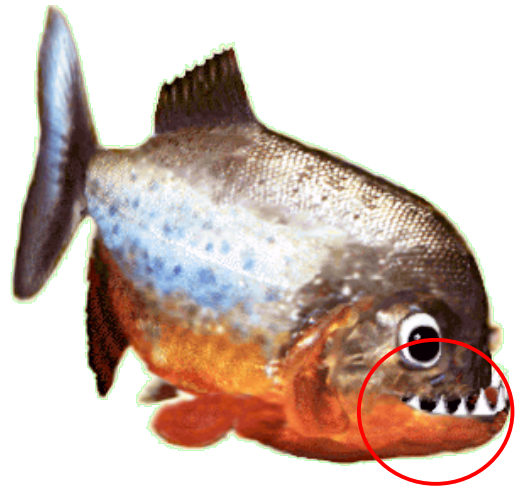
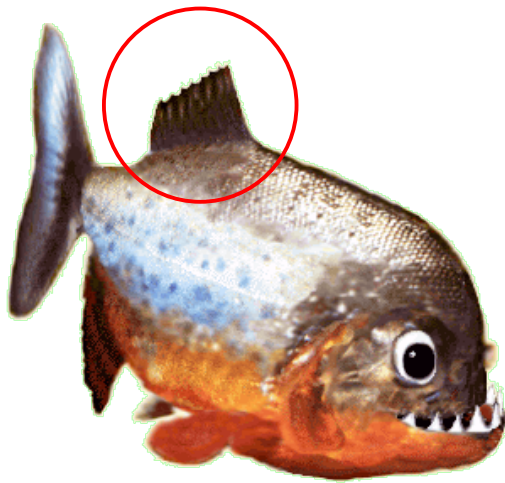
识记 Produce			
Pīnyīn	Characters	English meaning	Parts of speech
biān fú	蝙蝠	bat	noun
chì bǎng	翅膀	wings	noun
chī dōng xī	吃东西	to eat	verbal phrase
fēi	飞	fly	verb
gǒu	狗	dog	noun
hú dié	蝴蝶	butterfly	noun
qiāng láng	蜣螂	Bess beetle	noun
shù gàn	树干	trunk	noun
wěi ba	尾巴	tail	noun
xī shuǐ	吸水	to take in water	verbal phrase
xiǎo lóng xiā	小龙虾	crayfish	noun
yā zi	鸭子	duck	noun
yè zi	叶子	leaves	noun
zhī zhū	蜘蛛	spider	noun
zhú zi	竹子	bamboo	noun

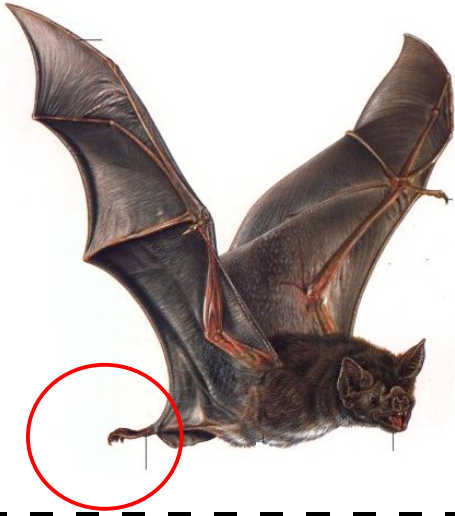
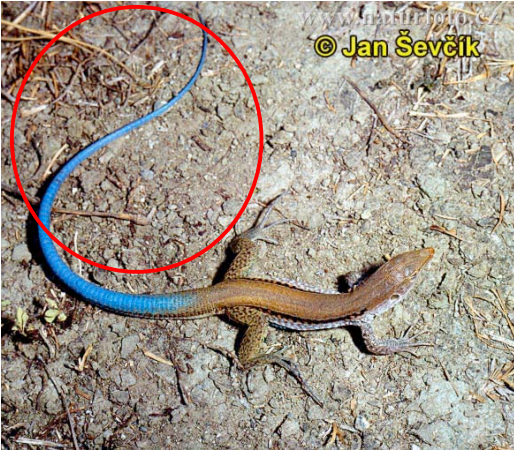
学习活动一

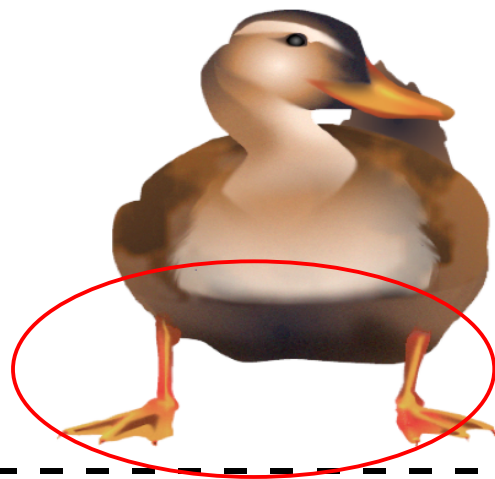














## 游戏卡:教师参考

游戏卡上的图象:圈出下列物体[及其用途]

1. 青蛙:舌头[叼住昆虫];皮肤[吸水]
2. 小龙虾:壳[保护];钳子[夹住食物]
3. 鸭子:鸭蹼[游泳];鸭嘴[吃东西、喝水]
4. 蝴蝶:触须[感触];翅膀[飞]
5. 木棉树:树干[吸水];蜡叶[排水]
6. 蜂鸟:翅膀[飞];鸟喙[吃东西]
7. 飞狐:翅膀[飞];尾巴[变换方向]
8. 蜥蜴:壳[保护];触须[感触]
9. 食人鱼:鳍[游动];牙齿[吃东西]
10. 蜥蜴:四肢[爬行];尾巴[保护自己]
11. 蝙蝠:翅膀[飞];脚[倒挂]
12. 竹子:茎[吸水];叶子[吸收阳光进行光合作用]

**Picture Cards: Teacher Guide**

Images on the picture cards: Circled items [and their functions] are listed below.

1. Frog: Tongue [to catch insects]; skin [to drink]
2. Crayfish: Shell [to protect]; pincers [to catch food]
3. Duck: Webbed feet [to swim]; bill [to eat and drink]
4. Butterfly: Antennae [to feel]; wings [to fly]
5. Kapok tree: Trunk [to take in water]; waxy leaves [to repel water]
6. Hummingbird: Wing [to fly]; beak [to eat]
7. Flying fox: Webbed wings [to fly]; tail [to change direction]
8. Bess Beetle: Shell [to protect]; antennae [to feel]
9. Piranha: Fin [to move]; teeth [to eat]
10. Lizard: Legs [to crawl]; tail [to defend itself]
11. Bat: Wings [to fly]; feet [to hang upside down]
12. Bamboo: Stalk [to take in water]; leaves [to absorb sunlight for energy]

## 卡片配对：教师参考

这是一组卡片配对的活动。天然物在左边；人造物在右边。下边是它们相同的用途。

1. 植物上的蜡质叶片 / 雨衣
  - 它们都用于防水
2. 狗的爪子 / 耙子
  - 它们都用于把东西拉近
3. 翅膀 / 机翼
  - 它们都用于飞翔
4. 蝙蝠的翅膀 / 降落伞
  - 它们都用于在飞行中减慢速度
5. 蜘蛛网 / 网
  - 它们都用于捉住东西
6. 海豚尾巴 / 鸭子脚蹼
  - 它们都用于划水
7. 鹰爪 / 钳子
  - 它们都用于抓住物品
8. 鹦鹉嘴 / 开壳器
  - 它们都用于把食物的外壳打开
9. 铆钉 / 魔鬼毡
  - 它们都用于固定物体
10. 小龙虾的爪子 / 筷子
  - 它们都用于夹住食物或选夹食物

说明：许多上述的物体已在第一个活动中接触过，所以学生应该不陌生。

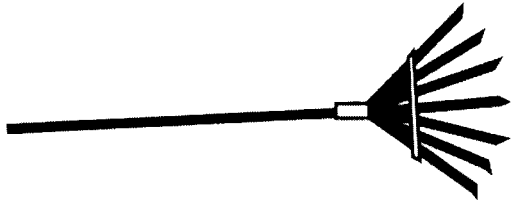
### **Matching Cards: Teacher Guide**

Here are the answers to the Matching Cards activity. The natural object is on the left; the human-made technology is on the right. The common function is indicated below each pair.

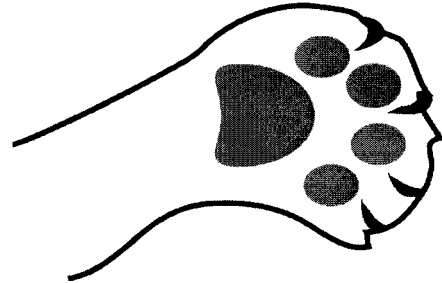
1. Waxy leaves on a plant / Raincoat
  - Both are used to repel water
2. Dog's paw / Rake
  - Both are used to pull things toward you
3. Hummingbird wings / Air plane wings
  - Both are used to fly
4. Flying fox's webbed wings / Parachute
  - Both are used to move slowly through the air
5. Spider web / Net
  - Both are used to catch things
6. Dolphin's tail **or** duck's feet / flippers
  - Both are used to swim
7. Eagle's claws / Serving tongs
  - Both are used to grab things
8. Parrot's beak / Nutcracker
  - Both are used to break/crack food
9. Burr / Velcro
  - Both are used to stick things together
10. Crayfish claw / Chopsticks
  - Both are used to grab things and pick them up

**Note:** *Many of the objects in this activity were used in Activity 1 as well, so students should be familiar with the vocabulary.*

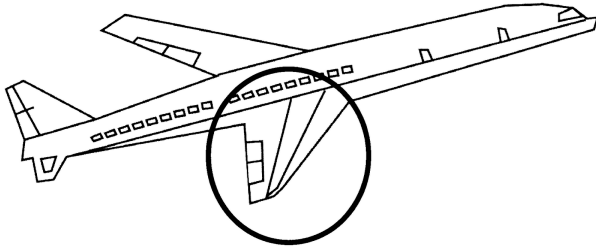
游戏卡



耙子  
把东西扫在一起



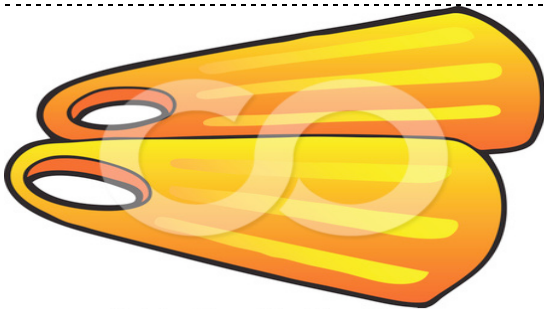
脚掌



机翼  
在空中飞行



蜂鸟的翅膀



© visekart \* www.ClipartOf.com/1059858

脚蹼  
划水



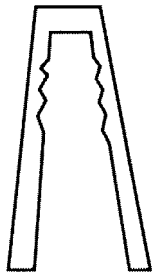
鸭蹼



小龙虾

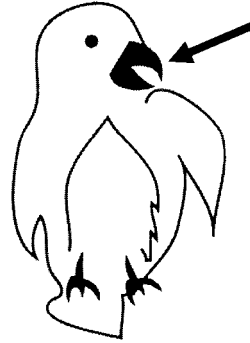


筷子



开壳器

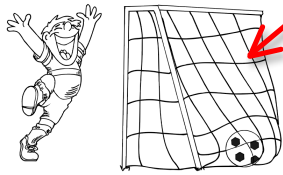
把坚果的壳压碎



鹦鹉的嘴



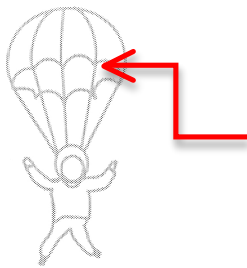
# 游戏卡



网  
网住东西



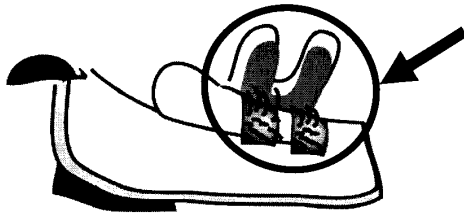
蜘蛛网



降落伞  
降低在空中移动的速度



蝙蝠的翅膀



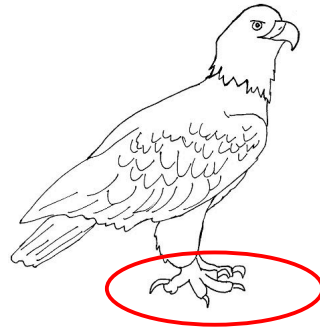
魔鬼毡  
把东西黏在一起



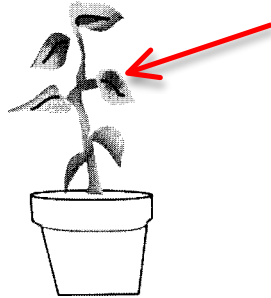
蒲公英



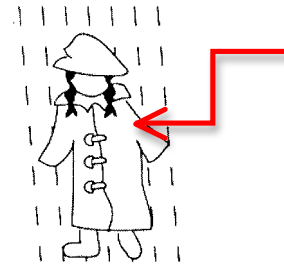
夹子  
夹住东西



老鹰的爪子



蜡质叶片



雨衣  
防水

Eagle

<http://www.art-made-easy.com/images/eagle-drawing1.jpg>

Tong

[http://www.instyledesignanddecor.com.au/images/mini\\_tong.jpg](http://www.instyledesignanddecor.com.au/images/mini_tong.jpg)



姓名: \_\_\_\_\_ 日期: \_\_\_\_\_



# 技术配对游戏



说明：找两组自然物品和技术产品的配对。将它们的图片贴在下面的格子里（或画出来），并且说明它们的功能。

第一组

自然物品

技术产品

--	--

它们的功能是什么？

第二组

自然物品

技术产品

--	--

它们的功能是什么？

所有生物体的基本需要是什么？

我们所学的四种生物是什么？

从小龙虾、蜚螂和青蛙中选一种动物，说一说它身上哪些部位可以满足这四种基本需要。

人类是如何保证这四种基本需要的？

青蛙



小龙虾



鸭子



蝴蝶



木棉树

蜂鸟



飞狐



蜚螳



食人鱼



蜥蜴



蝙蝠



竹子



学生1:  
我是个\_\_\_\_\_, 我有\_\_\_\_\_。

学生2:  
你用你的\_\_\_\_\_做什么?

学生1:  
我用我的\_\_\_\_\_(动词)\_\_\_\_\_。你呢?

(交换角色重复练习。)

“我有一个想法，也许可以帮助你。”  
Peters女士说，“你可以到外面走一走，观察一下大自然。有时候大自然本身就有奇妙的解决办法。我们这些生物工程师在观察大自然的时候，常常可以发现一些很有用的信息。这些信息可以用来创造‘科技’。科技是一个可以帮助我们解决问题的东西或者过程。”

\_\_\_\_\_是在大自然里找到的。

\_\_\_\_\_是人类发明的技术。

两者都是用于\_\_\_\_\_的。

模型: 小龙虾的钳子 + 筷子

学生A: 我是一只小龙虾, 所以我有钳子。

学生B: 你用钳子做什么?

学生A: 我用钳子夹东西。

学生B: 我也能夹东西。我是一双筷子, 人们用我来夹东西。我们可以配对。

或者

学生B: 我不能夹东西。我们不可以配对。

甲:

- 我是\_\_\_\_\_, 我有\_\_\_\_\_。
- 我用我的\_\_\_\_\_来\_\_\_\_\_。

乙:

- 我也是\_\_\_\_\_, 我有\_\_\_\_\_。
- 我用我的\_\_\_\_\_来\_\_\_\_\_。

句型一:

- 我是\_\_\_\_\_, 所以我有\_\_\_\_\_。
- 你用你的\_\_\_\_\_来做什么?
- 我用我的\_\_\_\_\_来\_\_\_\_\_。

句型二:

- 我是\_\_\_\_\_, 所以我有\_\_\_\_\_。
- 你能用你的\_\_\_\_\_来做什么?
- 我能用\_\_\_\_\_来\_\_\_\_\_。