



Using Technology to Teach Global Challenges Impacting Latin America

A Curriculum Guide for World Language Classrooms

*Center for Latin
American Studies*

VANDERBILT  UNIVERSITY

The Rising Cost of Water in Mexico

Target Audience: Intermediate language learners; Spanish learners in grades 9-12

RELATED CONTENT AREAS

Social studies, Environmental Science, Spanish

OVERVIEW

This lesson utilizes different types of technology to teach about access to water in Latin America. This lesson focuses specifically on access to potable water in Mexico with a comparison to the United States.

STANDARDS

ACTFL World Readiness Standards

COMMUNICATION

Interpersonal Communication Learners interact and negotiate meaning in spoken, signed, or written conversations, to share information, reactions, feelings, and options.

Interpretive Communication Learners understand, interpret, and analyze what is heard, read, or viewed on a variety of topics.

Presentational Communication Learners present information, concepts, and ideas to inform, explain, persuade, and narrate on a variety of topics using appropriate media and adapting to various audiences of listeners, readers, or viewers.

COMPARISONS

Cultural Comparisons Learners use the language to investigate, explain, and reflect on the concept of culture through comparisons of the cultures studied and their own.

OBJECTIVES

Learners will be able to...

- Use vocabulary related to the environment and water.
- Compare and contrast access to potable water in Mexico and the United States.
- Understand and interpret information in the target language.

VOCABULARY

El desperdicio - Waste	La cuenca - Basin	El agua potable - Potable water
La fuga - Leak	Conservar - To conserve	Abastecer - To supply / provide
El clima - Climate	Prevenir - To prevent	Los recursos naturales - Natural resources
Desperdiciar - To waste	El plomo – Lead	El abastecimiento - Supply/Provision
Ambiental - Environmental	El agua dulce - Fresh water	Almacenar - To stock up/collect/accumulate
La tarifa - Price	El aumento - Increase	El cambio climático - Climate change
El suministro - Supply	Contaminado/a - Polluted	
La falta - Shortage/Lack	El medio ambiente - Environment	
El caudal - Water level		

TIME	MATERIALS
90-180 minutes or 1-2 class periods	<ul style="list-style-type: none"> • iPad/Smartphone (1 per 1-5 students) • Access to Instagram • Dictionary App • Palabras Claves/Keyword List (Appendix D) • Palabra Nueva Worksheet (Appendix E) • BBC Mundo news article Polémica por tarifas de agua en México (Appendix F) • Guiding questions (Appendix G)

PROCEDURE

1. Begin the lesson by having students brainstorm in the target language all the ways in which they use water. Learners may record this list on a traditional whiteboard, or on an online learning management system, such as Blackboard, Edmodo, Canvas, and Schoology. Ideas that might end up on the list include: drinking, bathing, washing clothes, cooking, etc. It is important that this list remain available to all students, as they will be completing a homework assignment using this list.
2. Next give students the keyword list (Appendix D) as well as a copy of the article from BBC Mundo (Appendix F). To avoid making hard copies of the article, you may ask students scan a QR Code that links to the article with their personal mobile devices or iPads. Students should skim the article looking for all the keywords, or *palabras claves*. After skimming, learners can work with a partner or independently to discern

the meaning using context clues.

3. Next, pass out the *palabra nueva* worksheet (Appendix E) or ask students to access the worksheet digitally through a learning management system. Students will use a dictionary app, such as WordReference, on an iPad/smartphone to find the English meaning of each word. In addition, learners will search for the part of speech, the definition in target language, synonyms and antonyms. Using the worksheet, students will draw a picture to represent their word and use it in a sentence (or copy the sentence from the news article). It is recommended that students complete this worksheet for each word on the list.
4. After the vocabulary activity, divide the class into small groups of 2-3 people. In groups, learners will work together to read the article (Appendix F) and answer the guiding questions (Appendix G) in the target language. Students should be allowed to continue using their dictionary apps to clarify any unknown words. Once students have read the article and answered the questions, the teacher will lead a class discussion to review the article make sure all the worksheet questions were answered correctly.
5. Learners will use their personal mobile devices and/or iPads to do some research on access to clean water in the United States. Students may start by researching their local water service to see how much they charge for water. They can also try to find out how much water their own family uses every month. Students should also research an area in the United States that is facing a drought and what is being done by the government to conserve water in that area. Once completing this search, students will create a Venn diagram comparing water access and usage in Mexico City and the United States in the target language.
6. As a homework assignment, students will use the brainstormed list from the beginning of class and take pictures of examples of 5 of the items in the list. Then students will post each of their 5 photos to Instagram with a description of how they are using water. The description will also include a unique hashtag (created by the teacher) for this activity. For example, a student might take a picture of themselves washing their hands and write *Uso el agua para lavarme las manos. #ComoUsoELAgua*. The following day in class the teacher can show the pictures to the class and discuss all the ways we use water every day.
7. Finally, as a summative assessment, students will work in pairs to create a 2-4 minute Vlog in the target language in which they pretend to be a person living in Mexico City. Each Vlog will give a brief introduction to the problem of affordable clean water in Mexico City, discuss why it is important to conserve water, and what the

government can do encourage conservation among the Mexican people. Students should write out a script beforehand and have the instructor review it before filming. Upon completion, students will send it to the instructor as a summative assessment. The instructor may also choose to share the Vlogs with the class.

EVALUATION

Learners will be formatively assessed by class discussions, questions, Venn diagrams and other activities.

Learners will be summatively assessed by the completion of a vlog entry.

EXTENSION ACTIVITIES

1. Students may watch the documentary *Water and Power: A California Heist* and compare and contrast the issues with water access and water rights in Mexico and California in a blog post.
2. Students may research water access in other Latin American countries such as Guatemala, Bolivia, or Ecuador, and determine which groups of people are most affected by this problem and come to a conclusion about why.

**MEXICO WATER CRISIS INTERMEDIATE
PALABRAS CLAVES - KEYWORDS**

El abastecimiento	El agua dulce
El agua potable	El aumento
El cambio climático	El caudal
El cima	La cuenca
El desperdicio	La falta
La fuga	El medio ambiente
El plomo	Los recursos naturales
El suministro	La tarifa
Abastecer	Almacenar
Conservar	Desperdiciar
Prevenir	
Ambiental	Contaminado/a

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Palabra Nueva

Palabra: _____ Parte de habla: _____

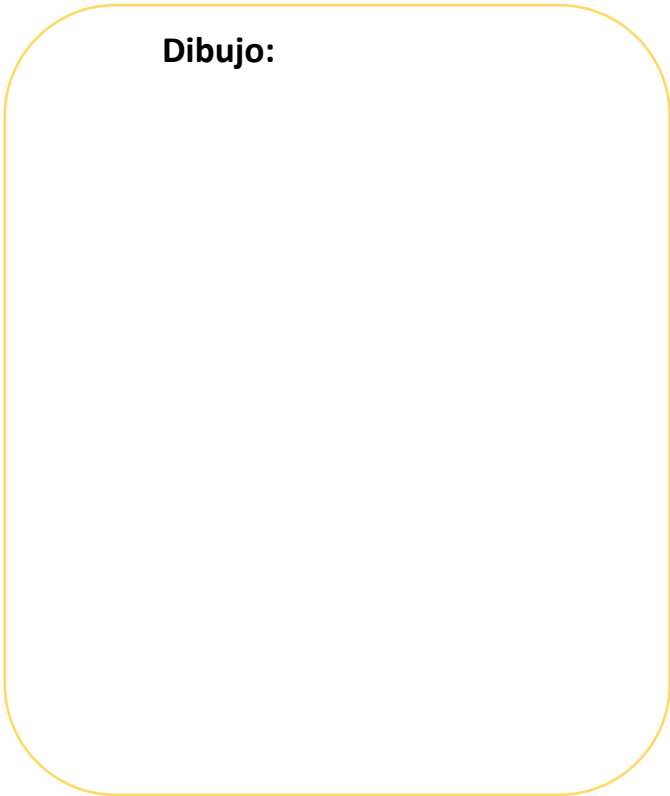
Traducción al inglés:

Definición:

Sinónimos:

Antónimos:

Dibujo:



Oración:

Polémica por tarifas de agua en México

Alberto Nájar

BBC Mundo, México

viernes, 12 de marzo de 2010 15:55 GMT

Por fugas y la ausencia de una cultura ambiental, la capital mexicana es una de las ciudades con mayor desperdicio de agua en América Latina, según reconocen las autoridades. Y para solucionar el problema, el Gobierno del Distrito Federal (GDF) aumentó a partir de marzo las tarifas al consumo doméstico.

La decisión causó una intensa polémica entre los habitantes de la ciudad, quienes denunciaron un aumento de hasta 500% en el precio del suministro del líquido. Las autoridades han dicho que el incremento es necesario no sólo para contener el desperdicio, sino porque el servicio de agua en la capital tiene un costoso subsidio.

Pero más allá de la polémica algunos especialistas señalan que, en el fondo, el problema es la falta de cultura ambiental en el país. Y es que para muchos, añaden, cuidar el agua no está en sus prioridades.

"El uso y manejo del agua se distinguen, con mucha frecuencia, por el desperdicio y la irregularidad de muchos de los actores de la sociedad", dijo recientemente Carlos Fernández, presidente del independiente Consejo Consultivo del Agua.

Duro castigo

Pero otros opinan que la capital mexicana tiene un sistema de abastecimiento poco sustentable, porque al menos la mitad del agua potable que llega a la ciudad se obtiene de cuencas ubicadas entre 127 y 143 kilómetros de distancia de la capital.

Las fuentes se encuentran a una altura menor a la de Ciudad de México, por lo que el líquido se eleva 1.100 metros con varias estaciones de bombeo, de acuerdo con datos de la gubernamental Comisión Nacional del Agua (CNA). Eso representa un enorme gasto de energía y, sobre todo, una inversión que supera, sólo en electricidad, los US\$131 millones al año.

"No hemos construido otras soluciones, por ejemplo almacenar agua en las zonas montañosas que rodean la ciudad. Hay 45 ríos que pueden aprovecharse", le dijo a BBC Mundo Jorge Legorreta, investigador de la Universidad Autónoma Metropolitana (UAM).

De hecho, para frenar el desperdicio el GDF estableció sanciones estrictas contra quienes tiren el líquido, como el encarcelamiento hasta por 36 horas a los infractores.

Según datos oficiales, en la capital mexicana se desperdicia el 40% del agua potable que llega a la ciudad, es decir unos 400 millones de metros cúbicos al año, cantidad que sería suficiente para abastecer a la población de Honduras. El promedio internacional de desperdicio, en poblaciones similares, es de 20% del abastecimiento total.

Cambio climático

La decisión de aumentar las tarifas por consumo de agua ocurrió después de que Ciudad de México vivió en 2009 una de las peores crisis de abastecimiento en las últimas décadas, según el GDF.

Las autoridades redujeron una tercera parte de la distribución del líquido en Ciudad de México, porque las presas que le suministran agua estaban semivacías.

El alcalde Marcelo Ebrard dijo que la sequía fue consecuencia del cambio climático. "La ciudad puede quedarse sin agua en los próximos años, por eso hay que cuidarla", advirtió.

De acuerdo con especialistas, el bajo costo del agua potable en la capital mexicana es un factor que propicia su desperdicio. Proporcionar un metro cúbico de agua a la ciudad cuesta US\$53 centavos, pero los capitalinos pagan un promedio de US\$15 centavos.

La crisis de desabastecimiento fue temporalmente superada en febrero pasado, cuando el país registró las lluvias más intensas de las últimas décadas, según reconoció el Servicio Meteorológico Nacional. La causa de las precipitaciones "atípicas", como señalaron las autoridades, fue una variación del clima en la región.

Sin embargo, el aumento en los caudales no canceló las nuevas tarifas por el consumo de agua, lo cual provocó que cientos de capitalinos promovieran juicios legales para no pagar las nuevas tarifas.

http://www.bbc.com/mundo/america_latina/2010/03/100312_mexico_agua_tarifa_lp.shtml?print=1

Preguntas del Artículo

Nombre _____ **Fecha** _____

1. ¿Qué hizo el Gobierno del Distrito Federal para solucionar el problema del desperdicio del agua en la capital? *What did the government do to solve the problem of wasting water in the capital?*

2. ¿Qué puede hacer el gobierno para alentar y enseñar a la gente acerca de la conservación del agua? *What can the government do to encourage and teach people about water conservation?*

3. ¿Qué tan lejos de la capital están las cuencas que almacenan el agua para la Ciudad de México? *How far away from the capital are the basins that store the water for Mexico City?*

4. ¿Cómo llega el agua a la ciudad? ¿Por qué es un método poco sustentable? *How does the water get to the city? Why is this an unsustainable method?*

Acknowledgements

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About the Authors

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Lisa Finelli is the Outreach Coordinator at the Center for Latin American Studies at Vanderbilt University. As Outreach Coordinator, Lisa leads all public engagement programs, organizes K-16 teacher workshops and summer institutes, coordinates the curriculum development and strengthens collaborations with community organizations and educational institutions.

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#LatinAmerica #Environment #Sustainability #Health #Globalization

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