THE BRIDGE: FROM RESEARCH TO PRACTICE

Instructional Scaffolding with Graphic Organizers

by Laurent Cammarata, University of Minnesota, Minneapolis, MN, with a lesson originally created by Mary Bartolini, 1st Grade Teacher, Adams Spanish Immersion School, Saint Paul, MN.

Introduction

Many experts in the language teaching field have elaborated on the difficulty of integrating content and language in content-based instruction (CBI) and some important challenges have been identified. Among the most commonly cited barriers, some researchers have underlined the obvious difficulties in accessing the authentic material necessary to elaborate CBI curricula, some have underlined challenges related to the evaluation of learning outcomes (Brinton, Snow, & Wesche, 2003; Stryker & Leaver, 1997). Other researchers have argued that the focus on content may actually impede the development of accuracy in the second language when not done appropriately (Genesee, 1994).

The problems linked to the integration of language with content in existing second language curricula cited in the literature are various but, even though most of the time they represent a true challenge to the development of such programs, they are far from being insurmountable. The complexity of implementing CBI is directly linked to its ambitious goal: to provide a more meaningful language learning experience which implies the elaboration of a more contextualized language instruction that can take full advantage of the potential of language as a semiotic tool and require learners to use the language tool for what it is truly designed for (e.g., thinking, communicating/sharing ideas, problem solving, etc.). To be truly meaningful, instruction should be focused on trying to create a bridge (or to be the bridge) between learners' classrooms and the outside world. At a curricular level, making language instruction more meaningful implies weaving in particular content that can be connected to the learners' lived experiences so that their learning can become "situated rather than abstract" (Echevarria, Vogt, & Short, 2004, p. 30). This can occur with the use of instructional scaffolds. For example, in a thematic unit exploring the uses and forms of water, teachers may begin with a K-W-L organizing scaffold to create the bridge by asking students to identify their prior knowledge about this topic. When such connection is not possible because the learners do not yet possess the necessary experience, the planning should provide for the needed experiences to create the knowledge base from which learners can transition and advance through the learning process.

Scaffolding: A Key Instructional Strategy for the CBI Curriculum Designer

Scaffolding, a term borrowed from the influential work of Wood, Bruner, and Ross (1976) on mother-child interaction, is a concept that can best be understood as a means to operationalize Vygotsky's concept of working in the zone of proximal development (ZPD) (Wells, 1999). The

ZPD refers to the difference between what a learner can accomplish alone and what s/he can do when provided with adapted assistance from a more capable peer. Working in the ZPD describes a process by which a more capable peer (in this case an immersion teacher or a fellow student with topic expertise) gradually provides a decreasing level of assistance to other learners as they progress toward full autonomy (the ultimate goal of instruction). This particular assistance with building content mastery and language proficiency is what the scaffold metaphor describes. To use another metaphor, we could talk about cognitive crutches that help students walk when they can't, like training wheels on a child's bicycle that help the child learn how to ride, but which can also be easily removed when no longer needed. No matter what image we choose, it is obvious that providing such assistance becomes crucial when it comes to implementing integrated content and language instruction.

There are many different ways immersion teachers can scaffold instruction in order to reduce the conceptual demand of the content to a manageable level and ensure that instruction matches learners' linguistic abilities and developmental levels. Echevarria et al. (2004) identify many different types of scaffolding techniques used by teachers to increase the effectiveness of their instruction. According to them, these scaffolding techniques can be classified into three major groups: *verbal* scaffolding (e.g., paraphrasing, using think-alouds, contextualizing), procedural scaffolding (e.g., modeling, using small group-instruction, activities designed to have more capable peer assist less experienced ones), and finally instructional scaffolding (e.g., using graphic organizers to help learners build background, help them organize text content, and so on).

Graphic Organizers: The CBI Curriculum Designer's Best Friend

Among the many scaffolding techniques an immersion teacher can utilize, one of the most effective in CBI is the use of well-developed instructional scaffolds which are tremendously versatile. Instructional scaffolds, which commonly take the form of more or less complex graphic organizers, are not simply designed to provide visual assistance to learners as it is often believed. Rather, they represent powerful instructional devices which, when associated with appropriate pedagogical frameworks, can help teachers successfully plan, develop, and finally implement integrated language and content instruction.

In the past, graphic organizers have mostly been used by language teachers to help their students deal with the complexity of content (assistance that becomes even more crucial when lessons make use of authentic material, as is commonly the case in immersion settings). This typical use of graphic organizers, which focuses principally on making content accessible to learners' processing abilities, rarely addresses the linguistic demands associated with the activities learners are engaged in other than simply helping them build vocabulary and become familiar with key concepts. As a consequence, the potential of graphic organizers to function as tools that focus on language (form) and to increase learners' engagement with varied grammatical structures and functions remains untapped. The graphic organizers developed for the Content Based Language Teaching with Technology (CoBaLTT) professional development program represent a clear attempt to tap the potential of these instructional scaffolding tools so that they can push the teachers' planning process further and ultimately help teachers scaffold language as well as content.

The CoBaLTT graphic organizers have been specifically designed to support the demands of integrated content and language instruction (you can find this online resource at http://www.carla.umn.edu/cobaltt/scaffolds/GO/index.html). When using the CoBaLTT graphic organizers, teachers are required to provide a scaffold for content (a typical use of graphic organizers), but also to consider the many linguistic challenges associated with the selected content as well as tasks that the teachers design. In addition to helping teachers focus on particular challenges that naturally come with activities based on authentic materials, the CoBaLTT graphic organizers also require teachers to extend the use of graphic organizers to ensure that learners practice language using the content they are learning. On each of the twenty possible graphic organizer model templates, a special section labeled "Target Language Structure(s)" helps teachers brainstorm possible language applications and ensures that language practice and focus-on-form remain present and contextualized by the content. The next section, labeled "Additional Language Task" invites the teacher to design an activity that expands the study of content into a practice of language. In the sample CBI lesson that follows, former CoBaLTT participant, Mary Bartolini, makes effective use of a graphic organizer as an instructional scaffold that ensures a focus on content as well as language.
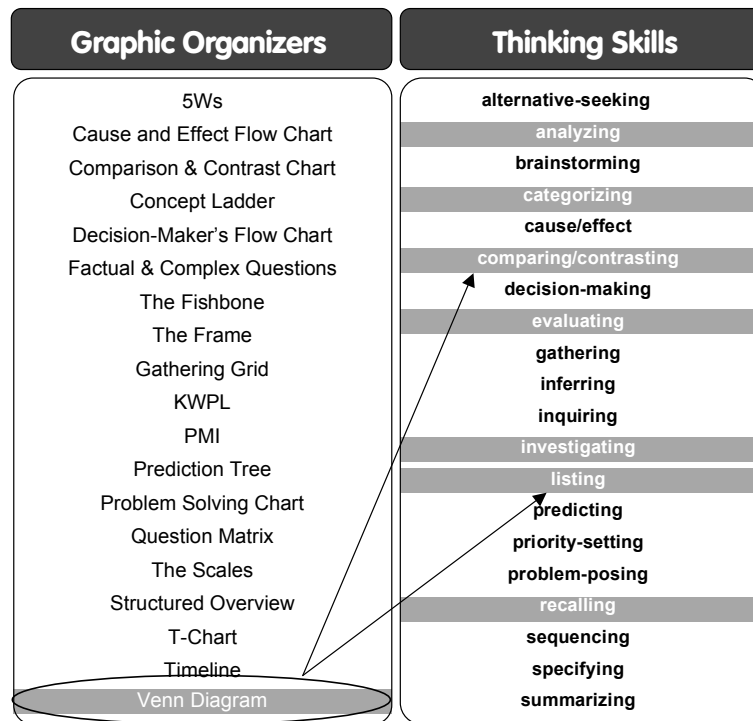
The graphic organizers developed for CoBaLTT and available on the program web site serve many purposes. One important purpose is to help teachers reflect on the kinds of challenges learners may face when engaged in content-based activities that rely heavily on authentic material. In other words, as important as the scaffolding of learning itself is what occurs with teachers in the process of developing the organizers with associated language tasks. Thoughtful planning processes can truly make a difference in integrated content and language instruction: finding what learners know and need to know, reflecting on the language structures and functions learners will use while engaged in completing the graphic organizer and additional language tasks, and so on.

Creating a Graphic Organizer the CoBaLTT Way

The CoBaLTT team has divided the process of creating a graphic organizer into seven distinct steps that can be separated into two major categories: 1) the identification of an appropriate graphic organizer that matches the underlying purpose of the lesson activity (this corresponds to steps 1-3), and 2) the customization of the online graphic organizer templates for use in the classroom (steps 4-7). Refer to the appropriate CoBaLTT web page (http://www.carla.umn.edu/cobaltt/scaffolds/GO/steps.html) for a more detailed description.
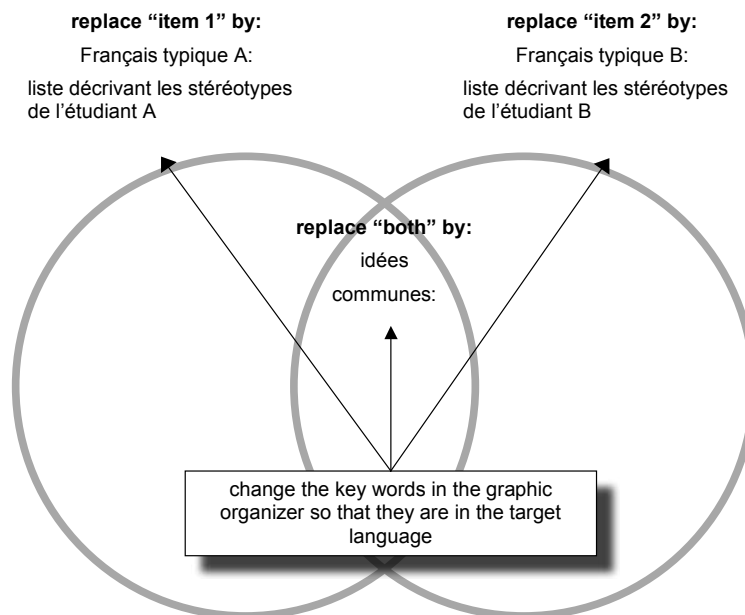
One particularly useful feature made available to teachers using the CoBaLTT framework to customize graphic organizers is found in step 2—an interactive table highlights the relationship between each graphic organizer and the thinking skills it activates. Teachers can select any graphic organizer in this interactive table and the associated thinking skills will automatically be highlighted (see illustration 1 on the following page); alternatively, the teacher may begin by selecting a particular thinking skill s/he is interested in developing and all the possible graphic organizers that use that skill light up.

Illustration 1

Graphic Organizers

5Ws
Cause and Effect Flow Chart
Comparison & Contrast Chart
Concept Ladder
Decision-Maker's Flow Chart
Factual & Complex Questions
The Fishbone
The Frame
Gathering Grid
KWPL
PMI
Prediction Tree
Problem Solving Chart
Question Matrix
The Scales
Structured Overview
T-Chart
Timeline
Venn Diagram

Thinking Skills

alternative-seeking
analyzing
brainstorming
categorizing
cause/effect
comparing/contrasting
decision-making
evaluating
gathering
inferring
inquiring
investigating
listing
predicting
priority-setting
problem-posing
recalling
sequencing
specifying
summarizing

Another feature CBI teachers who have used the graphic organizers in the past have found particularly helpful is the possibility of creating each graphic organizer in the target language (be it French, Spanish, German, Japanese, or some other) and using characters and accents appropriate for that language (see illustration 2 using French below).
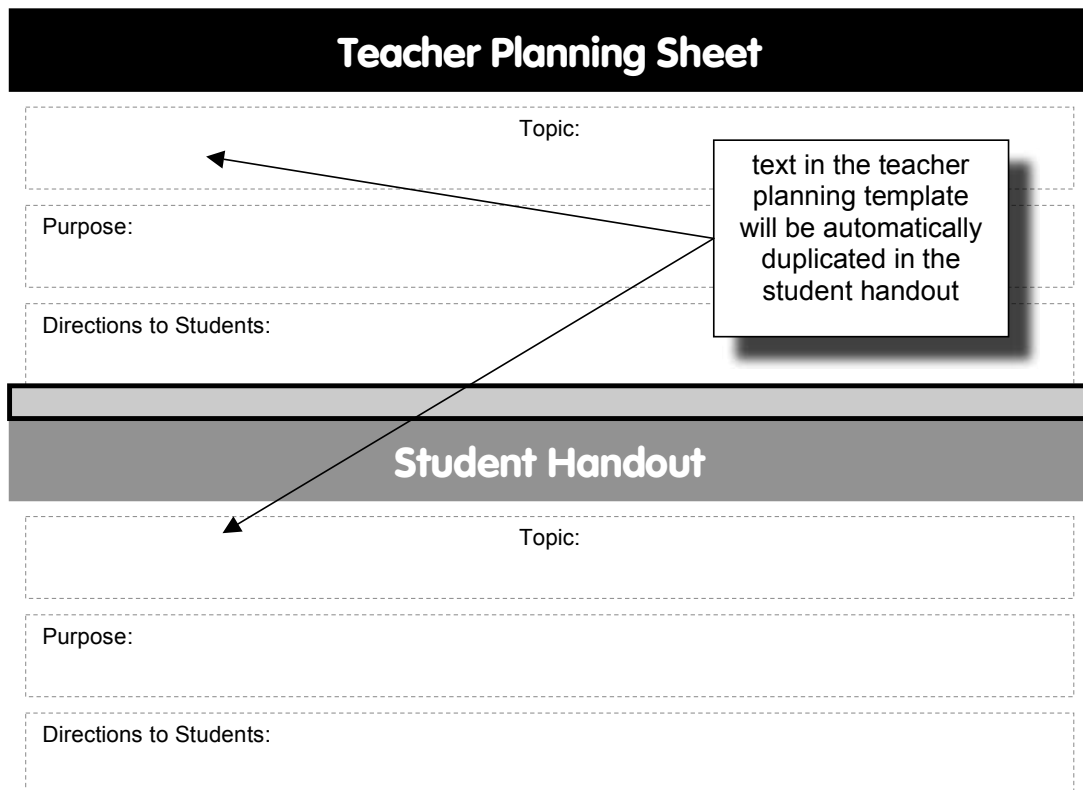
Illustration 2

replace "item 1" by:

Français typique A:

liste décrivant les stéréotypes de l'étudiant A

replace "item 2" by:

Français typique B:

liste décrivant les stéréotypes de l'étudiant B

replace "both" by:

idées

communes:

change the key words in the graphic organizer so that they are in the target language

(Note: Illustrations 1, 2, and 3 are adapted from: http://www.carla.umn.edu/cobaltt/scaffolds/GO/steps.html)

Finally, the process of creating a CoBaLTT graphic organizer has been optimized to take full advantage of multimedia capabilities. As the teacher moves through the planning process with the instructor handout, the software manages the task of automatically reproducing student-appropriate information from the instructor handout onto the student handout. Information related to teacher planning, intended only for the teacher to see, is left out. This ability to have appropriate information from the instructor handout automatically reproduced onto the student handout is a noteworthy time-saving feature that teachers find very attractive (see illustration 3 below, and attachments 2 and 3 on pages 11 and 12 of the Bridge).

Illustration 3

Teacher Planning Sheet

Topic:

Purpose:

Directions to Students:

text in the teacher planning template will be automatically duplicated in the student handout

Student Handout

Topic:

Purpose:

Directions to Students:

Conclusion

The use of instructional scaffolds such as graphic organizers is particularly crucial in immersion settings where what content learners are required to process often represents a real cognitive as well as linguistic challenge. To best assist individuals who are involved in learning academic content through a second language, teachers need to remember that their students are involved in a struggle against a two-headed beast, the learning of content as well as language. In order to achieve a greater balance between a focus on content and language during instruction, a mission that CBI promotes, instructional scaffolds specifically designed to integrate a focus on language act as a great asset for teachers. It is my belief that tools such as CoBaLTT's graphic organizers, which push teachers to focus on achieving this balance between language and content, represent nothing less than the immersion teacher's best friend.

Selected References

Bartolini, M. (2004). *Yo soy el agua*. CBI unit developed for CoBaLTT. Available on the CoBaLTT Web site: http://www.carla.umn.edu/cobaltt/lessonplans/search.html.

Brinton, D. M., Snow, M. A., & Wesche, M. (2003). *Content-based second language instruction* (2nd ed.). Ann Arbor, MI: The University of Michigan Press.

CoBaLTT Web site. *Using Graphic Organizers*. Retrieved January 25, 2005, from University of Minnesota, Content Based language Teaching with Technology (CoBaLTT) program hosted by the Center for Advanced Research on Language Acquisition (CARLA) Web site: http://www.carla.umn.edu/cobaltt/scaffolds/GO/index.html

Echevarria, J., Vogt, M., & Short, D. J. (2004). *Making content comprehensible for English learners: The SIOP model* (2nd ed.). U.S.A.: Pearson Education, Inc.

Genesee, F. (1994). Integrating language and content: Lessons from immersion. *National Center for Research on Cultural Diversity and Second Language Learning: Educational Practice Reports. No. 11. Washington, DC: Center for Applied Linguistics. (http://www.ncbe.gwu.edu/miscpubs/ncrcdsll/ epr11.htm)*.

Stryker, S. B., & Leaver, B. L. (1997). Content-based instruction: From theory to practice. In S. B. Stryker & B. L. Leaver (Eds.), *Content-based instruction in foreign language education: Models and methods*. Washington, DC: Georgetown University Press.

Wells, G. (1999). *Dialogic inquiry: Towards a sociocultural practice and theory of education*. U.S.A.: Cambridge University Press.

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem-solving. *Journal of Child Psychology and Child Psychiatry, 17*, 80-100.

Mary Carmen Bartolini is currently a first grade teacher at Adams Spanish Immersion in St. Paul, Minnesota. In addition to her elementary education undergraduate degree, she is working on a masters thesis from the University of Piura in Peru as well as the Immersion Certificate offered by the University of Minnesota. Mary developed the water unit featured in this issue's Bridge while participating in the CoBaLTT program.

Unit Title: Yo soy el agua

This lesson was adapted from the original created by Mary Bartolini for CoBaLTT. It is extracted from a unit comprised of five lessons available online at http://www.carla.umn.edu/cobaltt/lessonplans/search.html. To find the unit, select "Spanish" in the Content-Based Units search box.

Unit Cultural Theme or
Academic Content Area: Science and Language Arts

Language: Spanish

Standards:

Communication:	☑ 1.1	☑ 1.2	☑ 1.3
Cultures	2.1	2.2	
Connections:	☑ 3.1	3.2	
Comparisons:	4.1	4.2	
Communities:	5.1	5.2	

Target Audience: Immersion Elementary, Year I

Proficiency Level: Novice High

Lesson 4 of *Yo Soy el Agua* Unit: Estados del agua (States of Water)

Objectives:

Content:

Students will:

· Identify the three states of water

· Differentiate examples and non-examples of three states of water

· Categorize water representation in three states

Language: Content Obligatory

Students will:

· Use chunks (e.g., *es un ejemplo* or *no es un ejemplo)* to distinguish between examples and non-examples of three states of water

· Use the adjectives *sólido, líquido* and *gaseoso* to name the three states of water with the term *estado (estado sólido, estado líquido, estado gaseoso)*

· Use the contraction *"del"* to show relationship between two noun phrases (e.g., *el río es un ejemplo del estado liquido)*

· Practice the use of *"ser"* (third person singular *es* or *no es*) to identify types of water in

---

different states using words/phrases such as *un ejemplo del* and *estado sólido, estado líquido, estado gaseoso*

Language: Content Compatible

Students will:

- Use question word *"quién"* (who) with the third person singular present tense, or the second person singular present tense of *querer,* plus an infinitive of the action verb to choose jobs within the group (e.g., *¿Quién quiere buscar...?* or *¿quieres cortar?*)
- Use the first person singular of the verb *querer* (to wish) and the infinitive to accept or refuse a job with *yo quiero cortar* or *yo no quiero pegar*
- Use the structure *"poder + infinitive"* to identify possible activities that can be associated with a particular state of water using action verbs such as *nadar, patinar,* etc.
- Use the conjunction *"pero"* (but) to contrast activities that can vs. cannot be done given a particular state of water using *poder + infinitive* of action verbs such as *nadar, patinar, limpiar...*

Learning Strategies/Social and Skills Development:

Students will:

- Work cooperatively in pairs to create a poster

Time Frame:

One 45-minute period

Materials Needed:

- Poster song *Yo soy el agua* (see attachment 1 on p. 10 of insert)
- Flashcards
- Fowler, A. (1993). *Y aún podría ser agua.* U.S.A. Childrens Press, Inc.
- Delacre, L. (1992). *Arroz con leche: Popular Songs and Rhymes from South America.* Danbury, CT: Scholastic Books
- Magazines, scissors, glue, paper, markers, pencils

Description of Task:

Preview Phase

Students review the song *Yo soy el agua* introduced in lesson 1 by singing it in a chorus. This time students use body movements to represent each type of water.

Focused Learning Phase

◆ Teacher asks if we always find water in the same state *¿Encontramos el agua siempre en la misma forma o en el mismo estado?*

◆ Teacher introduces new topic-specific terminology for the class and presents three posters with the phrases *estado sólido, estado líquido, estado gaseoso.* The idea is to create a graphic organizer at the end of the whole-class presentation.

◆ Teacher shows picture cards with multiple examples of each state of water. On the posters she writes examples of water in its three states. She then works with the students to name basic characteristics of each state by asking questions like *¿Cómo es el agua en este estado?* (How is water in this state?) *¿Está quieto o está siempre corriendo? ¿Podemos tocarlo/podemos sentirlo? ¿Es suave o duro? ¿Podemos verlo?* She records student responses on the posters.

Expansion Phase

◆ Teacher reads the book *Y aún podría ser agua* and emphasizes the importance of water.

◆ When the book starts talking about different states of water, teacher changes the intonation to call students' attention to the new information and stops to point to the state of water posters on which they had recorded examples and descriptive words earlier. Teacher adds new examples of each state to the posters in order to expand the graphic organizer.

◆ Students form pairs and create their own poster for display as environmental print (following teacher's model of graphic organizer). Students cut and paste different representations of water from a magazine organizing the pictures into appropriate columns labeled *estado sólido, estado líquido* and *estado gaseoso.*

◆ Students make an oral presentation of their poster to the class.

Additional activity:

Teacher shows different representations of water to the students. Students record the examples of each state of water they are observing in the appropriate section of the "Comparison & Contrast Chart" classifying the different representations of water into the two available categories: example/non-example.

Assessment:

Informal observation of students' interactions in group activities. Collect and review completed graphic organizers.

<div align="center">

A Lesson from the CoBaLTT Project
http://www.carla.umn.edu/cobaltt
Center for Advanced Research on Language Acquisition
University of Minnesota

</div>

<div align="center">

CONTACT INFORMATION
Mary Bartolini
mary.bartolini@spps.org

</div>

*Canción: Yo soy el agua**

Yo soy el agua
me puedes encontrar
en diferentes formas
me puedes encontrar

Yo soy la lluvia
yo soy el mar
yo soy el charco
así me puedes encontrar

Yo soy la piscina
yo soy el lago
yo soy el agua
así me puedes encontrar

Yo soy la nieve
yo soy el hielo
yo soy la niebla
así me puedes encontrar

Yo soy la bañera
yo soy el río
yo soy el agua
así me puedes encontrar

Ritmo: canción tradicional *Arroz con leche*

Adaptation to folksong "Arroz con leche" lyrics by Mary Carmen Bartolini

Note: In the following examples, most of the text is in English so that ACIE readers can understand the task. For a real immersion class, all text within the graphic organizer should be written in the target language.

Attachment 2

Teacher Planning Sheet

Topic: Estados del agua (States of Water)

Purpose: to become familiar with the many different states of water and to be able to identify and categorize these states.

Directions to Students:
First, identify the correct category for each state of water presented and write it in the appropriate space under the "es un ejemplo" column. Once you are finished, include a counter example in the adjacent column titled "no es un ejemplo." You will need this additional information to complete the activity described in the "Additional Language Task."

	Es un ejemplo	No es un ejemplo
Estado sólido		
Estado líquido		
Estado gaseoso		

Target Language Structure(s):
the contraction "del"; use of "ser"; simple negation; use of "poder + infinitive of action verbs"; using "pero" as a connective to emphasize contrast

Additional Language Task:
Use the contraction "del" to identify and categorize examples and non-examples, e.g., "el río es un ejemplo del estado líquido" and "el hielo no es un ejemplo del estado líquido." Write sentences that first identify the state of the water and then describe what people can and cannot do with water in this state. For example, "El río es un ejemplo del estado líquido. En este estado podemos nadar, pero no podemos patinar."

Attachment 3

Student name(s): _____   Date: ____ / ____ / ____

Student Handout

Topic: Estados del agua (States of Water)

Purpose: to become familiar with the many different states of water and to be able to identify and categorize these states.

Directions to Students:
First, identify the correct category for each state of water presented and write it in the appropriate space under the "es un ejemplo" column. Once you are finished, include a counter example in the adjacent column titled "no es un ejemplo." You will need this additional information to complete the activity described in the "Additional Language Task."

	Es un ejemplo	No es un ejemplo
Estado sólido		
Estado líquido		
Estado gaseoso		

Additional Language Task:
Use the contraction "del" to identify and categorize examples and non-examples, e.g., "el río es un ejemplo del estado líquido" and "el hielo no es un ejemplo del estado líquido." Write sentences that first identify the state of the water and then describe what people can and cannot do with water in this state. For example, "El río es un ejemplo del estado líquido. En este estado podemos nadar, pero no podemos patinar."

Customizable graphic organizers posted on the CoBaLTT website: http://www.carla.umn.edu/cobaltt/