

## POPULATION NARRATIVE

The Science unit on water is targeted for next year's third grade dual language classroom of 17 students (8 boys and 9 girls). This classroom has a very heterogeneous group. At least 8 out of 17 students are from low-income families and the rest are from middle to upper income families. 9 students have English as native language, 3 have Cape Verdean kriole as native language, 3 have Portuguese, and 1 has Spanish as native language. Although they have different languages as L1, English is in fact the language they most use socially. Considering the language parents talk to child, there are only 4 children who are exposed to Portuguese at home. 7 children speak English with parents, 3 speak kriole, and 3 speak actually Spanish with parents. This group has been together since kindergarten except for 2 students who started on 2<sup>nd</sup> grade. Most of them are reading at grade level in both languages. However, there are about 4 students who are reading below grade level in both languages, and 2 who are reading close to grade level in English. These students will continue in the dual language program using 50/50 model that focus in Portuguese/English instruction through the content areas. This will be International Charter School 6<sup>th</sup> year running a dual language program. Currently ICS science curriculum is only available in English. However, Through the use of websites and translation of either English or Spanish books we were able to locate Portuguese materials for this unit that will cover all four domains of language.

**Unit Planning Guide by: Francisca  
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Unit Theme  
***Science: Water***

Big Idea  
Water has identifiable characteristics and the characteristics can be altered and changed in various ways.

**Lesson 1 big idea**

Water has three states: solid, liquid, and gas.

**Lesson 2 big idea**

Water has a cycle that changes state in processes such as evaporation and condensation.

## **Standards for Unit on Water**

**These standards are from the Rhode Island State Standards available at <http://www.ridoe.net/standards/frameworks/default.htm>.**

**Lesson 1: I want my students to understand that water has three states: liquid, solid, and gas.**

**Lesson 2: I want my students to understand that water has a cycle that changes state in processes such as evaporation and condensation.**

## **NATIONAL SCIENCE EDUCATION STANDARDS**

### **Science as Inquiry**

- **Develop abilities necessary to do scientific inquiry**
- **Understand about scientific inquiry**

### **Physical Science**

- **Develop an understanding of properties of objects and materials**

### **Earth Science**

- **Develop an understanding of properties of earth materials**

## **RHODE ISLAND K-12 GRADE SPAN EXPECTATIONS IN SCIENCE**

### **Area of Science: Physical Science**

**Enduring Knowledge: All living and nonliving things are composed of matter having characteristics properties that distinguish one substance from another (*independent of size or amount of substance*)**

- **PS1 (k-4) INQ 1 - Collect and organize data about physical properties in order to classify objects or draw conclusions about objects and their characteristic properties (e.g., temperature, color, size, shape, weight, texture, flexibility).**
- **PS1 (3-4) – 2 - Make a prediction about what might happen to the state of common materials when heated or cooled or categorize materials as solid liquid, or gas.**
  - 2a describe properties of solids, liquids, and gases.**
  - 2b identify and compare solids, liquids, and gases.**
  - 2c make logical predictions about changes in the state of matter when adding or taking away heat (e.g. ice melting, water boiling or freezing, condensation/evaporation).**

**Area of Science: Earth science**

**Enduring knowledge: The earth and earth materials as we know them today have developed over long periods of time, through continual processes.**

- **ESS1 (3-4) – 5 – Demonstrate an understanding of processes and change over time within earth systems by...**
  - 5b describing water as it changes into vapor in the air and reappears as a liquid when it's cooled.**
  - 5c explaining how this cycle of water relates to weather and the formation of clouds.**

**ENGLISH LANGUAGE PROFICIENCY STANDARDS FOR ENGLISH LANGUAGE LEARNERS IN K-12**

- **English Language Proficiency Standard 4: English language learners communicate information, ideas, and concepts necessary for academic success in the content area of SCIENCE.**

**ICS – GRADE LEVEL EXPECTATIONS – 3<sup>rd</sup> GRADE**

- **R-3-5.1** Makes logical predictions.
- **R-3-8.1** Connects information within a text.
- **R- R-3-7.3** Organizes information to show understanding (e.g., representing main ideas or details within a text through charting or mapping).
- **R -3-13** – Uses comprehension strategies before, during, and after reading or listening literary or informational text.
- **W – 3-2.1-** Selects appropriate information to set context/background.
- **W-3-3.4** – organizes ideas, using basic transition words and has a concluding statement.

**Big Idea/Essential Understanding:** I want my students to understand that water has three states: solid, liquid, and gas.

**Language of Instruction:** Portuguese

**Grade level :** 3rd

Preview Phase:

**Content Objectives – Students will:**

- Identify connections between two pictures to understand that water has different states. They will use pictures that represent the three different states of water: solid, liquid, and gas.

**Language Objectives:** - Students will:

- **Use two sentence prompts to describe their connections:** “       e        **estao conectados(as)/sao diferentes por que       .**”
- **Identify masculine and feminine;**
- **Identify negative and affirmative sentences.**
- Identify the difference of the verbs *conectar*

**Strategies:**

- Connect-two – using pictures to identify and make connections between the different states of water (e.g. ice/iceberg – lakes/river/oceans – vapor of a boiling kettle/water from hanging clothes).
- Worksheet with sentence prompts for students to complete using the pictures.

**Differentiation:**

- Groups of 3 or 4 students – talk to your table; sentence prompts.
- Opportunity for students to consult with partners from the same table;
- Teacher circulates and offers support.

**Flexible Grouping**

- Heterogeneous groups of four or three.

**Instructional Assessment:**

- Teacher observation of categories, description of the pictures.
- *Picture sort* - Are students actively engaged in activity?
- *Completion of sentence prompts* - Have students completed accurately the sentences prompts?

Focused Learning Phase

**Content Objectives – Students will:**

- Read texts in books or websites about the different states of water. During reading they will orally summarize, paraphrase, and write something about the texts they read. After that, one student of each group will share the information they wrote with other groups.

**Language Objectives:** - Students will:

- **Orally express the ideas of the texts using sentence prompts.** “*Eu li sobre       .*” (*I read about*)
- **Quantify forms of the water:** “*Os estados da agua sao tres:       ,        e       .*”
- **Describe/Exemplify the states of water.**

**Strategies:**

- **Say/write something during reading time.**
- **Jigsaw (After reading time) - Each student share what they read with a different group. They say orally what they have written during their first reading.**

**Differentiation:**

- Groups of 3 or 4 students mixed in different levels of proficiency of the target language.
- Teacher circulates and offers support.
- Students can consult with partners from the same group.

**Flexible Grouping**

- Heterogeneous groups of four or three.

**Instructional Assessment:**

- Teacher observation of first reading.
- Can students write something about the text they read?
- Can students express their ideas orally to the other groups about the text they read?

Application Phase

**Content Objectives – Students will:**

- Observe an ice cube for 2 or 3 days.
- Describe their observations everyday.
- Make a graph diagram to present to rest of the class what happened to the ice cube along the days, including the different states of water.

**Language Objectives:** - Students will:

- Use appropriate language to describe their observation.
- Use ordinal numbers – No *primeiro dia*., *no segundo dia*...
- Use articles (feminine/masculine)
- Use past tense of verbs (*virou/transformou*)

**Strategies:**

- **Write something about their observations.**
- **Graph organizer – graph cycle – showing the different states of water.**

**Differentiation:**

- Pair high students with medium or low students.
- Teacher circulates and offers support.
- Sentences prompts.
- A model of a graph organizer.

**Flexible Grouping**

- Students will work in pairs – High level proficient with low or medium proficient.

**Instructional Assessment:**

- Can students take note of their observations?
- Can students make connections of their observations with the three different states of water?
- Can students make a graph organizer to present to the class?

**Big Idea/Essential Understanding:** I want my students to understand that water has a cycle that changes state in processes such as evaporation and condensation.  
**Language of Instruction :** Portuguese  
**Grade level :** 3rd

Preview Phase:

**Content Objectives** - Students will:

- Participate in demonstration using the senses to experience the water cycle.
- Sort pictures to demonstrate the water cycle .
- Label pictures with the description of the water cycle, including evaporation and condensation.

**Language Objectives:** - Students will:

- Listen to a demonstration using senses to experience the water cycle.**
- Discuss with partners about the right way to sort the pictures. “I think this is right because\_\_\_\_\_”**
- Agree/disagree with partners’ opinions. “ I agree/ I don’t agree**

**Strategies:**

- TPR**
- Think-pair-share**
- Agree/disagree**

**Differentiation:**

- Pair high students with medium or low students.
- Teacher circulates and offers support.
- Sentence prompts
- Giving extra time to the low students

**Flexible Grouping**

- Whole group
- Pairs

**Instructional Assessment:**

- Can students participate in the TPR activity?
- Can they sort the pictures and label the parts of the water cycle?
- Do they keep the target language?

Focused Learning Phase

**Content Objectives** - Students will:

- Read texts in books or websites about the water cycle.

**Language Objectives:** - Students will:

- Orally express their ideas about the texts. “Eu li sobre\_\_\_\_\_.”
- Use sequential words to describe the water cycle. “*Primeiro...Segundo...depois...finalmente*”

**Strategies:**

- Write something during reading time.**
- Jigsaw (After reading time) - Each student share what they read with a different group. They say orally what they have written during their first reading.**

**Differentiation :**

- Groups of 3 or 4 students mixed in different levels of proficiency of the target language.
- Teacher circulates and offers support.
- Students can consult with partners from the same group.
- Sentence prompts of sequential words.

**Flexible Grouping**

- Heterogeneous groups of four or three.

**Instructional Assessment:**

- Can students express their ideas orally?
- Are they able to use sequential words to describe water cycle?

Application Phase

**Content Objectives** – Students will:

- Draw a poster showing how water evaporates and condensates through a cycle
- Color and label poster of water cycle.

**Language Objectives:** - Students will:

- Use appropriate vocabulary to present the poster about water cycle**
- Use appropriate sequential words they learned on previous phase of this lesson.**
- Listen to peer presentations and ask questions or/and make comments using the target language.**

**Strategies:**

- Roundtable – each student of the group takes turn drawing, coloring, and labeling one picture of the water cycle.
- Students’ presentations of the poster showing the water cycle.

**Differentiation :**

- Groups of 3 or 4 students mixed in different levels of proficiency of the target language.
- Teacher circulates and offers support.
- Word bank from preview phase
- Sentence prompts with question words/ comments.

**Flexible Grouping**

- Heterogeneous groups of four or three.

**Instructional Assessment:**

- Are students able to draw and label pictures appropriately?
- Can students present the poster orally?
- Can students ask/answer questions during presentations maintaining the target language?

## RESOURCES:

### BOOKS

1. Frost, Helen. *El agua como gas/Water as a Gas*, Capstone Press, 2004
2. Frost, Helen. *El agua como líquido/Water as a liquid*, Capstone Press, 2004
3. Frost, Helen. *El agua como sólido/Water as a solid*, Capstone Press, 2004
4. Frost, Helen. *El ciclo del agua/The Water cycle*, Capstone Press, 2004

The preceding four books are part of a bilingual series. They are written in both Spanish and English, but I intend to translate them into Portuguese and cover the original text, showing the pictures and the text in Portuguese. They provide excellent pictures of familiar scenes. Students will be able to relate to this book because it depicts water, a daily necessity, in the three most common stages of matter. The students will read these books during the focused learning stage.

5. Mantovani, Katia. *Colecao um jeito de aprender ciencias – 1a a 4a serie*, Sao Paulo: FTD, 1997.

This is a collection of four books – 1<sup>st</sup> to 4<sup>th</sup> grades in Portuguese. In each book there is a unit about water with pictures and text. I will be using this material as support for my classes. I will also copy some of the pictures for my lessons in this unit.

6. Lawrence Hall of Science. *Full option Science System. Water*, University of California at Berkeley, Delta Education, 2005.

This is the book the school where I teach is currently using for Science. There are some great hands-on activities that I can implement and modify to teach Portuguese. This program uses several instructional pedagogies to make science more efficient for teachers and more productive for students. It works with Science as inquiry. It also focuses on hands-on active learning, multisensory methods, student-to-student interaction, discourse and reflective thinking, and reading and research. Unfortunately, all the resources this book offer is in English, so I have to translate everything. There is a good bibliography they recommend for students to read, but everything is in English, so I can not use for my classes in Portuguese.

## **WEBSITES:**

1. [http://br.geocities.com/sostancredao/ecokids\\_ciclo.htm](http://br.geocities.com/sostancredao/ecokids_ciclo.htm) - This is a website entirely in Portuguese. It shows pictures of the water cycle and also about the amount of water in the world. It has a lot of pictures and texts. I think this could be used during the focused learning phase for the lesson of water cycle. The students will have a chance to increase their knowledge about this subject and also about the vocabulary. The visuals also will help them to focus and read in Portuguese.
2. <http://www.tvcultura.com.br/aloescola/infantis/chuachuagua/fonteseca.htm> - This is a great website for kids. It has a lot of visuals with simpler text. I intend to use it during my focused learning phase because students can increase their vocabulary in Science. It is totally in Portuguese. It also describes the water cycle in a very simple way with colorful pictures of the cycle and a small text about it. It will be useful for my students with a low level of Portuguese. It also has some games that students can play during their free choice.
3. <http://www.canalkids.com.br/meioambiente/sos/ciclo.htm> - This site is also entirely in Portuguese. It has a picture of the water cycle and a small description encouraging kids to think about it. I intend to use it during the focused learning phase when students are supposed to read about the water cycle.
4. <http://www.escola24h.com.br/salaaula/estudos/biologia/agua/home.htm> - This is an excellent website with general information about water. It is entirely in Portuguese. It shows a lot of pictures, the students will be able to listen to the text as they read. It also includes some activities for the students. I will use this website during my focused learning phase.