WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Target Language: Chinese	**Grade Level**: 2 and 3
Proficiency Level: Junior Novice Low – Junior Novice Mid	
Context and Storyline: A science class is learning about three states of matter. Students learn the concept of three states of mater and how they change from one to another. Students then apply their learning in real life; including making ice cream.	
Enduring Understanding: Students will understand that matter can change its state as it interacts with energy such as temperature. (Heat energy).	
Essential Questions: 1. What is matter? 2. How can we tell that matter can change its state? 3. What examples can we observe in our daily life that that show how temperature/heat energy affects the state of matter?	
Module Duration and Lessons: Depending on the length and frequency of classes per week, we suggest the five lessons in this module could be taught during the period of three to five weeks. On the average, each lesson may be taught over a week, with 30 minutes classes three to five times per week. Lesson 1 – *The Magic of Water* 水的魔术 Lesson 2 – *Three States of Matter and Their Properties* 物质的三态及其性质。 Lesson 3 – *Temperature Can Cause Matter to Change State* 温度可以改变物质的状态。 Lesson 4 – *A Matter of Taste: Making Ice Cream* 我们一起来做冰淇淋。 Lesson 5 – *This is the Matter with Ice Cream* 这就是冰淇淋的变化	

Standards Targeted	
5C – World Language Standards	**5E – STEM Standards**
Communication • Students understand spoken and written language on familiar topics related to states and properties of matter. (1.2A) • Students exchange information, procedures, and experiences of making ice cream (1.1B) **Cultures** • Students identify products and different states of matter that come from the target	**NGSS 2.SPM Structure, Properties, and Interactions of Matter** Students who demonstrate understanding can: ○ Provide evidence that some changes caused by heating or cooling can be reversed and some cannot. ○ Identify and compare the physical properties of objects.

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cultures. (2.1.A)

Connections

- Students access new information and reinforce existing knowledge of other content areas through the target language (3.1A)

Comparisons

- Students compare how different cultures use matter in its three states (4.2.A)

Communities

- Students teach their family members how to make ice cream at home (5.1)

Math Common Core

Measurement and Data 3.MD

- Solve problems involving measurement and estimation of intervals of time and temperature

Knowledge: Students will know…	**Skills: Students can…**
Vocabulary (both linguistic and content areas) • Three states of water and their properties • States of matter • Properties of matter • Temperature change • Procedures and ingredients for making Ice cream • Adjectives describing temperature and taste • Verbs expressing change Expressions and patterns • Express opinions with like/don't like • Ask and answer simple questions • Make simple statements	Students Can • Identify matter as solids, liquids, and gases, and describe their properties • Ask and answer questions about temperature changes • Express temperature (melt, freeze, hot, cold). • Recognize and name ingredients for making ice cream • Teach others how to make ice cream without a machine.

Assessment Tasks

Interpretive Task – State of matter
Use **Worksheet 5a** for students to identify solid, liquid, or gas.
Task Instructions: T: *Look at the pictures on your worksheet, and listen to my description. Connect the pictures to the*

words that say solid, liquid, and gas.

Presentational Task: Make a "I'm a Little Scientist" Video: State of Matter
Select one item on **Worksheet 5a**, explain to the audience: a. What is matter b. How many states does matter have? c. What is the state of the matter that you chose? d. What properties does this matter have? e. Show the audience one or two signs labeling matter, solid, liquid, or gas, in the target language.

Interpersonal and Presentational Task
Title: Making Ice Cream
1. Using **Worksheet 5b**, students complete the worksheet. 2. In small groups of four, students compare their notes and discuss their experiences. 3. Each group prepares its own cooking show about how to make ice cream. They can use pictures of ingredients and other props to demonstrate. 4. Each presentation will tell and show the audience (1) the ingredients needed; and (2) the directions for how to make ice cream.

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Materials/Resources
Materials and Resources ○ A cooler to store the ice. ○ Thermometer ○ Chart paper to record student observations ○ Snowman puppet made of a water bottle filled with frozen water. Decorate the water bottle so it looks like a snowman. Make sure the decoration can withstand water. ○ **Teacher Resource** – Permission Slip ○ **Ppt slides** Lesson 1: ○ States of Matter song http://www.youtube.com/watch?v=btGu9FWSPtc ○ Chart paper to record student observations ○ Water heater (for showing students "steam/gas") ○ **Teacher Resource 1a** – Permission Slip ○ **Ppt - Lesson One** ○ **Worksheet 1a** – Vocabulary – Literacy Practice ○ **Worksheet 1b** – Three State of water due to temperature changes Lesson 2: ○ A snowman puppet w/cooler ○ Chart paper to record student observations ○ **PPTs - Lesson 2** ○ **Worksheet 2a –** *Vocabulary - Literacy Practice* ○ **Worksheet 2b –** *Matter in a Solid State and its Properties* ○ **Worksheet 2c –** *Matter in a Liquid State and its Properties* ○ **Worksheet 2d** – *Matter in a Gas State and its Properties* ○ **Pocket chart and definition strips for liquids and gases** Lesson 3: ○ **Ppt – Lesson Three** ○ **Worksheet 3a –** *Making Pinwheels* ○ **Worksheet 3b –** *Chocolate Melts in My Hands* ○ **Worksheet 3c –** *Not All Matter Changes in the Same Way* ○ **Worksheet 3d –** *Temperature Can Change State of Matter* ○ *How to make a Paper Pinwheels or Windmills* http://frugalliving.about.com/od/frugalfun/ss/Pinwheel_3.htm Lesson 4: ○ A small can of ice cream ○ Small plastic bowls enough for students ○ Milk ○ 1 metal can, about 16 ounces ○ Enough ice cubes to fill the can ○ Enough water to cover the ice cubes ○ Instant-read thermometer (outdoor thermometer can be substituted)

- Rock salt
- Measurement spoons
- Sugar package, with at least one tablespoon to scoop out
- Permission slip
  Note: if students have not returned permission slips, they may not taste the ice cream.
- **Worksheet 4a** – *I can Write*
- **Worksheet 4b** – *How to make Ice Cream*

Lesson 5:

- 1 tablespoon sugar
- 1/2 cup milk or half & half
- 1/4 teaspoon vanilla
- 6 tablespoons rock salt
- 1 quart-size plastic food storage bag (e.g., Ziploc)
- 1 gallon-size plastic freezer bag
- ice cubes
- **Teacher Resource 5b**

STEM Background for teachers:

Matter

Matter is the "stuff" of which all objects and substances are made. Since all matter takes up space and contains a certain amount of material (mass), all matter can be measured. Some types of matter can be easily observed with your senses. For example, you can see or feel things like rocks, trees, bicycles, etc. You can also see and smell things like smoke from a fire. Some matter is more difficult to detect. For example, air is the invisible gas that surrounds us and you cannot see it or smell it, but you know it exists because you can feel it when the wind blows.

All matter has physical properties that can be observed with our senses without changing the make-up, or identity, of the matter. Examples of physical properties are color, shape, size, and texture. Other examples of physical properties would be density, boiling point, melting point, and solubility.

Matter can exist in any one of four conditions or states: solid, liquid, gas, or plasma. Even though we usually do not think of it as matter, plasma is the most common state of matter in the universe. Plasma is the gas-like mixture of particles found in the sun and other stars. However, the 3 more familiar states of matter are easier for us to observe and measure here on Earth. When describing the physical properties of solids, liquids, and gases, these characteristics apply:

- Solids - Solids have a definite shape and volume.
- Liquids - Liquids take on the shape of their container, and keep their same volume.
- Gases - Gases take on the shape and volume of their container.

Matter can be changed by heat energy. The temperature of an object determines how it is changed. For example, when a solid is heated to its melting point, the solid will change into a liquid. When a

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Lesson 1- Magical Water

水的魔术

Lesson 1 of 5 – How to make ice?	Duration: 30 Minutes
Objectives	***I Can:*** Oral Language: • Ask and answer questions about three states of water • Talk about some properties of water in each state. • Identify and tell at what temperature water changes into solid, liquid, or gas. Literacy: • Water has three states: 固体，液体，气体 STEM and Other Subject Areas: • Observe and label evidence that some changes of states can be caused by temperature changes.
Vocabulary and Expressions	**Previously learned:** 颜色，形状 **Content obligatory language:** 固体，液体，气体，冰，雪， 温度 华氏温度计，蒸汽，雪人， 哪裡，融化 **Content compatible language:** 冷冻箱，硬，软，冷，热，喜欢/不喜欢 它是怎样的感觉？ 是什么样子呢？ 你有什么？我有… 变成… 告诉，认为， 教室
Materials/ Resources	○ States of Matter song http://www.youtube.com/watch?v=btGu9FWSPtc ○ Chart paper to record student observations ○ Demonstration thermometer for visualizing temperature when it is discussed (see examples at http://www.deltaeducation.com/productdetail.aspx?Collection=Y&prodID=1493&menuID= or http://www.schoolmart.com/demonstrationthermometer.aspx Science or K-2 classrooms may have such thermometers available.) Water heater (for showing students "steam/gas") ○ **Teacher Resource 1a** – Permission Slip ○ **Ppt - Lesson One**

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	○ **Worksheet 1a** – Vocabulary – Literacy Practice ○ **Worksheet 1b** – Three State of water due to temperature changes
Lesson Storyline and Core Text	A group of students in a science class is learning about water and its three states. A snowman (bottle puppet) comes in to help students understand how water can change into another state due to temperature change. During several class periods, students experiment and observe at what temperature water changes from liquid to ice, back to liquid, and to gas. They will identify and talk about characteristics of water in different states. At the end, via various assessment instruments, students will demonstrate their understanding of the relationship between temperature, the three states of water, and its properties in each state. *Core Text:* 你好，小朋友。我的名字是雪人。你好吗？ 你知道我住在什么地方吗？ 今天外面的温度是多少？ 你可以做一个雪人呢？ 让我们来看看水会发生什么变化， 当温度低于32°F。 今天的温度是___°F，如果我们把它留在杯子，谁知道冰会发生什么变化？ 冰是固体 当温度低于32°F， 水冷冻成冰。 它成了固体。 水是液体 液体没有形状。 当温度高于32°F， 冰变成水。 它是液体。 蒸汽是气体 蒸汽没有形状 当温度高于212°F， 水变成气体。

Key Elements	Lesson 1 – *the Magic Water* Duration: 30 minutes
Engagement ● *Object, event*	**用雪人介绍冰，冷，和固体的概念。** Bring a cooler with a big bag of ice to keep the snowman bottle puppet.

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Key Elements	Lesson 1 – *the Magic Water* Duration: 30 minutes
or question used to engage students. ● *Connections facilitated between what students know and can do*	T: (Show students while saying it.)学生们，看看，我有什么？我有一个冷冻箱。我也有冰块。 T: 我们来看看冷冻箱里面有什么？ (Bring out the snowman). **Note:** Teacher in Snowman's voice and will act as Snowman, which is referred to as SN. SN: 小朋友们，你们好！我的名字叫雪人，你叫什么名字？ Lead students in greetings and introductions with Snowman; e.g., How are you. I'm fine, thank you. My name is (student's name) and so on. SN: 你们看， 这就是我， 雪人。**Ppt 1-1** SN: 你们知道我住在哪儿吗？ SN: 我住的地方很冷，下雪的地方。看这儿在下雪， 他们在做雪人。**Ppt 1-2** SN: 这儿是不是很冷？有没有看到雪/冰,你看到什么？(from the ppt) Ss: 雪/冰. SN: 这些雪人都和我一样。他们喜欢非常寒冷的天气。马里兰州有雪吗？ Students respond. SN: 你喜欢冷还是热？ **Show Ppt 1-3 & 1-4.** Ss: 冷/热 SN: 当天气非常冷，当温度低于32°F，雨变成雪。像变魔术一样。雨水结冰，变成雪。**(Show PPT. 1-5).** 雪是固体。人们可以做雪人。32°F被称为冰点，温度低于32°F时水会结成冰的。 T: 记得雪人说什么？什么温度是冰点？是几度？ Ss: 32°F. T: 当雨变成雪的时候是几度？ Ss: 32°F. SN: 今天的温度是多少？我们可以做雪人吗？ Ss: 可以/不可以 T: (Teacher shows students a thermometer.) 这个叫温度计，温度计是告诉我们现在的温度。温度计在教室里，它会告诉我们今天在我们的教室的温度。 T: (Teacher reads it and show students how to read it. Urge them to tell SN the temperature reading in the room. And tell the Snowman if they can make a snowman.) 现在教室的温度是 ___ °F. 我们可以不可以在这儿做雪人呢？ Students respond. (If there is a thermometer outside the window, have students read the temperature outdoors, and respond again. If no outdoor thermometer or no window is available, use the computer to find the temperature locally

Key Elements	Lesson 1 – *the Magic Water* Duration: 30 minutes
	outdoors. As another alternative, use a demonstration thermometer to show the outdoor temperature, determined previously by another means.) T: 那么你认为这些图片的天气怎么样？我住在这儿。你喜欢住在这种地方吗？(Show **Ppt 1-3** and encourage students to respond.) T: 我们叫 32°F什么? 什么是冰点? 冰点是比 32°F低? 还是高于32°F? 冰点冷吗？ Ss: 是的。冰点很冷，比32°F低。 T: (**Show ppt 1-4**) 雪人，如果你在这里，这样的天气，你会发生什么变化？当温度高时，你怎么办？ SN: (in a panic) 哦，不，温度高时我会融化的！当天气暖和时，我会融化。别让我融化喔！(**Ppt 1-5)** T: (Turn to class) 我们应该怎样帮雪人？如果我们把他放在冷的地方，像这袋冰和冷冻箱里？ Ss: 是的，把他放回冰和冷冻箱里。 SN: 谢谢。你很聪明。谢谢。我要进冷冻箱里，再见。 Ss: 再见，雪人。 T: 好了，现在雪人去冷冻箱里了，我们来谈谈当温度高时他身上的冰或是雪会发生什么变化？ Ss: 雪会融化。 T: 对了， 如果雪人融化，他变成什么？ Ss: 变成雨或是水。 T: 对，当气温高于32°F，雪人/冰雪融化成水。雪人几度会融化成水？ Ss: 32°F. T: 当它低于32°F，雪人是液体或是固体？ Ss: 固体。 T: 答对了！我很高兴我们雪人不会融化！让我们一起说：雪人不会融化！雪人不会融化。他喜欢冷。他喜欢温度低于32°F，温度低于32°F雪人不会融化。 Literacy Activity: Learn and practice the word: *Ice.* Use **Worksheet 1a** Closing routine:
Exploration ● *Objects and phenomena are explored.* ● *Hands-on activities, with*	**从冰变成水** Opening Routines: Always do calendar work and use an outdoor thermometer or a large demonstration thermometer to read the temperature of the day. Record it on the class calendar. Model and guide students to do it during the first week, then invite students to do the calendar routine independently

Key Elements	Lesson 1 – *the Magic Water* Duration: 30 minutes
guidance.	during the rest of the module. For example: T: 让我们来看看，今天是几月几日？星期几？ T: 今天的温度是多少? Students respond. T (or Ss): 是华氏____ 度 T: 我们写在这里。 (Or, who can write down the temperature on the calendar?) **Note:** On the first day or week, model how to read the thermometer. During the rest of this module, call on volunteers to read and write down the temperature. T: 我们的雪人在哪儿呢？你想雪人被冻成冰还是融化成水？ Students respond. T: 把雪人拿出来雪人。雪人，你今天怎么了？ SN: 我很好，因为我是固体，而且我很冷。 T: 为什么雪人说他很好？他住在冰里吗？ Students respond. T: 让我们来看看，冰的温度是不是低于32°F。 T: (Put a thermometer inside the bag of ice and explain to students that they have to leave it there for a while before the thermometer can read the temperature correctly.) 雪人，你可能会不喜欢今天我们做的实验，因为我们今天要看温度高时水的变化。 SN: 哦，不，我要回冰冻箱里面。再见。 Everyone says goodbye to Snowman. T: 在我们把雪人放入时，记得冰冻箱的温度要低于华氏32度。 (Remove thermometer, and have a volunteer read the temperature.) 温度应该高于或是低于华氏32度对雪人好？ Ss: respond T: 谁知道今天外面的温度是什么？它是高于或低于水的冰点？今天教室里的温度是多少？ (Consult the classroom thermometer. After students respond, bring out another bag of ice cubes. Take two cubes of ice and put them into a clear plastic cup.) T: 我们的教室的温度是华氏___ ，如果我们把冰留在杯子，冰会怎么样？ Students respond. T: 让我们来看看。你们每人到我这里来拿一杯冰。跟我说：老师，请给我一些冰。 Model the request and have the class repeat it a few times. Distribute the ice to each student. T: 好，我们来看看冰会发生什么变化。

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Key Elements	Lesson 1 – *the Magic Water* Duration: 30 minutes
	T: 在等冰的变的时候，我们摸摸冰，它是怎样的感觉？热还是冷？ Ss: 冷的 T: 软的还是硬的？固体还是液体？ Ss: 固体 T: 你看得到冰块吗？ Ss: 看得到。 T: 没错，因为冰有形状。你能看到你的冰的形状吗？ SS: 看到。 T: 这块冰的形状是一个立方体。现在告诉你的同学冰是什么形状。 Ss talk to one another. T: 你的冰融化了吗？ Ss: 融化了 T: 你怎么知道？是因为冰变成水吗？ Ss: 是的。 T: 当冰变成水，我们称为液体。冰是固体，但水是液体。 (Show **Ppt 1-6)** of ice—word solid; water—word "liquid") Have students repeat a few times. Ask them to check each other's ice and describe it (solid, liquid). T: 为什么我们的冰变成水？有谁能告诉我们？ Students respond. T: (Bring out the thermometer from the ice bag.) 冰的温度是多少？它是在冰点以下吗？让我们来看看。_____，冰的温度是多少？并要求另一个学生在白板上把它写下来。_____， 教室的温度是多少？ T: 那一个温度比较高？ Ss respond. T: 对了！我们教室的温度高于水的冰点。因此，在这儿的温度下，冰融化成水。冰变成水，因为它需要从室内热能。所以现在水是固体或液体状态？ Show the PPT for students to respond. T: (Use **Ppt. 1-7**) 我们来看看水的特性。 Repeat similar questions for checking ice. Lead students to summarize the comparison of water in solid vs. liquid form. **Later you can add another column for gas.**

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<table>
<tr><td>Key Elements</td><td>Lesson 1 – the Magic Water Duration: 30 minutes</td></tr>
<tr><td></td><td>
<table>
<tr><td colspan="2">水和冰</td></tr>
<tr><td>固体</td><td>液体</td></tr>
<tr><td>冰
低于 32°F
有形状
冷</td><td>水
高于 32°F
没有固定的形状
(add later) 低于华氏212 °F</td></tr>
</table>

Teach students the chant, using call and response (Students repeat each line after the teacher) :

冰是固体
固体有形状。
低于32度时，
水冷冻成冰。
又变回固体。

水是液体
液体没有形状。
温度高于32度，
冰变成水。
又变回液体。

Repeat the chant several times.
As students are doing the liquid chant for the last time, model and collect the water in each student's cup into a glass jar or pot/plastic bottle to be used for the next day.

Literacy Activity: Learn and practice writing the words: water. Worksheet 1a

Closing:
Do the chant one more time.
Do the goodbye routine/song.</td></tr>
<tr><td>Explanation
● Students explain their understanding of concepts and processes.</td><td>从液体到气体

Talk about the three states of water and their properties: 固体，液体，和气体。

Opening Routines: Do calendar work; read the temperature; and record it on</td></tr>
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● *New concepts and skills are introduced as conceptual clarity and cohesion are sought.*	the class calendar. Bring out the Snowman, prompt students to tell Snowman what they observed and learned yesterday. T: 现在告诉雪人，它为什么或是在什么情形下会融化成水。 Students explain to Snowman that when temperature is higher than 32°F, it will cause him to melt. They will also explain the characteristics of water in each state are. They advise Snowman what the best temperature is for him to stay solid. Ask Snowman if he wants to stay and watch a new experiment in which water changes into another state. Snowman refuses and decides to go back to ice. Pass Snowman to say goodbye to everyone. The last student puts Snowman back. T: 我们这里有什么？ (Show the glass pot of water from yesterday) 这是什么状态？我们能不能… (Ask a few questions about the properties of liquid). Students respond. T: 你想看到另一个实验？你想看到液体变成别的样子吗？ Students respond. Set up the water heater to heat up the glass pot that has water in it. T: 你们看。当温度高于212°F时，气泡上升，水变成蒸汽。你能告诉我，水变成气泡时，你看到气泡和蒸汽吗？ Students respond. T: 你看到蒸汽吗？水开了， 很热。 ，蒸汽在空中看起来是白色的。你看到空气中的白色吗？ Students respond. S: 看到 T: 蒸汽是气体。水是液体，冰是固体。蒸汽是另一种状态的水。这种状态被称为气体。现在告诉你的同学你看到什么。 S: 空气/气体/蒸汽 T: 非常好。这是气体。蒸汽的气体的状态。空气是气体的状态。那么水变成什么？ S: 气体! T: 很棒！水变成冰，冰变成水，水变成蒸气。我们现在写在图表上。 T: 水的沸点是什么？当水的温度变化，从液态到气态。 Teacher put a thermometer into the water. Read the temperature out loud. It's 212°F.(100°C) T: 水的沸点是212°F（100°C）谁记得冰点水变成冰时？

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Key Elements	Lesson 1 – *the Magic Water* Duration: 30 minutes
	Ss: 32°F (0°C) Teacher writes it down or invites a student to do so. T: 太好了。我们来看看水的变化。 T: 当水开时，就变成水蒸汽/蒸汽/气体。你看到的水蒸汽/蒸汽/燃气？ Students respond. T: 让我们来看看，如果蒸汽是水。我这里有一个塑料罐子。让我们在这里收集的蒸汽。任何人都可以预测接下来会发生什么？你看到什么？ Students respond（液体，水）。 Collect the steam in the jar/pot and seal it. Wait a few seconds and show students what they see. By now they should see some water. The lid of the pot will also have water drops. T: 你看到什么？ S: 水。 T: 刚才发生了什么呢？现在水是什么状态？ Student responds T: 为什么气体变成水？现在教室里的温度是什么？ Facilitate student responses, relating their concept to the temperature of boiling water and the room temperature. Distribute a sandwich bag to each student. T: 我们来吹吹气 (Teacher modeling) 我向袋子里吹气 (Hold open bag in front of mouth and fill with breath, then quickly seal the zipper to keep air inside). 我把它关起来，别让气走了。 T: 你们我一起做。 T: (Fill bag with breath and quickly seal the Ziploc bag.) 袋子里是什么？气体还是液体？ S: 气体。 T: 答对了。袋子里是气体，是水蒸气。水蒸汽是空气中的气体。空气中有很多气体。你摸摸空气中的气体！ (Teacher and students stretch their arms in the air). T: 你摸不到它。到处是空气！我们可以看到的水蒸汽在袋子里变成液体。 In a similar way, go through a series of questions about properties of gas. **Use Ppt 1-8** As students discuss the properties of gas, add a new verse to the chant: 冰是固体 固体有一定的形状。 温度低于32度 水冷冻成冰。 它再回到固体。

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 1 – *the Magic Water* Duration: 30 minutes
	水是液体 液体没有形状。 温度是在32度以上 它又回到液体。 蒸汽是气体 蒸汽没有形状 温度在212度以上 水变成气体。 Literacy Activity: Learn and practice writing the words: gas. Use **Worksheet 1a** Closing routine, including the chant.
Elaboration *Activities allow students to apply concepts in contexts, and build on or extend understanding and skill.*	**Summarize the three states of water and its properties in each state**. Opening Routines: Do calendar; read the temperature of the day; record it on the class calendar. Invite students to practice the entire chant, and write key words: ice, water, gas. Do this a few times to allow more students to show and tell their writing. Bring back Snowman. T：雪人你好！今天欢迎回到我们的教室！ 学生们："欢迎光临"雪人！雪人又回来了。 S&T：欢迎光临，雪人。雪人， 好久不见，你怎么样？ T：雪人，我们希望您知道我们会为你有大的表现。所以，我们会看到你的明天。 Class says goodbye to Snowman. T: 我们今天預演，明天是正式演出。我们有三个站。固体站，液体站，和气体站。 **Note:** for the "gas" station, use an electric water pot, or take precautions to prevent injury or fire. Stay near the station to supervise. Divide students into groups of three. T: 每个小组将去每一站。我会告诉你该去哪里。，当你去所有的站之后，把答案填在你的Worksheet 1b上。做完Worksheet 1b后，准备给明天的雪人报告。每个学生将告诉他其中的一站。 老师做示范，并教学生如何填Worksheet 1b。等所有学生都做好了，请他

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 1 – *the Magic Water* Duration: 30 minutes
	们交给同学互相校订，检查。也帮助学生练习第二天的口头报告进行评估。 Check the accuracy, neatness, and completeness of Worksheets. Lead students in practicing the chant for assessment. Give each group time to practice, check for accuracy and provide assistance when walking around the room. Closing: do the chant again. Say goodbye to one another.
Evaluation *Students assess their knowledge, skills and abilities. Activities permit evaluation of student development and lesson effectiveness.*	**Preparation and Presentation: Worksheet 1b** 1. Put three stations in the front of the class. Each has a prop: ice, water, and gas. In groups of three, students use the props and talk about the three states of water and their properties. Each student is responsible for one state. Allow them time to practice. 2. Bring out the Snowman. Each group reports its findings and performs the chant. Closing: Snowman will tell students how well they have done. Snowman tells the class that he will return to a cold place. He will not return to visit the class any more. The class say goodbye to the Snowman and one another.

Teacher Reflection Lesson 1- *the Magic Water*	
What worked well?	
What did not work well?	
What would I do differently?	
Other comments or notes	

Lesson 2 – Three States of Matter and Their Properties

物质三态 和它们的特性

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Lesson 2 of 5 -*Three States of Matter and Their Properties*	Duration: 30 Minutes
Objectives	***I Can:*** Oral language: ○ Ask and answer simple questions about three states of matter and their properties. Literacy: ○ Read and write words describing properties of each state of matter. STEM and Other Subject Areas: ○ Recognize three states of matter and their properties.
Vocabulary and Expressions	**Content obligatory language:** 物质 Matter 质量 Mass 体积 Volume 东西，大小，形状，空间，纹理，弯曲。 可以，不可以。 **Content compatible language :** *Describe, everywhere, own*
Materials/ Resources	○ Chart paper to record student observations ○ **PPTs - Lesson 2** ○ **Worksheet 2a –** *Vocabulary - Literacy Practice* ○ **Worksheet 2b –** *Matter in a Solid State and its Properties* ○ **Worksheet 2c –** *Matter in a Liquid State and its Properties* ○ **Worksheet 2d –** *Matter in a Gas State and its Properties* ○ **Pocket chart and definition strips for liquids and gases**
Lesson Storyline and Core Text	In Lesson 1, students learned how water changes its state due to temperature change. Building upon water as an example, students continue to explore the concept of matter and various properties associated with the states of solid, liquid, or gas. Core Text: 物质是什么？物质是什么？ 物质是一切， 物质具有质量。 物质占用空间。 物质是所有的东西。

	物质可以在三种状态：固体，液体，或气体 物质的基本属性：体积，质量，和形状。 形状是物质的形式：它的外观。 成交量为的空间量占用事项：它的大小。 质谱是物质的量的一个对象具有：其重量。 固体有一定的形状和体积。 固体占用空间，并具有质量。 液体没有一定的形状， 液体的流动和其容器的形状。 液体有一定的体积。 液体占用空间，并具有质量。 气体不会有自己的形状或大小。 气体其容器的形状。 气体可以填补了房间。 气体占用空间，并具有质量。

Key Elements	Lesson 2 – *Three States of Matter and Their Properties* Duration: 30 Minutes
Engagement ● *Object, event or question used to engage students.* ● *Connections facilitated between what students know and can do*	**What is Matter?** Do the calendar routine. Talk about the weather (temperature). Prompt students to talk about Snowman, then review water, its three states, and their properties. T: 水有三种状态：固体，液体和气体。 T: (Teacher looks confused) Is water matter? **Ppt 2-1** T: 物质.....这是一个新词。什么是物质？ Elicit students' response. T: 这儿说（PPT） 物质.....“一切都是由物质造成的？”物质是你四周看得到的东西 ， 你觉得对不对？ S: 对/不对。 Point at an object or a student, one at a time, and test the statement. For example, T: 笔是物质吗？你是物质吗？ Students respond. Use more objects and students as examples to deepen students' understanding about matter. T: 我们一起来看看下一张怎么说. (Invite students to read together): “体积，质量

Key Elements	Lesson 2 – *Three States of Matter and Their Properties* Duration: 30 Minutes
	和空间决定了物质” T: 什么是体积？ 体积占用空间。我们一起来看看这是什么意思. T: (Moving hands around) 一切的东西都占用空间 T: (Hold up a glass or any object, turning and touching it) 这个杯子占用空间吗？（Pass the glass for students to touch and determine that it takes up a space.） T: (Ask a student, Mary, to sit on a chair, and ask the class) Kyle 可以和她坐在同一个椅子上吗？ Ss: 不可以。 T: 为什么不可以？ Ss: 因为 Mary 已经坐在那儿了。 T: 对, 因为Mary 已经坐在那儿了, 所以Kyle 不能坐在那儿。 Illustrate more examples of what space mean until students understand it. T: (bump into a student) 对不起, Kevin, 我碰到你了。 T: (Motion Carol and Sam, or any two students, to stand side by side. Pull them apart from each other) Carol and Sam, 你们两个人中间可不可以有更多的空间? (Or, pull them closer to each other) 你们两个人可以制造更少的空间吗? Ask different pair of students to try out. Divide the class into pairs, do a TPR of more or less space to prepare students to understand volume. Bring out two objects and think out loud. For example, T: 我这儿有两个盒子，哪一个空间比较小?是这个吗? 哪一个空间比较大?是这个吗? Students respond. T: 对了, 答对了. 那一个空间比较小; 这个比较大i. 所以这个占的空间比较大。我们再来看看这两个，哪一个占用空间比较小?哪一个占用空间比较大? Point to or show two objects of different sizes for students to say: *more* volume or less volume. Repeat several times. Divide students into pairs and find their own examples of what takes up space and which one has more volume and which has less volume. Ask students to volunteer to present their findings. For example: “*This is a pencil. The pencil is matter; it takes up space. It has less volume. This is a marker. The marker is matter; it takes up more space. It has more volume.”* Lead students to walk around the classroom in a line. Point at an object and recite the chant: “Matter takes up space. Matter has volume.” Literacy practice: 质量，固体，液体，气体。Use **Worksheet 2a**

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What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 2 – *Three States of Matter and Their Properties* Duration: 30 Minutes
	Closing: Do the closing routine. As students walk out, lead them in reciting the matter chant: "Matter takes up space. Matter has volume."
Exploration ● *Objects and phenomena are explored.* ● *Hands-on activities, with guidance.*	**More Properties of Matter** Open with the calendar and weather routines. Review what they have learned about matter so far. Do the Matter chant together. Invite a few students to pick up matter and do the chant. T: 我们上节课学了物质有三个基本的特性，哪三个呢？ Students respond. T: 是的，我们学了物质有体积，体积占有空间。物质有体积，那另外两个特性是什么？ **Ppt 2-2**. T: 跟我一起念:"体积，质量和空间，决定了物质"，这句话是什么意思？ Students respond. Bring out a scale. If using a regular body scale, it may be necessary to find something having some weight to it. **Note:** There is a scientific way to measure mass, but our point is to connect the concept of mass to something children are able to understand. T: 我们来看看这样东西它是什么？ Invite a student to read the scale together. T: 它有二十磅重。这就是说这个物质(whatever it is called) 二十磅重. 谁想看看你身上的物质有多重？也就是你有多重的意思。 Call on volunteer students to weigh and tell their weight. Be sensitive to children who may have weight problems and be careful about how to talk about the mass in their bodies. Divide students into pair and ask each pair to select an object to measure. Each pair will come up to weigh and record the mass of their select objects on the white board. At the end, the class can compare which objects have the most mass, which have the least; or rank objects by mass. "物质有不一定有形状" Show or point at any object in the classroom and ask students to identify if the object has a definite shape. Make sure to show solids (have definite shape), and liquids and gas (do not have definite shape). (More detail about liquids and gases will be on later days during this lesson.) Use this slide as a way to summarize the learning today about mass and shape. **Ppt 2-3**

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Key Elements	Lesson 2 – *Three States of Matter and Their Properties* Duration: 30 Minutes
	Use the tune of "Oh My Darling, …Clementine" to teach the Matter song: 什么是物质， 什么是物质？ 物质是你四周看得到的东西 体积，质量和空间决定了物质。 物质在我们的四周。 Literacy practice: matter, use **Worksheet 2a** Closing: Sing the Matter song again. Say goodbye to everyone.
Explanation ● *Students explain their understanding of concepts and processes.* ● *New concepts and skills are introduced as conceptual clarity and cohesion are sought.*	**Three States of Matter: Solid, Liquid, and Gas** Opening: Do calendar; temperature of the day; and record it on the class calendar. Using the **Ppt 2-4 ,** facilitate student review: 体积，质量和空间决定了物质 体积是物质的形状，也就是它的外表。 空间是物质的大小。 质量是物质的量的单位，也就是重量。 Sing the Matter song with the students. T: 我们知道我们四周的一切都是物质组成的，那现在我问你们固体是物质吗？液体是物质吗？气体呢？ Student responses vary. T: 对了，物质的三种状态：固体，液体，或气体。 T: 我们先来看看固体 **Ppt 2-5** T: 让我们一起玩玩个游戏。幻灯片说什么？*(Lead students to read)* *Solid have definite shape and volume; they take up space and have mass.* Ask comprehension check questions to review the concepts and to ensure comprehension. Literacy Activity: Introduce how to write "solid." Divide the class into pairs and ask students to work on **Worksheet 2b -** *Matter in a Solid State and its Properties.* Afterwards, direct students to use **Worksheet 2b** to identify which object is solid on **Ppt 2-6 & 2-7**. Tell them this is a game. Pairs should compete to finish it fastest and best. (Note: This worksheet can be used for liquids and gases later as an excellent literacy activity as well.) After a few minutes, ask students to do peer editing to make sure accuracy of concept and literacy. T: 谁可以说说看固体的特性？

Key Elements	Lesson 2 – *Three States of Matter and Their Properties* Duration: 30 Minutes
	Students volunteer, evaluate, and discuss. Repeat with liquid and gas. Extension: If there is time, Use **Ppt 2-7 & 2-8** to introduce additional concepts such as rigid, bendable. Review Solids: **Ppt 2-9** 固体： •有一定的形状和体积 •占用空间和质量 Closing routine
Elaboration ● *Activities allow students to apply concepts in contexts, and build on or extend understanding and skill.*	**液体和气体** Do the opening routine, calendar, and temperature of the day. Talk about the weather and if it will rain or snow. Review solids and their properties. T: 同学们，现在大家大概知道是什么是液体，什么是气体吧？ Students respond. T: 我需要一个帮手来读液体的特性。 T: 液体有个新的特性。我们来看看…液体可以流动. (Pick up a clear, empty glass and a tall, narrow, clear bottle with some colored water in it.) I have a bottle of (color) water here, and a glass. Are the bottle and the glass the same shape? 我有一瓶水和一个杯子，瓶子和玻璃杯形状一样吗？ Students respond T: 这水和瓶子形状是一样的，是不是。(Students respond.) Now I'm going to pour water from the bottle into the glass 现在我把水从瓶子里倒入杯子中一看，水流入被子里. 现在水是不是仍然和瓶子一样的形状? 不是了，现在水的形状和杯子一样… 这儿我有个四方形的玻璃盘 (hold up square glass container). 我需要另外一个帮手帮我把水倒入. 四方形的玻璃盘里。 (Choose a volunteer) 同学们, 我们来告诉他 (Name) 怎么做: "流，流，流，流到那儿去." (Teacher and class chant as student pours.) 好，谁能告诉我水现在是什么形状? 水是和杯子一样还是和玻璃盘的形状一样？(Call on volunteer to respond.) T: 我们再来玩个游戏. **Ppt 2-10** Divide students into pairs. Ask them to discuss. Make sure they will use the properties of liquids to justify their choices: liquids do not have their own shape; they flow and take up the shape of their container; liquids take up space, have mass and volume. A few minutes later: T: 谁能告诉我们什么是液体? **Ppt 2-11** Call on volunteer students and ask them to provide reasoning.

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What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 2 – *Three States of Matter and Their Properties* Duration: 30 Minutes
	(Literacy practice) Write each sentence of the Liquids Definition on a separate card for a pocket chart. Place them in the pocket chart one at a time, reading it aloud and having students repeat it. Review by reading through it one more time, inviting students to read with you. Then read the strips in random order and invite students to come and take the strip down, repeating the sentence. Continue until all strips have been removed. Collect the strips. Recite the Liquids Definition and have students return their strips to the front: 液体没有一定的形状。 液体流动，容器的形状就是液体的形状。 液体有一定的体积。 液体占用空间，并具有质量。 Repeat the same procedures for Gases, using **Ppt 2-12**. Recite the Gases Definition and have students return their strips to the front: 气体没有自己的形状或大小。 气体飘浮，容器的形状就是气体的形状。 气体可以填补了房间。 气体占用空间，并具有质量。 我们看不到气体！ Literacy: Work on **Worksheet 2c** and **Worksheet 2d:** *Liquid and Gas.* Closing routine
Evaluation ● *Students assess their knowledge, skills and abilities.*	**Review and Assessment** Opening: Do the routines. Review Liquids and Gases. Divide students into pairs and work on Worksheet 2b to identify liquids and gases. Peer editing. Class sharing and discussion. Review the states and properties of water. Show the slides, and invite student pairs to identify the states and properties of water in each picture. Invite student pairs to talk about one picture from the slides. **Ppt 2-13** Divide students into groups of three. Follow the same procedures and ask them to answer the questions. Help the groups that need more assistance. Each group will identify and present their examples of solid, liquid, and gas. One student is responsible for each state. **Ppt 2-14 & 2-15** Invite student groups to present their evidence of Can-dos. Interpersonal communication assessment. As students hold a conversation, walk around and document their can-dos. Interpretive assessment. Work with individual or groups of students and have them point to objects or pictures when you tell them to find something in a certain state.

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What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 2 – *Three States of Matter and Their Properties* Duration: 30 Minutes
	如果有时间的话，带领学生唱物质的歌： 什么是物质， 什么是物质？ 物质是你四周看得到的东西 体积，质量和空间决定了物质。 物质在我们的四周。 物质有三种状态：固态，液态，和气态 体积，质量和空间决定了物质 体积是物质的形状，也就是它的外表。 空间是物质的大小。 质量是物质的量的单位，也就是重量。

Teacher Reflections on Lesson 2 – *[Physical Changes]*	
What worked well?	
What did not work well?	
What would I do differently?	
Other comments or notes	

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冰淇淋怎么样了？

Lesson 3 – Temperature Can Cause Matter to Change State

温度可以改变物质的状态

Lesson 3 of 5-温度可以改变物质的状态	Duration: 30 Minutes
Objectives	***I can:*** Oral language: • I can tell others how some matter changes its state because of temperature (heat energy) change. Literacy: • I can write basic information about what kind of temperature (heat energy) causes a change in certain matter. STEM and Other Subject Areas: • I can describe the change of state caused by temperature (heat energy).
Vocabulary and Expressions	**Content obligatory language:** 热，能源，成分 **Content compatible language:** 湿，乾
Materials/ Resources	○ **Ppt – Lesson Three** ○ **Worksheet 3a –** *Making Pinwheels* ○ **Worksheet 3b –** *Chocolate Melts in My Hands* ○ **Worksheet 3c –** *Not All Matter Changes in the Same Way* ○ **Worksheet 3d –** *Temperature Can Change State of Matter* ○ *How to make a Paper Pinwheels or Windmills* http://frugalliving.about.com/od/frugalfun/ss/Pinwheel_3.htm
Lesson Storyline and Core Text	Having learned about 3 states of matter, students continue to learn through some examples about how temperature (heat energy) can cause matter to change its state. Core Text: 复习物质的三态和它们的特性。 做和玩风车 什么是气体？ 气体有它自己的形状和大小吗？ 气体是粗糙的，还是光滑的，硬的还是软的？ 气体占用的空间吗？ 我们能弯曲气体吗？ 为什么东西会融化？ 你认为巧克力需要的热能从手心融化吗？ 你们的都是一个个的小科学家 你们改变物质的状态。

	这些都会做录像，我们一起来决定我们的表演。

Key Elements	Lesson 3 Procedures -温度可以改变物质的状态
Engagement ● *Object, event or question used to engage students.* ● *Connections facilitated between what students know and can do*	复习物质的三态和它们的特性。大家一起来做风车和玩风车 Do the calendar and weather routines. Review what students have learned and remembered about states and properties of Matter. Opening routine. T: 谁还记得物质的歌 (Begin to sing): "什么是物质，什么是物质？ Review the properties of solids, liquids, and gases, pointing out objects and asking about them. For example: 它有质量吗？能流动吗？它有它自己的形状吗？它占用的空间吗？ Have students find examples of solids, liquids, and gas in the room, and then justify their choice. Review the properties of liquids and gases with the pocket chart. Use **Lesson 2 Ppt 2** to have students quickly identify what is solid, liquid, and gas, while talking about their properties. T: (Show a pinwheel to arouse students' curiosity and interest) 同学们，你看，这是一个风车。风车是做什么的呢？它可以吃， 好闻吗？我们可以碰它吗？ Students respond. T: 当我们吹风车时会怎么样？它会移动吗？ (Blow it.) T: 為什么风车会移动？ Students might answer wind or gas or air. T: 是的， 因为我们对着风车吹气， 空气的流动使风车流动。 空气是气体或液体，还是固体？ 空气中有大小吗？ 空气中有形状吗？ 空气有空间吗？ 我们可以弯曲空气吗？ T: 因此，空气是气体。现在我们来看看风车，当我对风车吹空气（气体），我越大力吹，风车转的越快。 T: 现在我们都来做风车，看谁的风车转的快。 Literacy and Crafts Activity: Distribute a worksheet for how to make pinwheel. Explain and demonstrate how to make one in front of the class. **Ppt 3-1 to 3-5** Ask students to write on the pinwheel the word "gas" and their names, so they

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What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 3 Procedures -温度可以改变物质的状态
	can personalize it while practicing literacy. **Worksheet 3a** Once students are finished, they can play with the pinwheel. Closing routine.
Exploration ● Objects and phenomena are explored. ● Hands-on activities, with guidance.	**Does a pinwheel change into liquid or gas when the air/temperature is hot or cold? What matter around us will change its state when the air/temperature is hot or cold?** Opening: Do the calendar and weather routines. T: 你们仍然有我们昨天做的风车吗？ Students respond and show their pinwheels. Teacher blows the pinwheel, and motions students to blow, as well. T: 风车是固体，液体，还是气体？ Ss: 固体. T: 我们对风车吹气时，风车怎么样？ Ss: 他们转。 T: 如果我们吹的很快，风车怎么样？ Model and motion students to do that. Ss: 它们转得很快。 T: 如果我们对着风车吹更多的空气，风车转得更快，风车会不会变成液体或气体？ Ss: 不会. T: 如果我们对着风车吹热空气呢，风车会不会转得比较快，它会不会变成液体或气体？ Ss: 不会. T: 你怎么知道? (Bring out a hair dryer) 我们来试试看. **Ppt 3-6** Put on different temperatures and speeds and blow on the pinwheel. Tell students what temperature (low, high) and speed (low, mid, high) you are using. After blowing the air on the pinwheel each time, invite students to comment on what happens to the pinwheel—does it turn into liquid or gas. Make sure the pinwheel is sturdy enough to take the blowing and the heat. Students make predictions and observations, and examine the results. T: 所以现在我们知道，较高的温度和更多的空气，不会把风车变成液体或气体。 拿出一包巧克力片给学生看并且告诉学生 T: 我真的很喜欢巧克力。你们有谁喜欢巧克力？ T:让我倒了一些巧克力来看待。（几块巧克力倒入到一个浅盘或板，然后

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 3 Procedures -温度可以改变物质的状态
	走走课堂上展示给大家巧克力。）看看巧克力。你能告诉我巧克力是液体，固体或气体？ T: 现在拿出一张纸，放在你的面前。我给你每一个人几块巧克力，放在你前面的纸上。不可以吃巧克力。我们要用它做几个实验。(Pass out several pieces of chocolate to each student.) T: 还记得我们吹风车的时候，怎么样？它改变状态了吗？ (Students respond) 如果我们吹巧克力，巧克力会怎么样？ (Students respond) 我们来试试看。 (Model blowing on the chocolate.) T: 巧克力有没有改变它的状态？如果我们用吹风机吹的話，巧克力会改变它的状态吗？ (Students respond) 用吹风机以不同的温度和速度对着巧克力吹，就像对风车一样。(当温度高时，巧克力融化) 拿给学生看，再问学生，巧克力改变它的状态了吗？现在它是什么状态？ Students respond 我们现在再来做另一个实验。 Then ask students to place the piece of chocolate into their hands for 1 minute (or longer, if necessary). Students may rub the chocolate morsel between their hands. Ask students to predict what will happen to the chocolate morsel; i.e., if the chocolate will stay a solid or melt into liquid or gas. Time it. **Note:** Chocolate chips melt best at temperatures between 104°F and 113°F. The melting process starts at around 90 °F (32.22°C) when the cocoa butter in the chips starts to heat. T: 举手，而且告诉我们你的巧克力发生什么样的变化。 T: 它仍然是固体还是它已经改变了它的状态。 Students tell the class/each other what happened. T: 当巧克力它在我们的手中的时候，巧克力发生什么变化？ Ss: 它变成液体 /失去它的形状/它融化了。 T: (In a series of Q & A) 你能告诉为什么会巧克力会融化？ 我们的手是温暖的吗？ 是我们手上的热能，让巧克力融化。 T: 对了，我们手上的热能让，巧克力融化在我们的手中。 T: 大家排队去洗手。我们回来后，我们来写关于巧克力的实验。 Students wash their hands. Distribute a few more chocolate chips to each student. Ask them to put one piece into their mouths. Tell students not to bite on it and pay attention to what happens to the chocolate chip.

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 3 Procedures -温度可以改变物质的状态
	Students respond (It changes into liquid/loses its shape/melts). T: 巧克力是不是很容易融化？ Students respond. T: 是，巧克力的熔点比较低，所以它们很容易融化在我们的嘴巴。现在，你们可以吃剩下的巧克力，然后，我们一起来写我们今天所学到的。 Use the Language Experience Approach, lead students to recall what they did today with chocolate. Possible text may be: 我们把巧克力片放在我们手里。 我们用手摩擦巧克力，使他们温度加高。 巧克力片在我们的手里融化了。 从一定形状的固体。 融化后，就没有一样的形状了。 巧克力片变得像液体。 Invite students to make contribution to the writing on the board. After the story is finished, read it together a few times. Invite a few volunteers to read independently, or go through line by line for volunteers to read. Distribute **Worksheet 3b –***Chocolate Melts in My Hand.* They can also draw pictures to record their experiment. These will become their mini-books that can be passed around for reading. Do closing routine. Review whether blowing air will turn pinwheels into liquid or gas. Invite students to talk about their chocolate chips experiment and read the "book" again.
Explanation ● Students explain their understanding of concepts and processes. ● New concepts and skills are introduced as conceptual clarity and cohesion are sought.	**Not All Matter Change in the Same Way** Opening routines. Review what they learned yesterday. Play with and talk about the pinwheels. Invite a few students to read their own or their classmates' mini-books. T: 今天，我们将学更多物质的特性。你们都是小科学家。今天的问题是：以同样的方式做不同种类的物质变化？下课以前，我们都要能够回答这个问题。 Write down the question on the white board. T: 在讨论不同种类的物质，我们也顺便写下我们的讨论。 T: 我们先来讨论水。谁记得水是固体时候，我们叫什么？ Ss: 冰. T: 冰的融化点是几度?

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 3 Procedures -温度可以改变物质的状态

Ss: *32°F.*

T: 冰融化，我们叫它什么？
Ss: 水.

T: 水几度变成气体
Students respond *212°F (or 100*°C). Write down the number on the white board.

T: 水加热过了华氏212度时是什么？
Ss: 气体. (Write on the board.)

T: (In a series of Q & A)

巧克力怎么了？
他们融化在我们的手里还是口里？
谁知道我们的体温是多少？

Students respond 98.6°*F (37*°C) - Write down the temperature.

T: 对，通常巧克力，在大约90°F（32.22℃）开始融化

Write down the temperature.

T: 所以哪个有较高的熔点，冰或巧克力？
Students respond.

T: 它们变成了什么？
Have students compare and discuss the changes of state between water and chocolate.

Bring a few pieces of gold or gold-looking jewelry and ask a student to identify what it is and the state of gold as they see it. Ask students to predict what would happen to gold if the temperature were high. Ask students to think about how high the temperature might be when they watch a video about how to melt gold into a bar.

Gold: http://www.youtube.com/watch?v=sbbgWPt3G1Y

Note: This video show what happens when scrap gold is melted and processed into a gold bar. Students might ask if gold would evaporate into gas. Scientists believe that if the temperature is really high, it will. However, it is not likely the temperature could reach that high under the normal circumstances.

Melting points of some metals and alloys are indicated in the table below:

Gold, 24K Pure	1063°F(573°C)	1945°F(1063°C)

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

<table>
<tr><td>Key Elements</td><td>Lesson 3 Procedures -温度可以改变物质的状态</td></tr>
<tr><td></td><td>
<table>
<tr><td>Silver, Sterling</td><td>893°F(478°C)</td><td>1640°F(893°C)</td></tr>
</table>

Source:
http://www.engineeringtoolbox.com/melting-temperature-metals-d_860.html

Directions of how to use the video to engage students:
Show the video in its entirety once. Show it again and stop at various points and invite students to comment the state of gold, predict what temperature it might be, and so on.

Another good example of glass: Follow similar procedures as used for showing and teaching about gold.
Video: http://vimeo.com/30247302
This is a video Jam Factory in Adelaide South Australia made. Two drawings were selected from many collected at a Family Day held at the Studios and gallery. The video follows the design process, and the kids were along to watch their glass piece created.

Note: Glass has different melting points depending on what the composition of the glass actually is. Standard soda lime glass (the most common kind of glass) melts at something on the order of about 2,700°F(1482°C), while top drawer silicon oxide has a glass melting point of in excess of 4,200°F(2316°C)

Ask students to continue their comparison of melting points of gold and glass.

Closing:

Using the various temperatures that were written on the white board as clues, ask students what each temperature refers to. Have the class do a quick summary of what they learned today: water, chocolate, gold, and glass. Encourage them to talk about different states of these kinds of matter and how they change.

Point to the big question at the beginning of the class:
Do different kinds of matter change in the same way?
Ask students if they are able to answer this question. Invite a few to comment.
Do closing routine.</td></tr>
<tr><td>Elaboration
● Activities allow students to apply concepts in contexts, and build on or extend understanding and</td><td>Temperature can cause some kinds of matter to change their state. Not all matter has the same freezing or melting points. Not all matter goes through the states in the same order

Opening routines. Ask students what they learned yesterday; talk about the changes of state and the temperature points that caused the change.
Note: Mothballs (camphor balls) fumes can be very dangerous, especially to</td></tr>
</table>

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 3 Procedures -温度可以改变物质的状态
skill.	**children. Be sure to handle them carefully and do not let children hold or handle them. Keep them safely secured when not in use.** T: *But you know, not everything changes its state from solid to liquid.* *Bring out a sealed plastic bag of mothballs* (camphor balls) **Ppt 3-8** T: 这是一包樟脑丸。很多人把它们的抽屉里，以防止飞蛾出自己的衣服。我打开袋子，你可以闻到他们！ (Open and close the bag just long enough for some fumes to escape.) T: 你闻到了吗？你有没有看过在香樟树？ Students respond. T: 你们可以闻到樟脑丸是因为它从固体到气体。你闻到的是气体状态樟脑球。在室温，樟脑球的变化，从固态到气态。 (Optional): T: 我想告诉你，我妈吗告诉我一个故事。当她还是一个小女孩，她的妈吗把所有的冬衣，她的大衣和围巾和手套之间放樟脑丸再放在大木箱里。冬天时，她打开后备箱拿出衣服。她可以闻到樟脑丸，她想要把它们夺走再次使用。但她大衣下看了又看，连指手套，到处。但是樟脑丸都不见了！现在，你们谁能告诉我樟脑丸为什么樟脑丸不见了？ S: Response T (In a Q & A series): 今天室温是什么？写下今天的室温。 T: 我们现在分成四组。 Students get into their groups. Distribute **Worksheet 3c.** T: 每组将记录在不同的温度下物质的改变。我们现在一起来看看表，并讨论该怎么做，我们每个人的工作是什么。 T: 大家一起分工合作，从工作中找乐趣。 Do peer editing within each group. The class shares and discusses the answers. Students should write their own books, but they should help one another in the process. Do peer editing and revise. Share books and read them aloud. Ask students to practice reading as many books as possible because they will be asked to read for the class. Tell them that they will be asked to do a science video like what they watched during this lesson.
Evaluation ● Students assess their knowledge, skills and abilities. Activities permit evaluation of student	**Evaluate students' mastery of new vocabulary.** Do a quick review of this lesson. Use the **Ppt** to conduct a Q & A to check students' comprehension and understanding. **Worksheet 3d** Interpretive and presentational assessment: Students will select a book written by of their peers and read it to the class.

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 3 Procedures -温度可以改变物质的状态
development and lesson effectiveness.	Interpersonal and presentational assessment: Divide the class into pairs. Bring out objects or pictures of gold, water, ice, gas, glass, chocolate, and moth balls. T: 我们的下一个节目是要你们每一个人就像新的视频上的科学家们那样对听众解释一下-为什么有些东西温度可以导致改变它的状态，有些不能。每一组要选一种物质，可以用真实的东西或是图片。与你的同伴讨论你们想要录什么，说些什么，以及怎么做。我们会负责录像。你们将会有一些时间来决定和计划你的节目。 Give students time to discuss and prepare. Walk around to see how students are communicating with each other in the target language. Each pair will perform as scientists, based on their selection of matter. Provide each pair with safety glasses before their performance to instill the notion of safety.

Teacher Reflections on Lesson 3 – *Chemical Changes*	
What worked well?	
What did not work well?	
What would I do differently?	
Other comments or notes	

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Lesson 4 – A Matter of Taste: Making Ice Cream

我们一起来做冰淇淋。

Lesson 4 of 5	Duration: 30 Minutes
Objectives	***I Can:*** Oral language: • tell others the basic ingredients for making ice cream • show and explain to others how to make ice cream without a machine. Literacy: • recognize labels for basic ingredients of ice cream. • write signs for ice cream STEM and Other Subject Areas: • explain why we need salt in making ice cream by hand • explain why we need to shake the bags when we make ice cream by hand
Vocabulary and Expressions	**Content obligatory language:** 牛奶，盐，糖，香草精冰淇淋 搅拌，混合，摇匀 **Content compatible language :** 形容词（硬，软的，热的，冷的，大的，小的），喜欢/不喜欢 塑料袋
Materials/Resources	○ A small can of ice cream ○ Small plastic bowls, enough for all students ○ Milk ○ 1 metal can, about 16 ounces ○ Enough ice cubes to fill the can ○ Enough water to cover the ice cubes ○ 1 instant-read thermometer (outdoor thermometer can be substituted) ○ Rock salt ○ Measuring spoons ○ Sugar package, with at least one tablespoon to scoop out the sugar ○ Permission slip Note: if students have not returned permission slips, they may not taste the ice cream. ○ **Worksheet 4a** – *I can Write* ○ **Worksheet 4b** – *How to make Ice Cream*

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Lesson Storyline and Core Text	Students make ice cream and experiment how liquid can be made into solid. They will also learn that salt can lower temperature, which helps milk turn into ice cream. Core Text: 你为什么说冰淇淋是固体？ 我想听听你的解释。 我们应该了解更多关于冰淇淋的知识？ 你想知道什么，我们需要做冰淇淋吗？ 或者更好的是，我们应做冰淇淋吗？ 我们要学习做冰淇淋。 做冰淇淋需要什么，你能猜到吗？ 我们需要牛奶吗？ 它的味道如何？它是甜的吗？ 你闻到什么吗？ 这就是所谓的香草。我们还需要香草。 我把冰块在一个塑胶袋里。 我们一起来做冰淇淋 我们爱我们自己的冰淇淋。

Key Elements	Lesson 4 Procedures – *A Matter of Taste: Make Ice Cream*
Engagement ● *Object, event or question used to engage students.* ● *Connections facilitated between what students know and can do*	**Is ice cream Solid, Liquid, or Gas?** Do calendar and temperature routine. **Review**: Quickly ask students what they learned in the previous lesson: pinwheel and the point that more gas may not change the state of solid into liquid or gas; how temperature may cause some matter to change its state; the notion that different kinds of matter have different melting points; e.g., water, gold, gas; and not all matter change its state in the same way (e.g., mothballs/camphor balls change their state from solid to gas). **Note**: If videotapes of students' performances as scientists are finished, show selected ones each day during this lesson as part of either the opening or closing activity. Students will feel rewarded that their performances are enjoyed by the audience. Keep these videos as part of the final summative assessment collection. T: (Show ppt from Lesson 3 quickly) 我们上一节课，我们学了一些问题，如黄金，玻璃，水的熔点。你们想学更多关于物质的凝固点吗？

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 4 Procedures – *A Matter of Taste: Make Ice Cream*
	T: (After students' responses) 给我一些物质冻结的例子？(e.g., Frozen pizza, vegetables, fruit, popsicles, and ice cream, and so on)**Ppt 4-1** T: 冰淇淋！冰淇淋是一个很好的例子。冰淇淋是固体，液体还是气体？ **Ppt 4-2** Students may respond solid. In a series of Q & A: T: 你为什么这么说冰淇淋是固体？ Students give their reasoning based on the properties of solids learned in Lesson 2. T: 是的。冰淇淋是固体，但它不是真的很硬。它可不可能是液体？ Ss: 不可能。 T: 为什么不可能? Students give their reasoning. T: 谁觉得冰淇淋是气体？ Discuss. T: 让我们来表决一下。如果你认为冰淇淋是固体？举起你的手。是气体？举起你的手。， 是液体？举起你的手。 Record the numbers of vote for each category. **Note**: This is an excellent opportunity to write down the number in a culturally authentic way. For example, in English,  is used while 正 is used in Chinese. In a series of Q & A: T: 很好。我们将学习一些更多关于状态的知识，并找出如果冰淇淋是固体，液体或气体，或者甚至全部三种状态。 T: 让我们了解更多关于冰淇淋的知识。你们想知道什么，我们需要做冰淇淋吗？或者我们应该做冰淇淋？ Students respond. T: 我们明天要学怎么做冰淇淋。你们回家想想做冰淇淋我们需要什么。 Literacy: Show students how to write ice cream in the TL. Use **Worksheet 4-1** for practice. Students may draw pictures. Closing routine.

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

<table>
<tr><th>Key Elements</th><th>Lesson 4 Procedures – A Matter of Taste: Make Ice Cream</th></tr>
<tr><td>Exploration
● Objects and phenomena are explored.
● Hands-on activities, with guidance.</td><td>
What We Need to Make Ice Cream

Opening routine. Review what the class was talking about yesterday. Students remind Teacher that they will talk about what they will need to make ice cream.
T: 是的，今天我们要查出做冰淇淋需要什么。
In a series of Q & A:
T: 你可以猜猜我们需要什么？ Ppt 4-2
T: (Show a jar of milk) 我们需要牛奶吗？
S: 要牛奶。
T: 没错，我们需要牛奶，还要什么？

Pass out small plastic spoons for each student. Pass sugar around. Encourage students to taste a little bit by using their plastic spoon to scoop up a little bit.

T: 这是什么？吃起来怎么样？甜吗？
Students respond.

T: 是的，它是甜的。这是糖。我们做冰淇淋要用糖吗？
T: 是的，我们做冰淇淋要用糖。但如果我们用另一种成分。它的味道会更好，你知道是什么呢？

S: 知道/不知道
Students make guesses.

Open a bottle of vanilla extract and have each student smell it.

T: 我们还需要香草。闻闻看，你闻过吗？这就是香草。香草使的口感好，好闻。也使冰淇淋吃起来更好吃。

Note: Vanilla has alcohol that acts as antifreeze.

T: 我们现在有什么? (Show PPT 4-3: milk, sugar, and vanilla extract)

Students respond: milk, sugar, and vanilla extract. Teacher writes these ingredients on the board.

Also ask students to talk about the state of these ingredients as illustrated below:

<table>
<tr><td>材料</td><td>成分的状态</td></tr>
<tr><td>牛奶</td><td>液体</td></tr>
<tr><td>糖</td><td>固体</td></tr>
<tr><td>香草</td><td>液体</td></tr>
</table>

Show PPT 4-3: ingredients for ice cream
</td></tr>
</table>

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 4 Procedures – *A Matter of Taste: Make Ice Cream*
	✓ 半杯　牛奶 ✓ 1汤匙　糖 ✓ 1/4茶匙　香草 T: 现在让我们把所需要的材料放在一起。量杯，汤匙和茶匙。当测量成分的时候大声地说出来。把它们放到一个透明的碗里，并用一个大勺子搅拌。这些都是冰淇淋的配料。所以.....这是我们应该做些什么呢？我认为我们应该尝试它。你觉得呢？吗？这种混合物固体，液体，气体的状态是什么？(Student responses) 我们需要什么做冰淇淋？ Student response T: 如果我现在就把这些混合物放在冰柜里，它会变成冰淇淋吗？ S: 会 /不会 T: 为什么不会？难道我们不需要把它放在冰柜里让它变成冰淇淋吗？ S: 要/不要 T: 我们来看看会怎么样。 Students respond. T: 我认为我们应该把它放在冰柜里，看它会不会变成冰淇淋？你们觉得呢？ S: 好。 T: 好，我们现在把混合物倒入这个冰块托盘里。我会把它放在冰箱的冰柜里。我们明天看看会不会有冰淇淋。我们来预测混合物会不会成为冰淇淋.. Take the Yes/No vote. Invite a student to count, and another student to record the results on the board. Literacy: Invite students to write ice cream in the TL, if they know how to write. Encourage others to practice. Use Worksheet 4-1 if necessary. **Do the closing routine. Quickly review what they learn today.** **This "chant" has not been adequately prepared for. Instead have them sing the Matter song.** T: 谁要带头唱物质三态 (or other chant or song)? Volunteer leads, children sing with teacher. 什么是物质，　什么是物质？ 物质是你四周看得到的东西 体积，质量和空间决定了物质。 物质在我们的四周。 物质有三种状态：固态，液态，和气态 体积，质量和空间决定了物质 体积是物质的形状，也就是它的外表。

Key Elements	Lesson 4 Procedures – *A Matter of Taste: Make Ice Cream*
	空间是物质的大小。 质量是物质的量的单位，也就是重量。
Explanation ● Students explain their understanding of concepts and processes. ● New concepts and skills are introduced as conceptual clarity and cohesion are sought.	**Did it turn to ice cream? What else is needed?** Opening routine. T: 同学们！你们看我手上有什么？我刚刚才把它从冰箱中拿出来。 T: 这是不是冰淇淋？ (Tap surface with a spoon) S: Respond T: 这是固体还是液体？ Ss: 固体. T: 但冰淇淋不是像这个样子？我们可以说这是冰淇淋吗？冰淇淋不完全是固体？我们叫它半固体。半的意思是差不多，但并不完全是。 T: 但问题是怎么做冰淇淋，如果我们不能直接冻结的话？我们可以用做冰淇淋的机器，但我们没有做冰淇淋的机器。让我们来找一个做冰淇淋的配方，配方会教我们怎么做冰淇淋。 Bring out a recipe. Read it, act surprised. T: 奇怪。这儿有一个配方它说，我们不用做冰淇淋制机器来做冰淇淋你相信吗？我们应尝试的配方？ Distribute, **Worksheet 4b-How to Make Ice Cream,** to the class. Divide the class into pairs. Ask each pair to read the ingredients in the recipe. T: 同学们，我们又所有的东西吗？ Work with the class to identify everything they need. T: 我们有牛奶，糖和香草。但它说我们还需要... Lay out the ingredients on the table. Invite students to show and tell: ○ 6茶匙食盐 ○ 一个小的塑胶袋 ○ 二个大的塑胶袋 ○ 三杯冰块 **Students understands the function of rock salt in taking away heat energy and lowering down temperature** T: 盐？冰淇淋不是甜的吗？为什么我们需要盐？我再读一次. Read the instructions of recipe aloud: Fill the large bag half full of ice, and add the rock salt. Close the bag. Shake it to make sure ice is covered with salt. T: 哦，我想起来了。我还是一个学生的时候，我的老师告诉我们盐会降低冰的温度。让我们来看看它是怎么降低冰的温度的。

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 4 Procedures – *A Matter of Taste: Make Ice Cream*
	T: 跟我一起重复并做动作。 首先，我把冰块放在大袋里填补冰块半满， T: 接下来，我把温度计放在袋里，冰块中。然后等30秒 (count to 30, and keep count on wrist as if on a watch). 把温度计上的温度写下来.. (Invite a student to read the temperature out loud, and another to record the temperature on the white board.) T: 下一步，我把盐放入大袋里，用汤匙搅拌。 关闭袋，挤掉空气。摇动它，以确保盐覆盖着冰。 T: 我把温度计放在袋里，冰块中。然后等30秒 (count to 30, and keep count on wrist as if on a watch). 把温度计上的温度写下来.. (Invite a student to read the temperature out loud, and another to record the temperature on the white board.) 我把牛奶，香草，糖放入小袋里，挤掉空气。 我再把将这个袋子在另一小袋子。紧紧关闭，挤掉空气 我把小袋放入大袋里，关闭大袋，再仔细挤掉空气 我摇这袋子，直至混合物变成冰淇淋，大约5分钟。 我打开大袋子。取出小袋子。 我打开里面的小袋子，把舀出冰淇淋放入碗中。 我把冰淇淋分成两份。 (Before Inviting a student to read the temperature, have students to predict whether it will be higher or lower. For example, T: 谁可以预测水温将会发生什么的变化？水温会加高(hold fist with thumb pointing up) 还是降低 (hold fist with thumb pointing down)? 如果你认为它会更高，说"我预计这水温会申高"大拇指向上。如果你预测会降低，说"我预测这将是较低的，"你的拇指向下。准备好了吗？ T: 现在，我需要一个志愿者看温度。我们来看看我们的预测是正确的。 After reading and recording the temperature: T: 我们发现了什么？盐升高还是降低水的温度？ Ss: 盐降低水的温度. T: 是的，盐使冰水更冷。现在让我们回顾一下我们所做的实验。我们用行动作讲一次盐的故事： 我把牛奶，香草，糖放入小袋里，挤掉空气。 我再把将这个袋子在另一小袋子。紧紧关闭，挤掉空气 我把小袋放入大袋里，关闭大袋，再仔细挤掉空气 我摇这袋子，直至混合物变成冰淇淋，大约5分钟。

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 4 Procedures – *A Matter of Taste: Make Ice Cream*
	我打开大袋子。取出小袋子。 我打开里面的小袋子，把舀出冰淇淋放入碗中。 我把冰淇淋分成两份。 一份给自己，另一份给同伴。 Repeat a few times. Literacy: If there is time, do literacy practice. Invite students to write ice cream in the TL, if they know how to write. Encourage others to practice. Use Worksheet 4-1 if necessary. Closing routine: T: 今天我们学到了什么？我们了解做冰淇淋需要的材料？它们是什么？你们准备明天做冰淇淋吗？ Students respond. T: 是的，我们明天要做冰淇淋。记住我们需要什么样的成分，所以你可以自己做冰淇淋。 Closing routine.
Elaboration Activities allow students to apply concepts in contexts, and build on or extend understanding and skill.	**Note: If feasible, it is helpful to enlist a parent or fellow teacher to help out during this class period. The process may be chaotic and messy, so classroom management is critical. It may be desirable to break this lesson into two periods.** Do the opening routine. T: 我们昨天做了一个实验。谁记得我们做了什么？我们在冰块和水里·加盐发生了什么变化？温度怎么了？ S: 温度降低。 T: 我们再用动作复习一下盐的故事：。 Repeat the series with the students, with actions. Prepare What We Need for Ice Cream : ○ 1/2杯牛奶 ○ 1汤匙糖 ○ 1/4茶匙香草 ○ 6茶匙食盐 ○ 三杯冰块 ○ 一个大的冷冻袋 ○ 两个小的冷冻袋 T: *Are you ready to make ice cream? Let me model one time for you because it could be messy if you don't follow the instructions.*

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 4 Procedures – *A Matter of Taste: Make Ice Cream*
	Read the steps one by one, following the procedures to make it, and to show each material so students can identify it later. As the Teacher models, students pantomime each step. Make sure students know how to measure the amount as well. **Ppt 4-7** 我把牛奶，香草，糖放入小袋里，挤掉空气。 我再把将这个袋子在另一小袋子。紧紧关闭，挤掉空气 我把小袋放入大袋里，关闭大袋，再仔细挤掉空气 我摇这袋子，直至混合物变成冰淇淋，大约5分钟。 我打开大袋子。取出小袋子。 我打开里面的小袋子，把舀出冰淇淋放入碗中。 我把冰淇淋分成两份。 一份给自己，另一份给同伴。 Taste the ice cream. T: 嗯，真好吃。你们准备自己做冰淇淋了吗？ Divide the class into pairs. Tell students to review **Worksheet 4b,** and call up pairs of students to get the materials. While the process may be lengthy, it is important for students to measure and follow procedures, as real scientists would do. Help and supervise students as they make their ice cream. T: 停！ 现在看看你的小袋子的牛奶和糖是变成什么？ S: 冰淇淋*!* T: 我们试试看！味道是不是像冰淇淋？小心地把冰淇淋舀出来，要不然冰淇淋会很咸！ T: 你们觉得味道是不是很像冰淇淋？*(*delicious/not delicious, hard/soft, icy/creamy, too sweet/too salty/just right) Do closing routine as students eat their ice cream.
Evaluation ● Students assess their knowledge, skills and abilities. Activities permit evaluation of student development and lesson	**Reflect upon their experiences with making ice cream** 学生把做冰淇淋的步骤写下来。 Students write down the Steps of Making Ice Cream, **Worksheet 4b** **Opening Routine.** T: 大家好！冰淇淋是不是很好吃！你们觉得怎么样？你喜欢我们昨天的冰淇淋吗？ S: 喜欢! T: 冰淇淋里有什么？

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Key Elements	Lesson 4 Procedures – *A Matter of Taste: Make Ice Cream*
effectiveness.	Ss: 牛奶，糖，香草。 T: 我们用牛奶，糖，香草做冰淇淋. 它们各是什么状态？ S: 液体/固体. (Sugar dissolves into liquid.) T: 再做冰淇淋的过程中，从液体变成固体。但是冰淇淋不是真的固体。因为牛奶中脂肪和其他的东西，所以不是完全冻结叫半固体。有些可能仍然会以液体形式. **Ppt 4-8** T: 你能猜哪种牛奶会做出最柔软的冰淇淋吗？ Students guess and provide reasons. T: 非奶不含脂肪，所以它的味道最像冰，不像冰淇淋。奶油最好吃，但它能发胖。这就是为什么我们说我们不能有太多的冰淇淋，因为它脂肪成分最高。 T: 另外，你知道为什么我们再做冰淇淋时要摇动它？ T: 这是因为当我们摇晃它，空气被折叠成冰淇淋。这就是为什么牛奶混合物没有冻结成一个大的冰晶。仍然保持单独冰晶(Showing marbles and small beads to indicate sizes of ice crystals).这也是为什么冰淇淋那么的柔软。我们说，冰淇淋是半固体的，因为它实际上有一些液体和气体成分在里面。 T: 现在我们可以回答这个问题，冰淇淋是固体，液体还是气体？ Students respond. T: 让一起的回答。冰淇淋是半固体，它也有一些液体和气体成分。 T: 哦，我们还使用一个秘密的成分，那是什么？ S: (Answers vary) 盐. T: 当我们做的冰淇淋的时候，盐有什么用？为什么要用盐？ Ss: 盐可以降低温度，所以我们不需要用冰柜。 T: 哇，很好，你们准备教别人怎么做冰淇淋吗？ Students respond with enthusiasm. Do Closing routine.

Teacher Reflections on Lesson 4 – *A Matter of Taste: Make Ice Cream*	
What worked well?	
What did not work well?	

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

What would I do differently?	
Other comments or notes	

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Lesson 5 – Assessment

这就是冰淇淋的变化

Lesson 5 of 5	Duration: 30 Minutes
Objectives	I Can: Oral language: • Explain what matter is. • Give one or two examples about properties of matter in solid, liquid, and gas • Give examples from daily life that show how temperature can change the state of matter • Show and teach others the basic ingredients of ice cream. • Show and teach others how to make ice cream without an ice cream maker. Literacy: • Write and use the terms solids, liquids, and gases. • Recognize words that name ingredients in ice cream. • Write signs for ice cream to show people where it is. STEM and Other Subject Areas: • Give examples of freezing or melting points of water (or some other form of matter). • Give examples of how temperature can change states of matter.
Materials/Resources	**Ice Cream Ingredients** ○ 1/2 杯牛奶 ○ 1 汤匙糖 ○ 1/4 茶匙香草 ○ 6 茶匙食盐 ○ 三杯冰块 ○ 一个大的冷冻袋 ○ 两个小的冷冻袋 **Other materials** ○ Changes of Matter Booklet (from previous lessons) ○ **Teacher Resource 5a**- Ice-cream making instructions ○ **Worksheet 5b** – My Ice Cream Experiments
Review	Preparation: Use **Ppt and Worksheet** to help students review.

WORLD LANGUAGE-STEM MODULE COVERSHEET

What's the Matter with Ice Cream?

冰淇淋怎么样了？

Assessment Tasks

Interpretive Task – State of matter
Use **Worksheet 5a for** students to identify which is solid, liquid, or gas?
Task Instructions: T: *Look at the pictures on your worksheet, and listen to my description. Find the picture I describe and draw a line from the picture to the correct word for its state of matter: solid, liquid, or gas.*

Presentational Task: Make a "I'm a Little Scientist" Video: State of Matter
Select one item on **Worksheet 5a**, explain to the audience: a. What is matter b. How many states can matter have? c. What is the state of the kind of matter that you chose? d. What properties does this kind of matter have? e. Show the audience one or two signs labeling the matter in the target language: solid, liquid, or gas.

Interpersonal and presentational Task
Title: Making Ice Cream
1. Using **Worksheet 5b**, students complete the worksheet. 2. In groups of four, students compare their notes and discuss their experiences. 3. Each group prepares its own cooking show about how to make ice cream. They can use pictures of ingredients and other props to demonstrate. 4. Each presentation will tell and show the audience (1) the ingredients needed; and (2) the directions for making ice cream.

Rubrics for assessment:

Student Name				
3	2	1	0	Spoke fluently and on topic in target language.
3	2	1	0	Communicated ideas clearly and accurately to the audience.

3	2	1	0	Asked appropriate questions.
3	2	1	0	Answered questions accurately.
3	2	1	0	Other criterion
Total Score:				____/15

Presentational Task
Title: Presenting how to make Ice Cream
Task Procedure/Instructions: Students will tell the group or class how s/he makes home-made ice cream.

Rubrics for assessment:

Criteria	**Can do - 2 pts. each**	**Can do this with help - 1 pt. each**	**Not yet - 0 pt. each**
Vocabulary	Used appropriate target vocabulary during presentation.	Used some target vocabulary during presentation.	Relied on some native language vocabulary.
Information	Accurately described changes in states of matter using the terms solid, liquid, and change.	Described changes in states of matter using one vocabulary word.	Relied on some native language vocabulary to describe changes in states of matter.
TOTAL Points __/ 4			

Teacher Reflections on Lesson 5 – *Assessment Task*	
What worked well?	
What did not work well?	
What would I do differently?	
Other comments or notes	