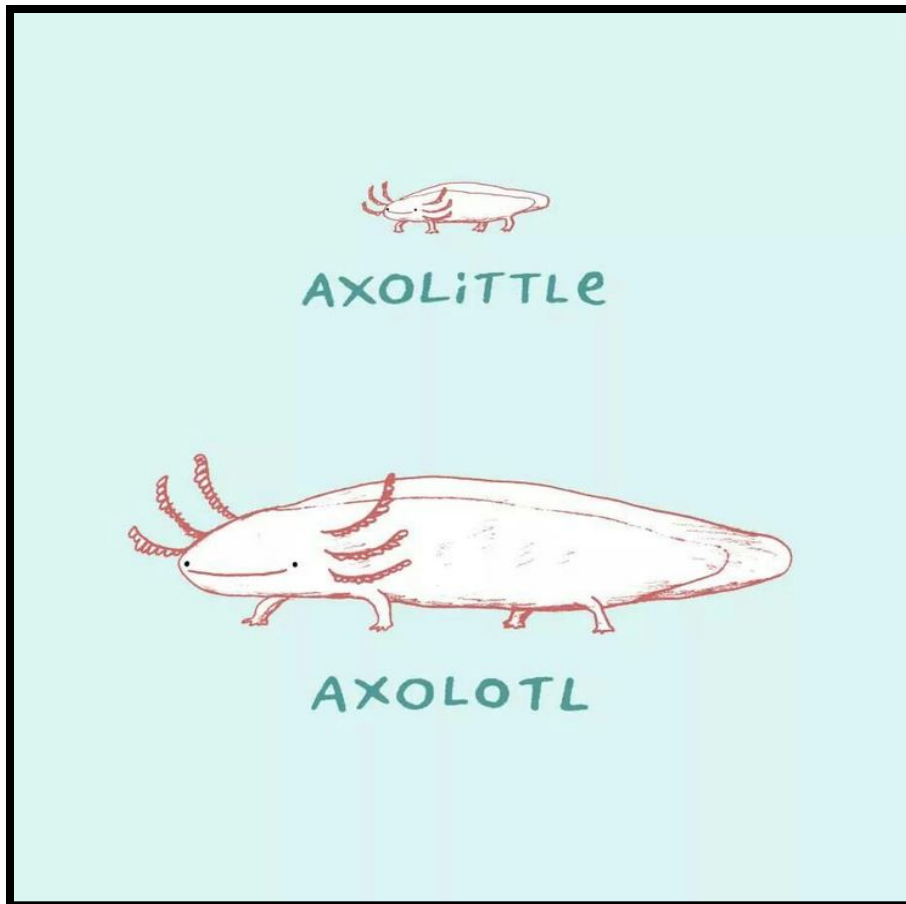


A lot of Axolotls

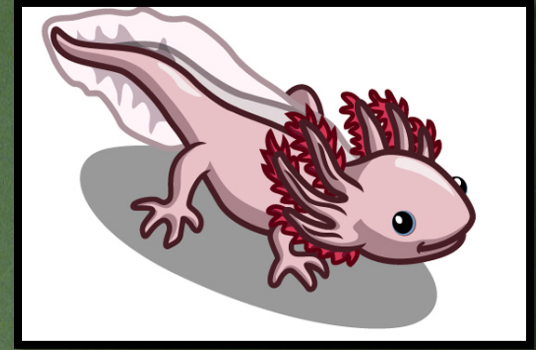
A Thematic Unit for Teaching
Science and Language



Dr. Lori Langer de Ramirez

Director, World & Classical
Language Department, The Dalton School

Active Learning Strategy #1: K-W-L chart



Fill in a chart like the one below with information regarding what you *know* about axolotls, and what you *want to know*. Leave the last column blank (for now!)

| Know | Want to Know | Learned |
|------|--------------|---------|
| | | |

*Who are we?
Why should
you care?*





I am an **Axolotl**.

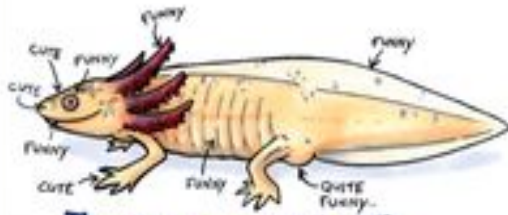
I am a **Mexican Salamander**.

I am **Ambystoma mexicanum**.

Yo soy un
ajolote.

WHY AXOLOTLS ARE AWESOME

BY MORRISON3000



They look cute and funny



They come in different colors



They are curious



They have awesome external gills



They love to nibble your finger



They 'smile' and look good in pictures



They're not dangerous



They look funny when they yawn



They create cute babies very easily



They can regenerate bodyparts



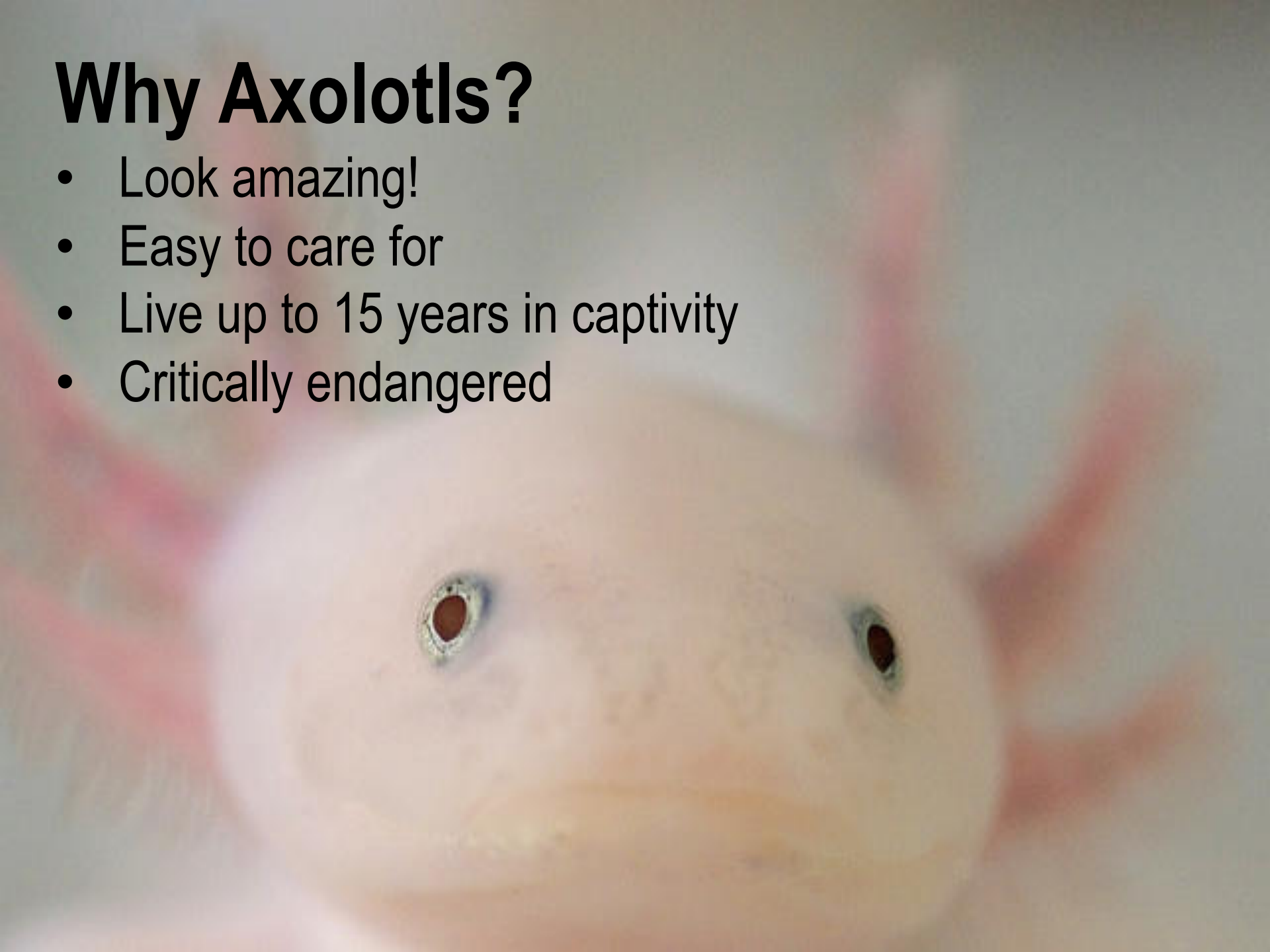
They're relatively cheap



They love to create 'axie stacks'

Why Axolotls?

- Look amazing!
- Easy to care for
- Live up to 15 years in captivity
- Critically endangered



What makes axolotls special?

- External gills used for breathing and excretion
- Neoteny
- Limb regeneration






Nuestros ajolotes...
Our axolotls....





¡Hola!
Soy Mely. Soy un
ajolote tipo melanoide.
Soy de color grisáceo y
tengo los ojos negros.

MELLY

A white axolotl with prominent pink gills and black eyes is perched on a dark, porous rock in an aquarium. A white tube is visible in the upper left corner. A green speech bubble with a black border is positioned to the right of the axolotl. In the bottom right corner, a dark rectangular label with the word "EINSTEIN" in white capital letters is partially visible.

¡Hola! Soy
Einstein. Soy un ajolote
tipo leucístico. Soy de color
blanco con las agallas rojas
que destacan muchísimo. No
soy albino como Ally puesto
que tengo los ojos de color
negro porque tengo
algunas células con

EINSTEIN



¡Hola! Soy Fancy Free.
Como Einstein, soy un ajolote tipo
leucístico. Soy de color blanco con las
agallas rojas que destacan muchísimo. No
soy albino como Ally puesto que tengo
los ojos de color negro.

FANCY FREE

A photograph of a white axolotl (Allie) in an aquarium. The axolotl is positioned horizontally, facing left. It has a pale, almost white body with faint yellowish-orange spots. Its gills are a distinct pinkish-red color. The background shows dark rocks and green artificial plants. A yellow speech bubble with a black outline is positioned above the axolotl, containing text in Spanish. A name tag with the word 'ALLIE' is visible on the right side of the tank. The number '4' is printed in the bottom left corner of the image.

¡Hola!

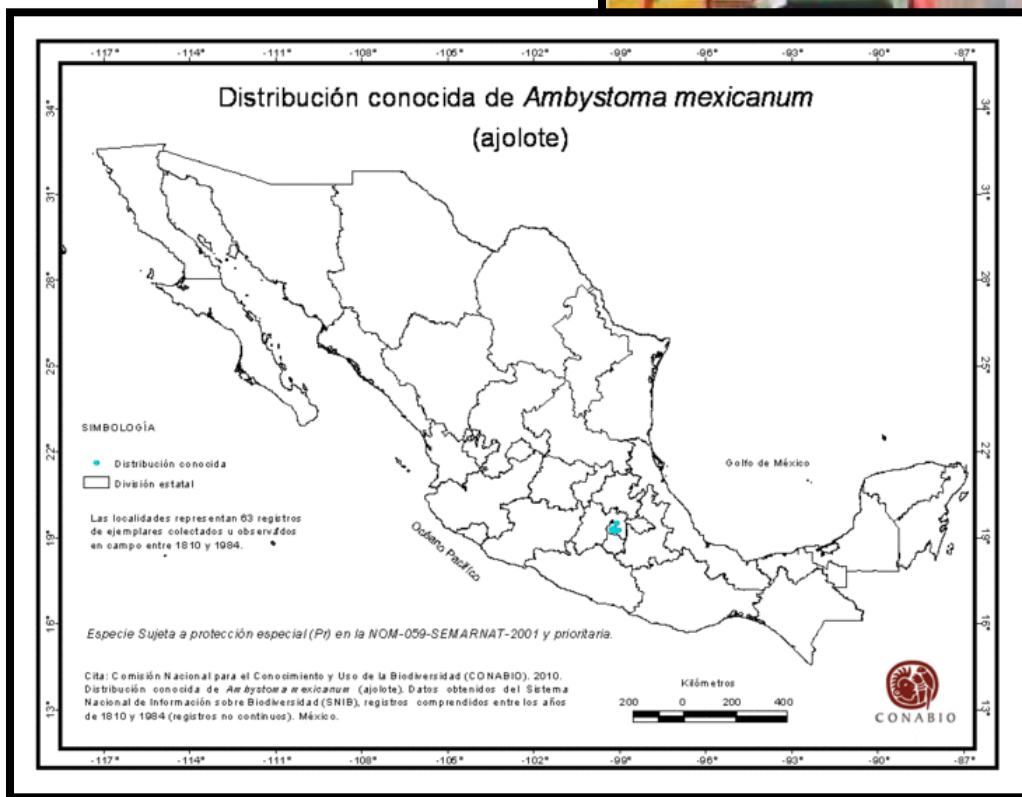
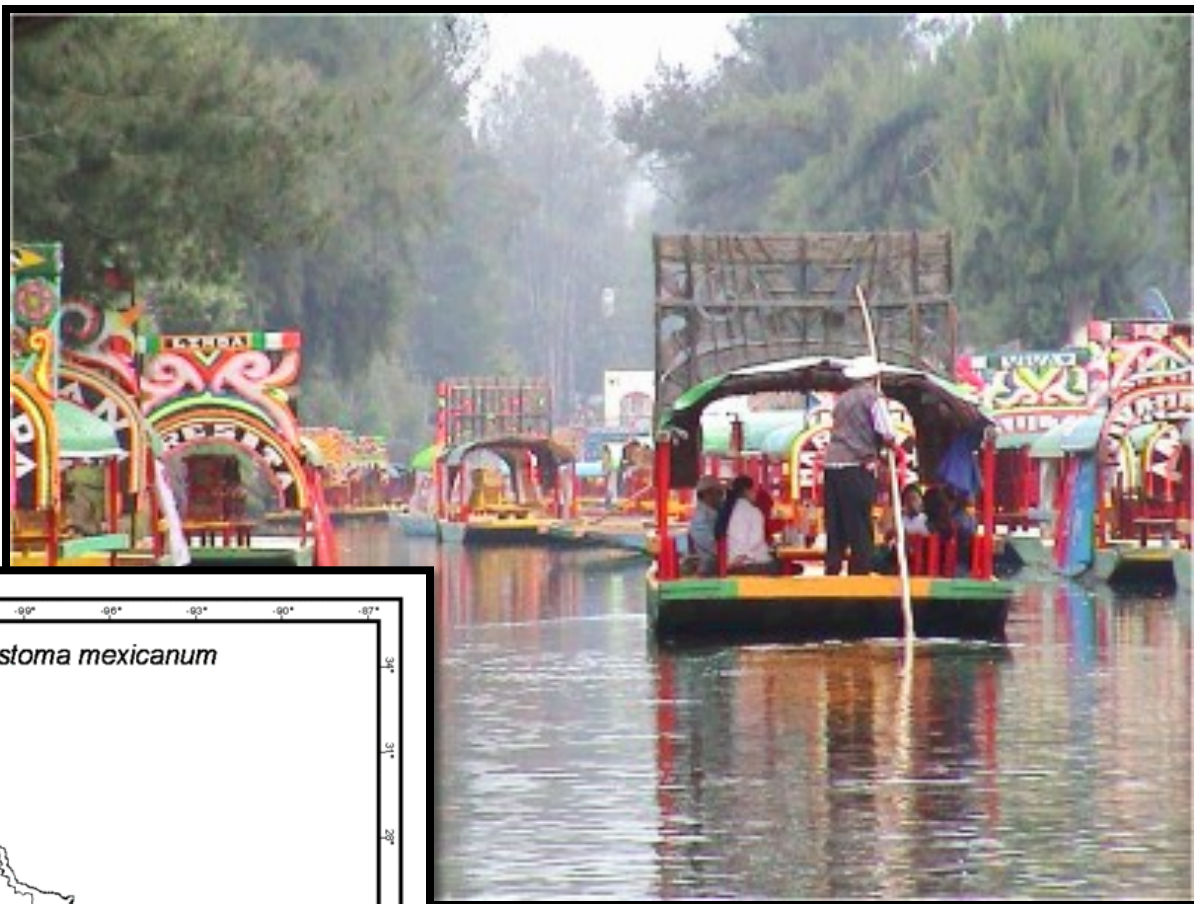
Soy Allie. Soy un ajolote tipo albino, de color amarillo claro. No tengo ningún pigmento oscuro en todo el cuerpo. Mis ojos son casi transparentes y la pupila es de color amarillo también.

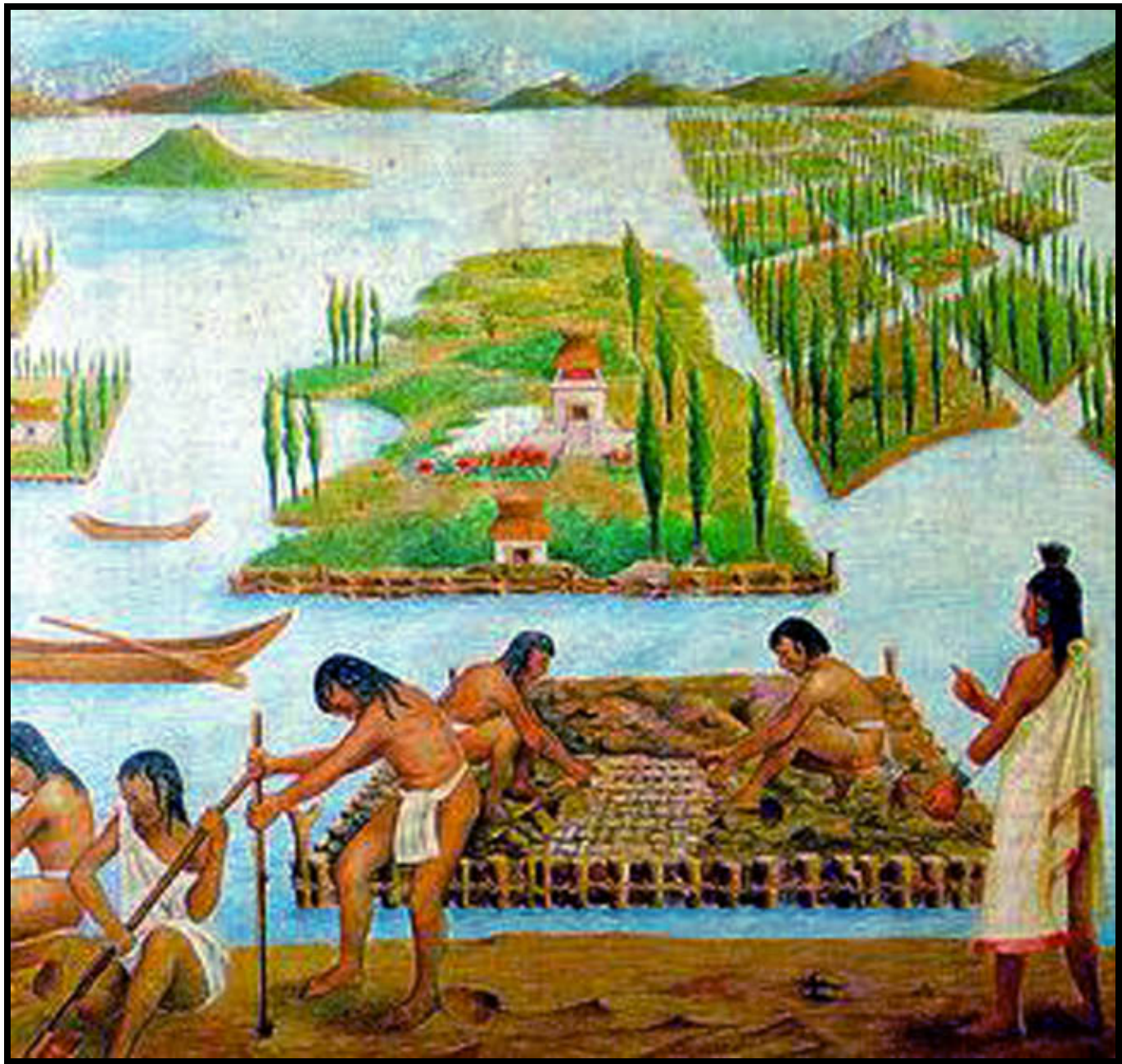
ALLIE



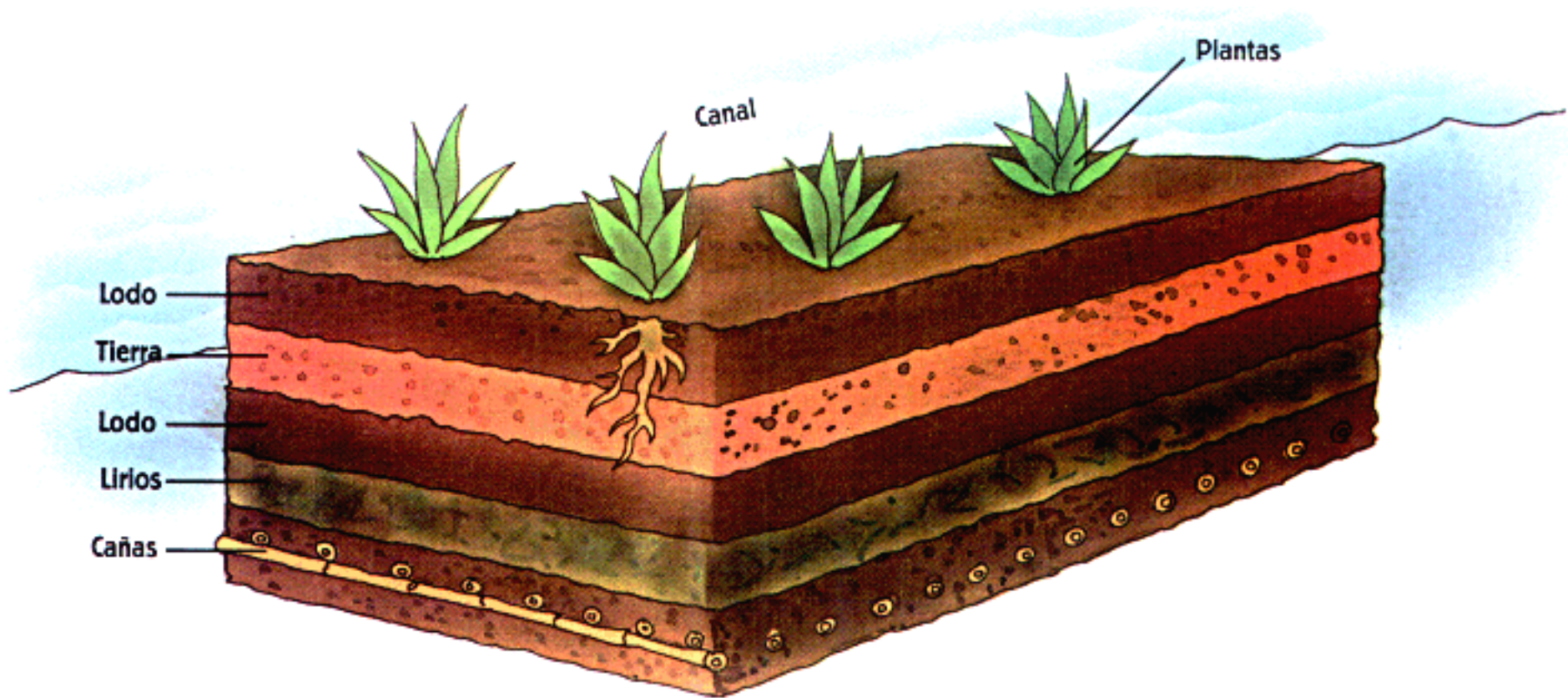
¡Hola!

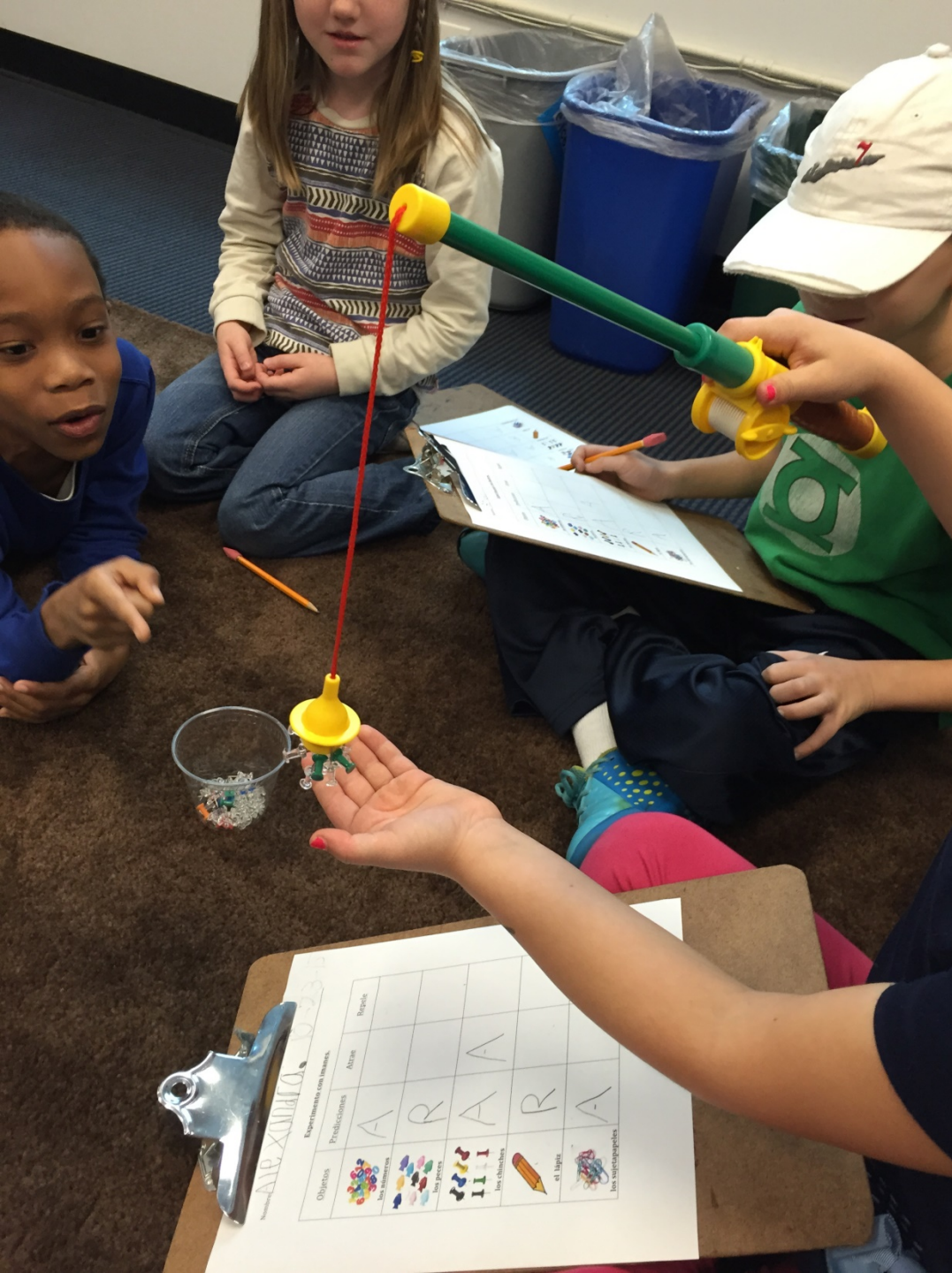
Soy Darwin. Soy un
ajolote tipo silvestre. Soy de
color grisáceo con manchas.
La mayoría de los ajolotes
tienen mi coloración.











Content-based **STEAM** (Science, Technology, Engineering, Arts, and **Math**)

Active Learning Strategy #2:

Think-Pair-Share

Think about your responses to the following questions:

- What other STEAM topics have you incorporated into your teaching in the past?
- How do STEAM topics help strengthen your language teaching?



Then turn to your neighbor and share your thoughts.

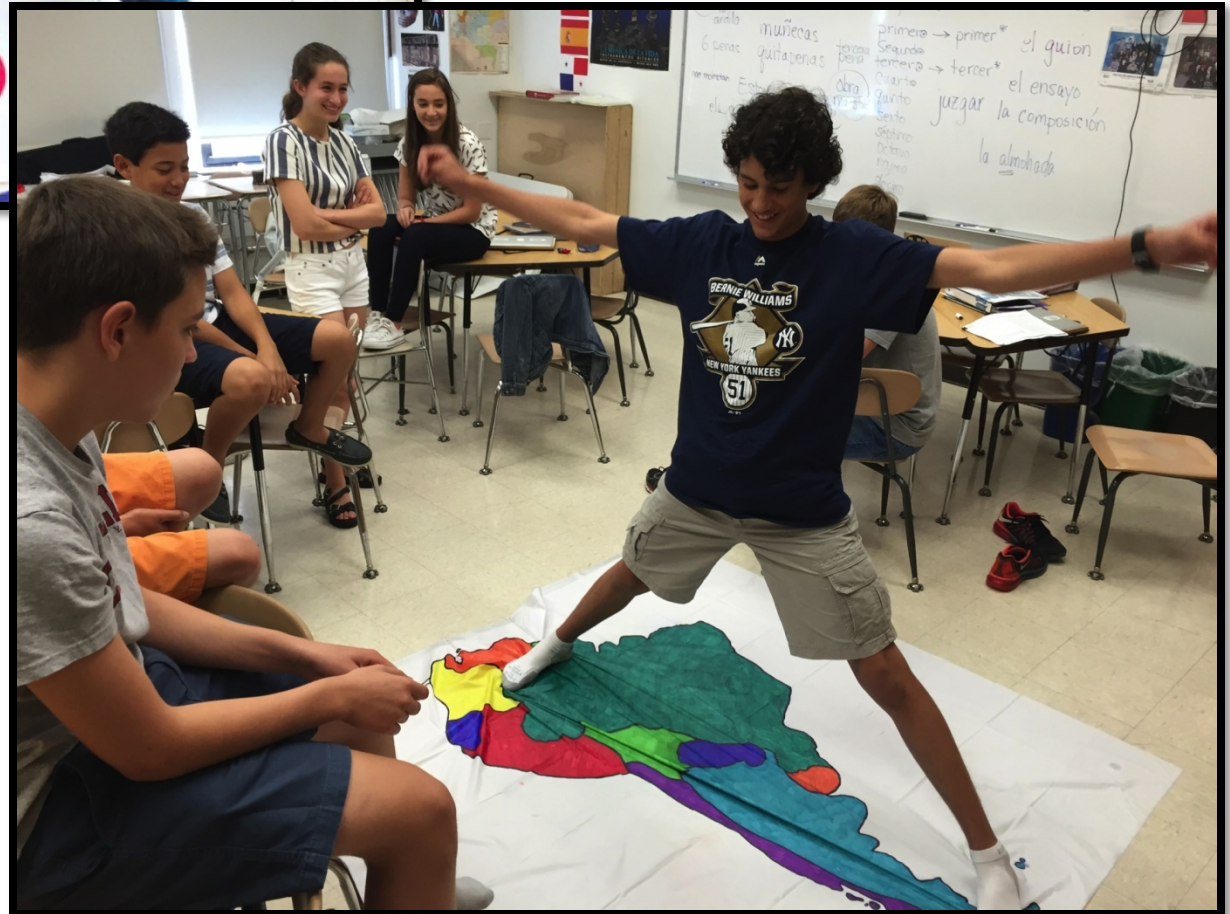
Axolotls in the
ELEMENTARY
SCHOOL

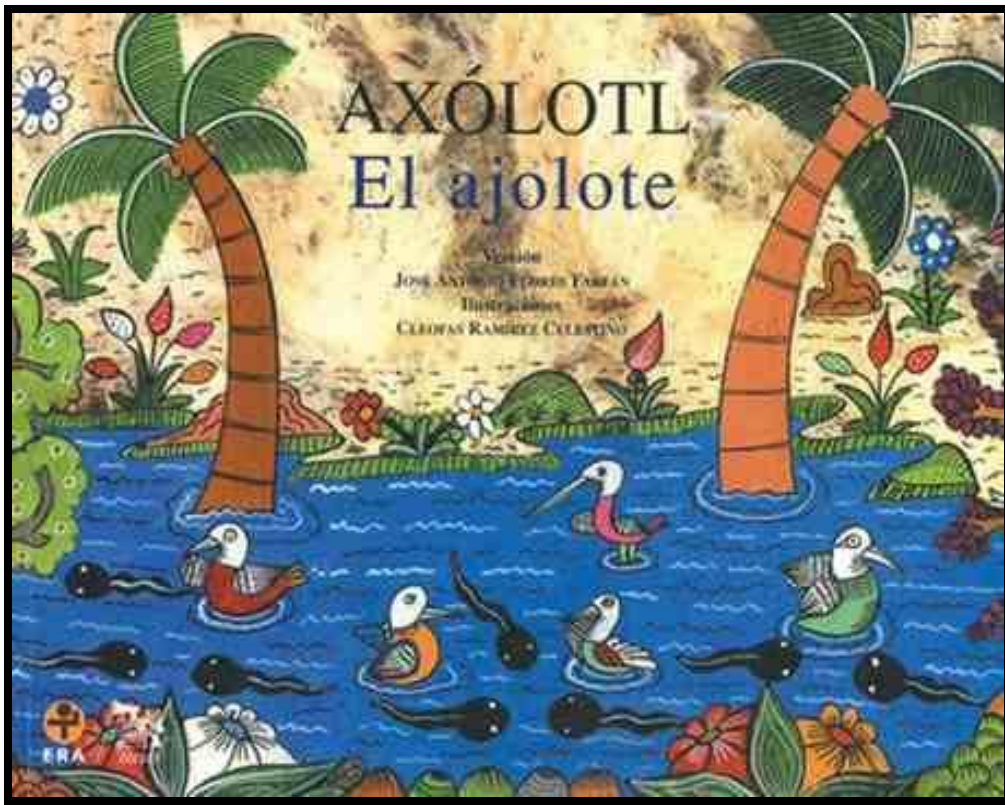




Chinampa floormap

Twister and info gap games





The ancient Aztec believed that, due to the Axolotl's strange look and regenerative powers, they were the manifestation of the god Xolotl. One legend says Xolotl interfered in the political affairs of the other gods and feared he would be banished or lose his life. He decided to transform himself into an Axolotl and hide in the lake to elude capture.

En la compra de este libro, usted brinda un donativo a Fundación UNAM que es destinado al proyecto de Restauración Ecológica de Xochimilco y del Ajolote. ¡Gracias por su contribución!



EL AJOLOTE DE XOCHIMILCO

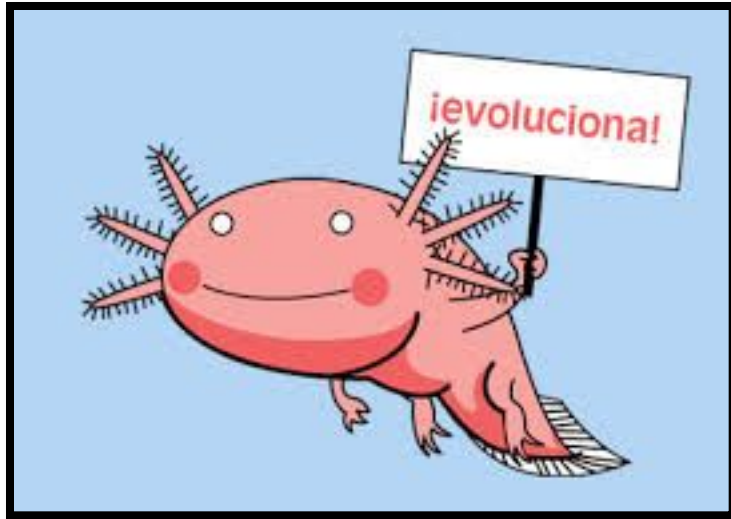
XOCHIMILCA AXOLOTL

XOCHIMILCO'S AJOLOTE



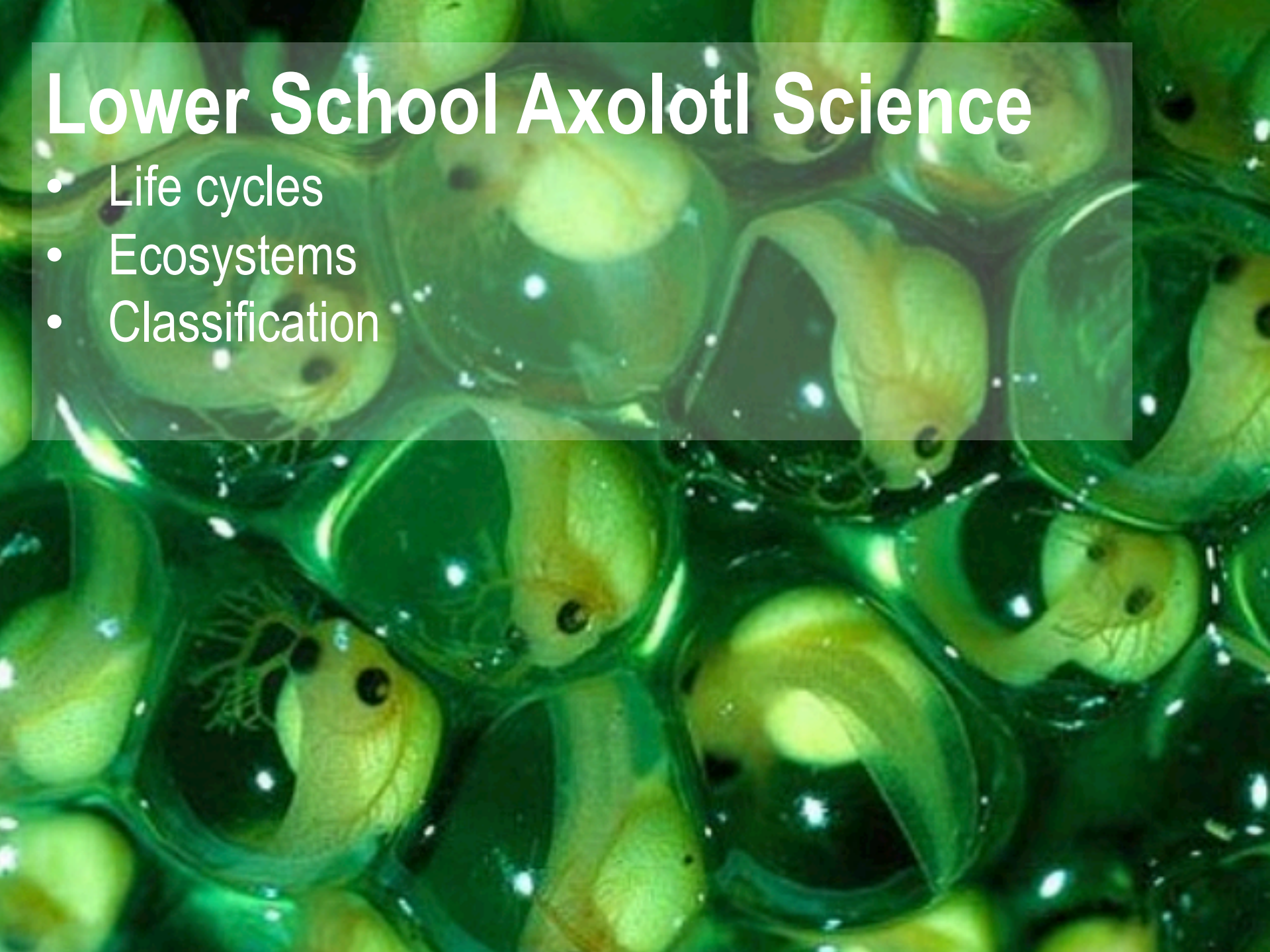




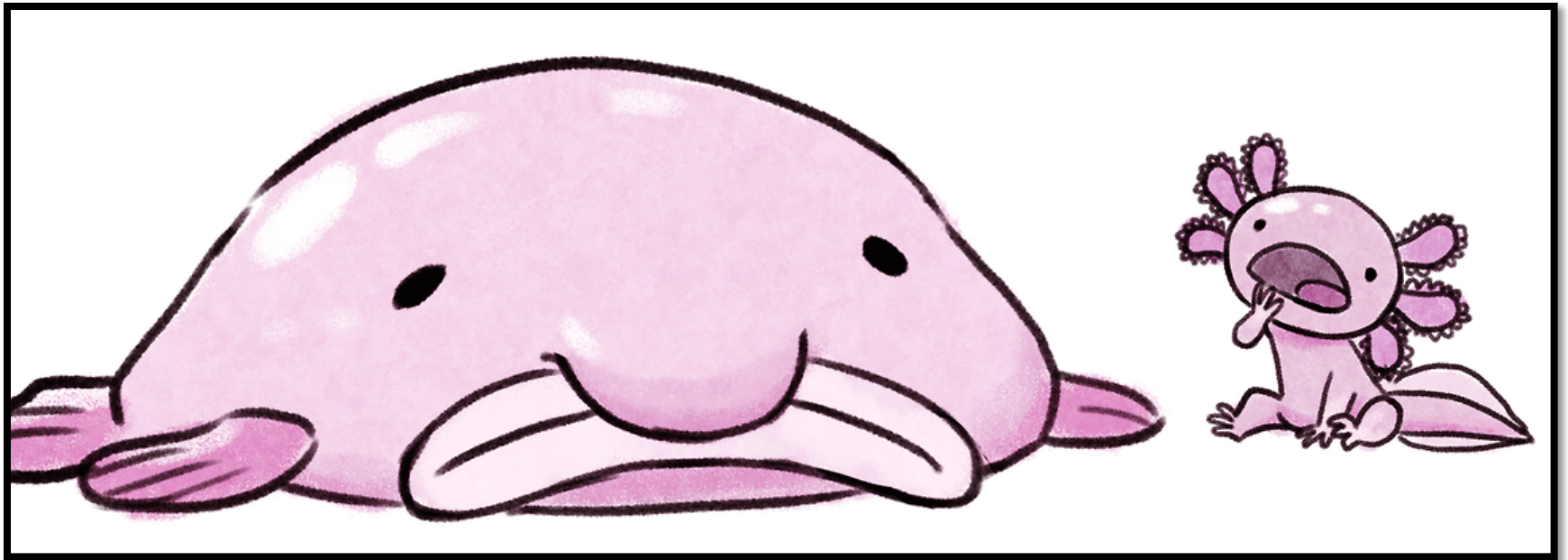


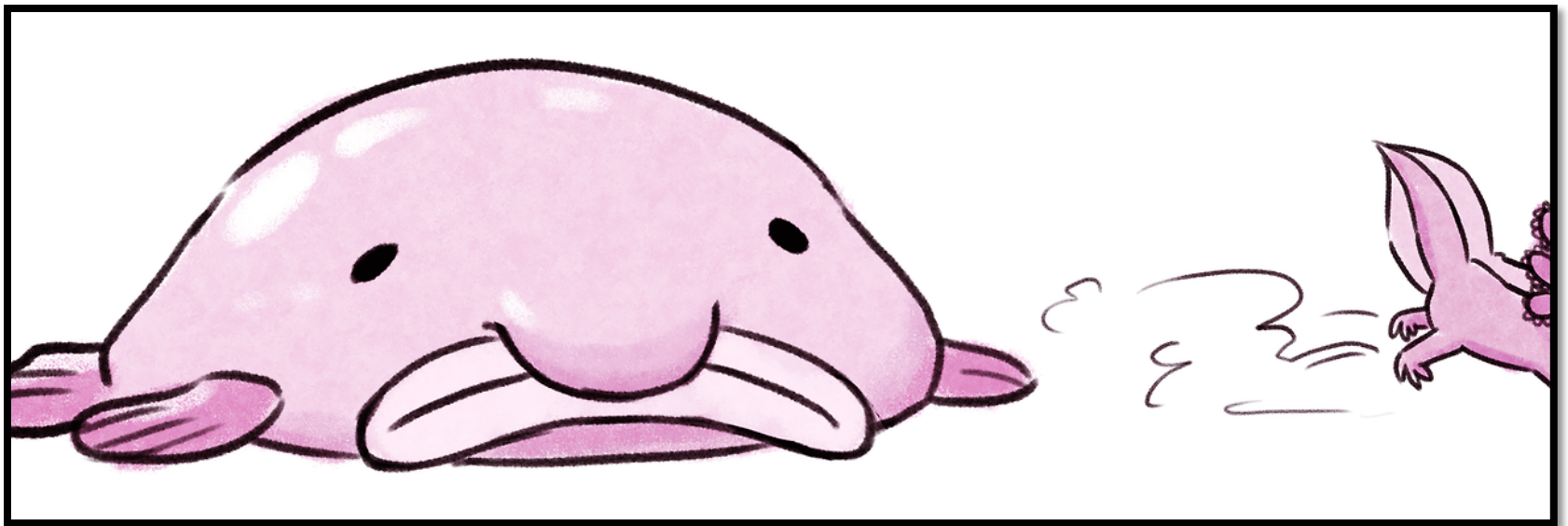
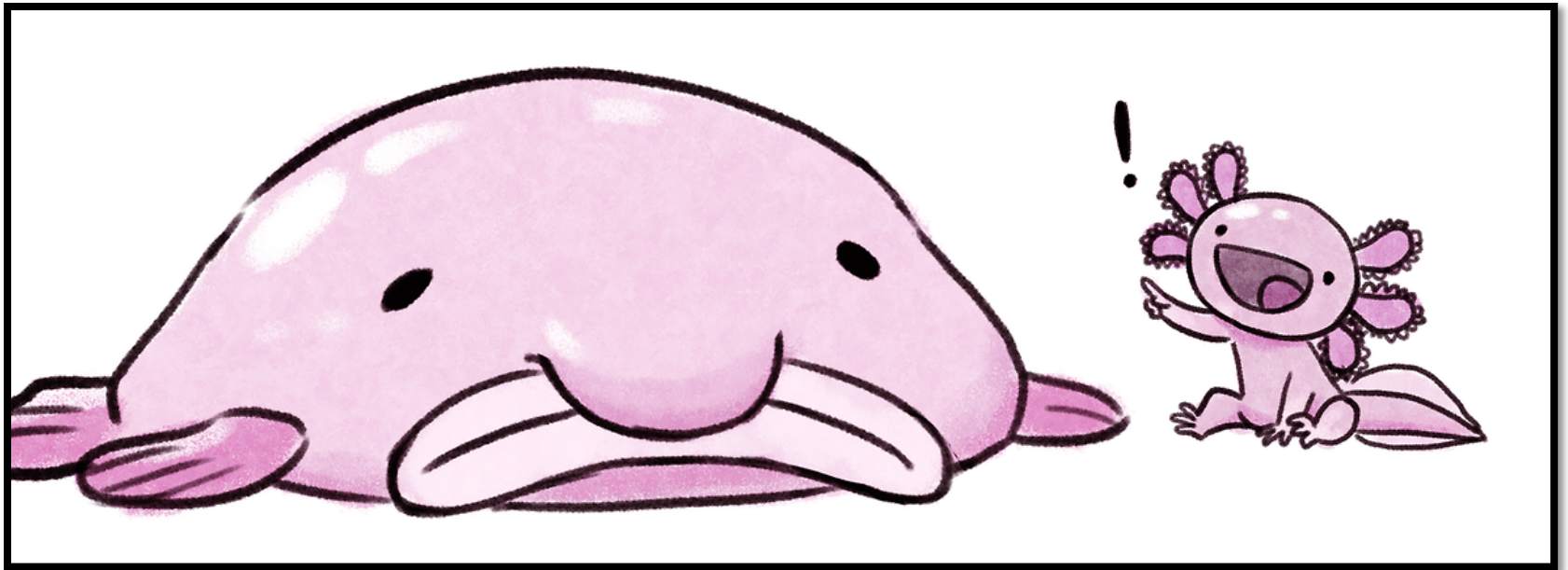
Lower School Axolotl Science

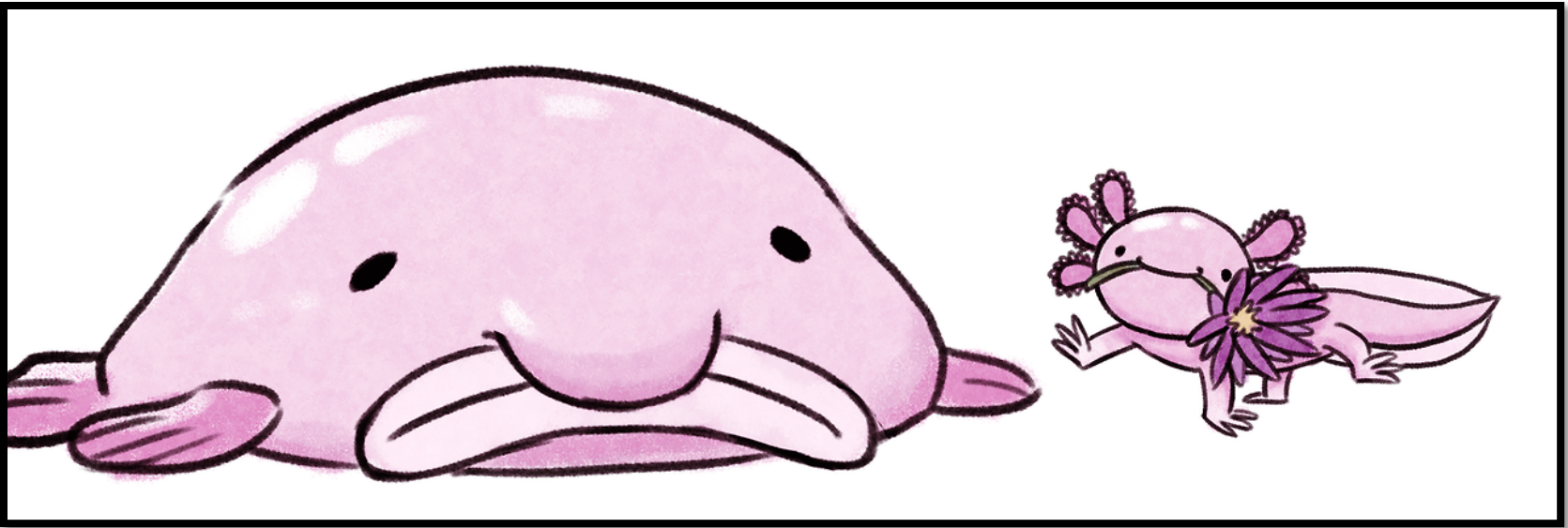
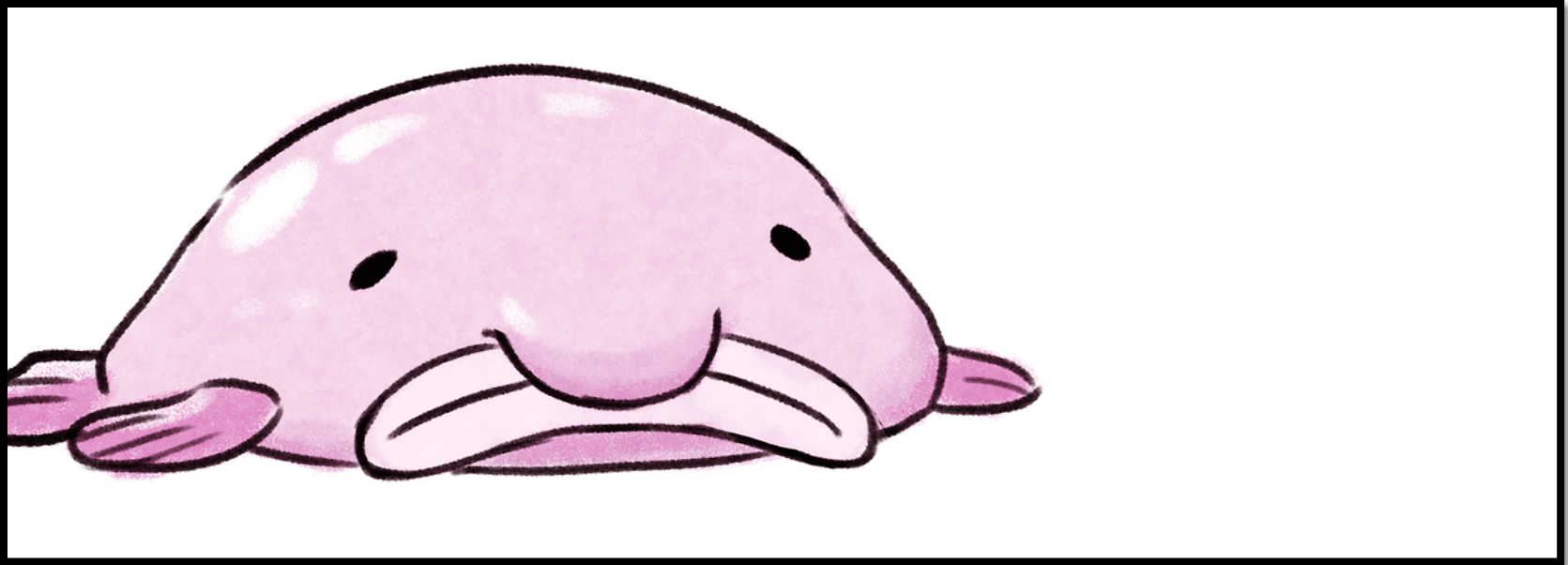
- Life cycles
- Ecosystems
- Classification

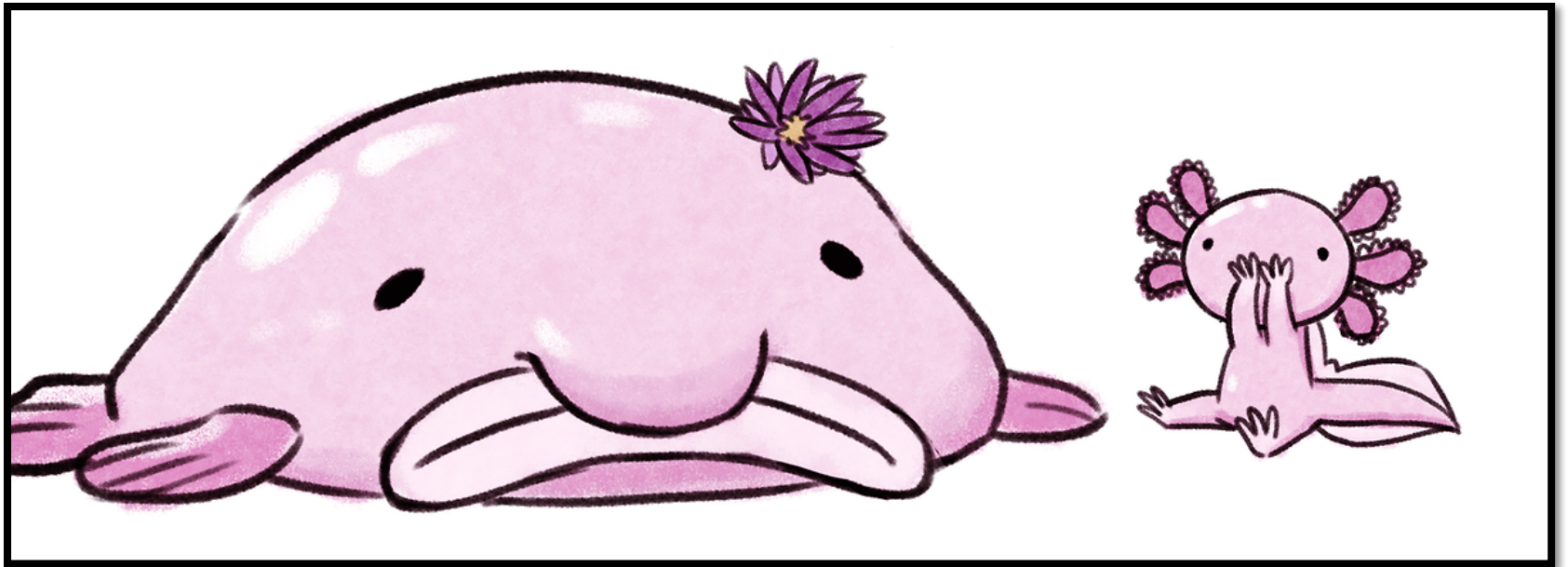
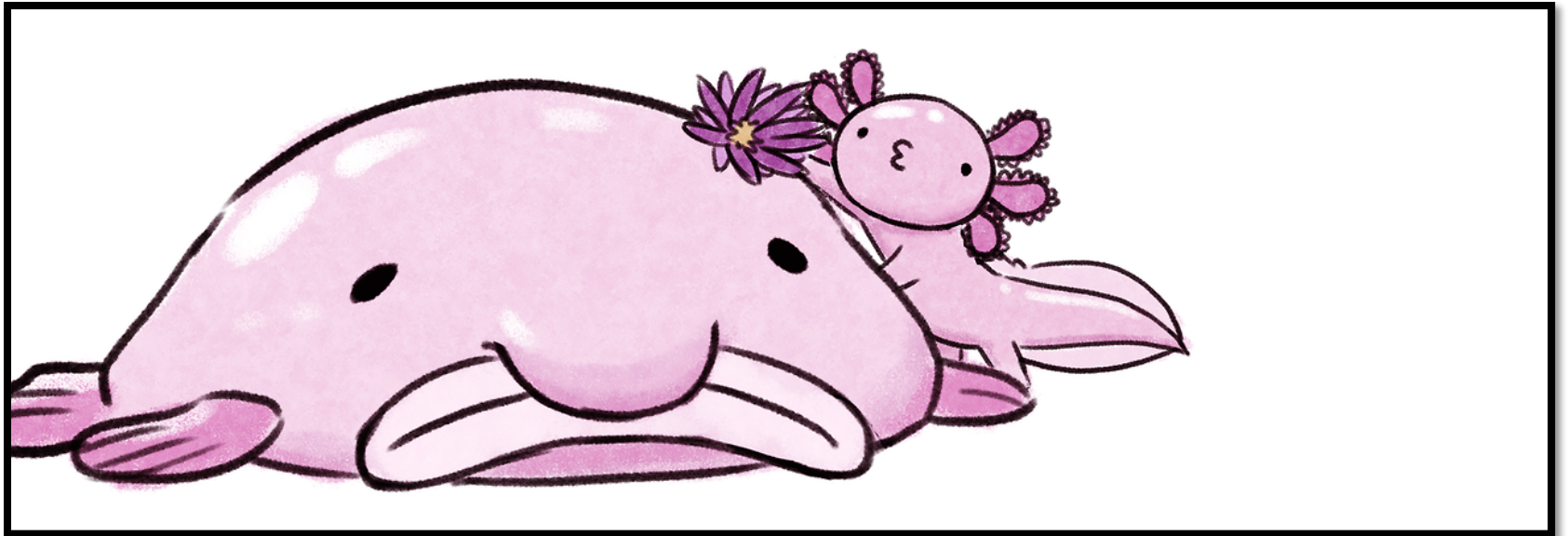


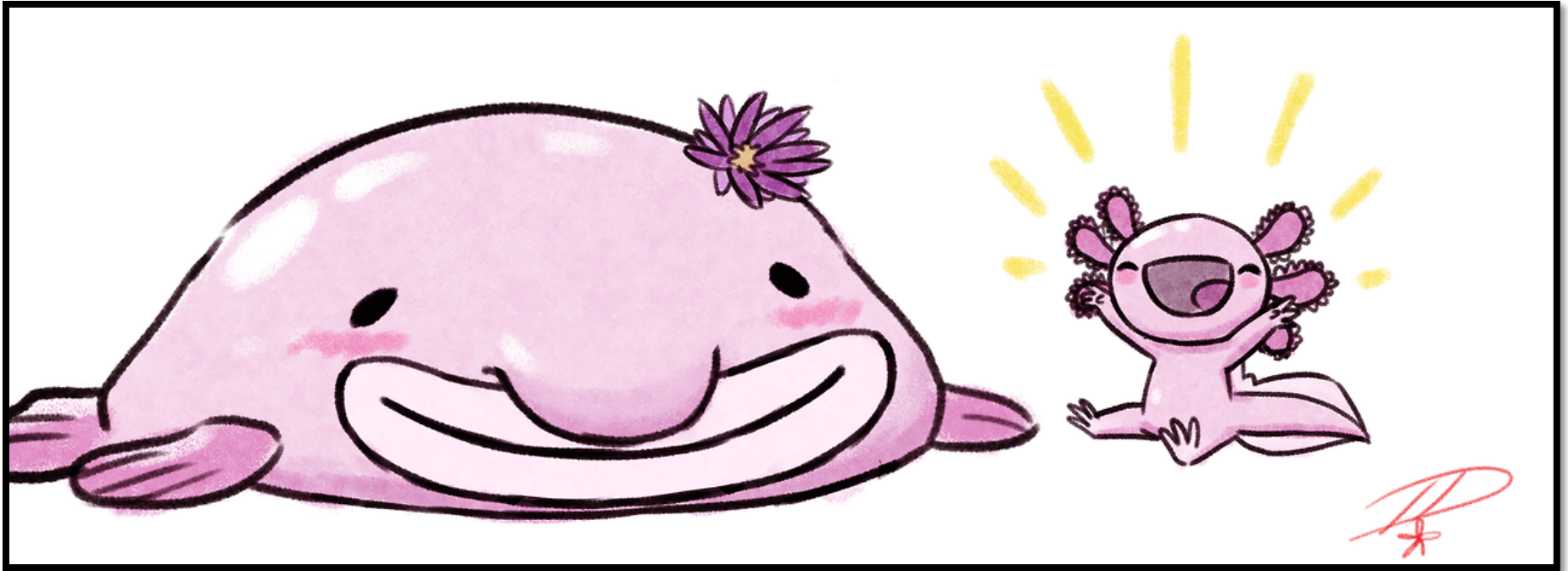
EL AJOLOTE Y EL PEZ BORRÓN











Active Learning Strategy #3: 3-2-1 Format



With a partner, discuss:

- 3** activities shared so far
- 2** activities that you might use in your classes
- 1** question you have



**Axolotls in the
MIDDLE SCHOOL**



Chapter 1
¿Qué es EL Ajo...

1

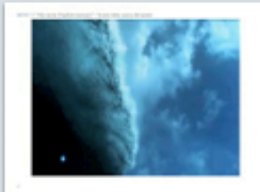


2



Section 1
Untitled

3



Section 2
Untitled

4



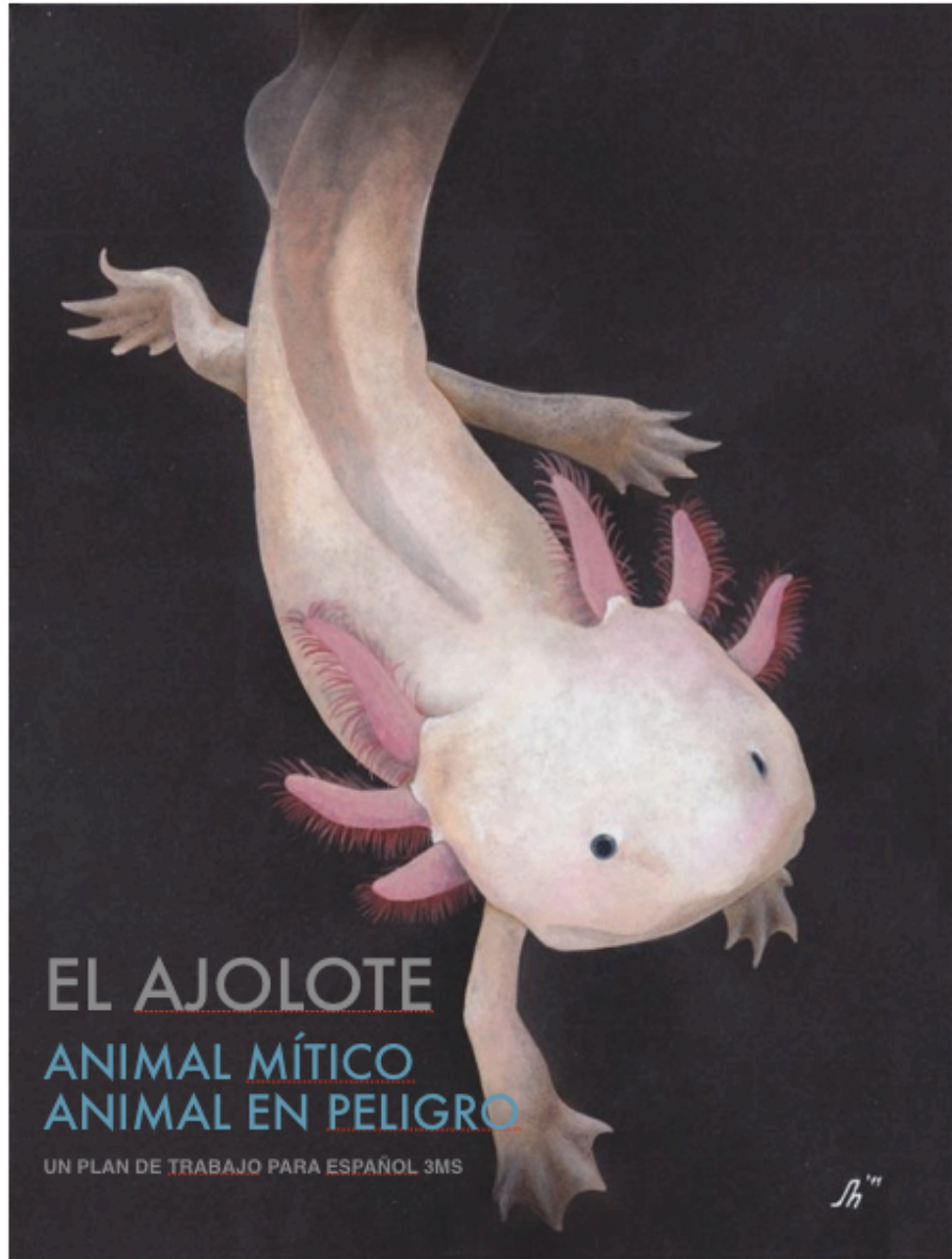
Section 3
Untitled

5



Chapter 2
El ajolote: Ani...

6





El ajolote en peligro de extinción

El agua contaminada pone en riesgo a esta salamandra

Hábitat: zona lacustre de Xochimilco y Chalco-Tláhuac

Población de ajolotes

1996

1.000
por Km²



2008

100
por Km²



2014

0,3
por Km²



Nombre científico: *Ambystoma Mexicanum*

"Axolotl": "monstruo del agua" en náhuatl

Tamaño: hasta 30 cm

Longevidad: hasta 20 años en cautiverio

Neotenia: permanece como larva toda su vida

Branquias externas

Ausencia de párpados

Aleta dorsal de renacuajo

Tejido cartilaginoso

Estado de conservación

Extinto

Amenazado

Alerta menor

EX

EX

CR

EN

VU

NT

LC

Fuente: Universidad Autónoma de México (UNAM)

AFP

¡Salva el ajolote
mexicano!



Su hábitat está contaminado.
Los canales de Xochimilco
están llenos de basura.
Proteja este animal de la
extinción. Ayuda a mantener
las aguas limpias.

Proteger los ajolotes!

El Ajolote

Contaminación de agua



Este animal es un ajolote. El vive en Mexico. Era un animal de leyenda. Los científicos están interesados en él porque puede vivir por mucho tiempo. Se relaciona con una salamandra. Se utiliza branquias para respirar.



El ajolote es extinguido. Esto es porque de la contaminación de los ajolotes viven en lagos. Cuando se vierte basura en lagos, su hábitat es destruido. El agua se contamina y necesitan el agua para respirar. Morirán sin ayuda.



¡Protege los ajolotes!

- Los depredadores más comunes de los ajolotes son los aves, los peces grandes (como tilapia) y los seres humanos.
- Para proteger a los ajolotes, debemos de limpiar los lagos y disminuir la cantidad de basura en el Lago Xochimilco.

- Los Aztecas creían que los ajolotes eran el alimento de los reyes.
- Hay en día muchos en Mexico reconocen el ajolote como un pez que camina.
- Los ajolotes están en peligro debido a que su agua está muy contaminada y también hay muchos peces que se comen las plantas y no hay suficiente comida para los ajolotes.

- El ajolote es un anfibio de tamaño mediano, que sólo se encuentra en unas lagunas cerca de la Ciudad de México.
- El ajolote es carnívoro. Pueden vivir entre 15 y 20 años.
- Hay muy pocos que crecen en estado salvaje. La mayoría son producidos en laboratorios para venta en tiendas de mascotas.
- El nombre "Ajolote" viene de los Aztecas y se traduce como "Monstruo del Agua".

Dr. Emilio Vicioso

TE QUIERO
PARA
SALVAR
LOS
AJOLOTES



TE QUIERO
PARA
SALVAR
LOS
AJOLOTES



TE QUIERO
PARA
SALVAR
LOS
AJOLOTES



¡TENGO UNA SONRISA TODOS LOS DÍAS PERO NO ESTOY FELIZ! MI CASA, EN COLIMILLA, TIENE MUCHA POLLUCIÓN Y YA NO PUEDO VIVIR ALLÁ. ¡AYUDANOS! ESTAMOS DESEA PARA CRECER Y SOMOS 2 HERENTES NECESITAMOS TU AYUDA. MIS EXTREMIDADES PUEDEN SANAR PERO NO ES LO MISMO PARA MI POBLACIÓN. ¡AYUDANOS RAPIDO PORQUE NO PUEDO DEJAR MÁS TIEMPO!

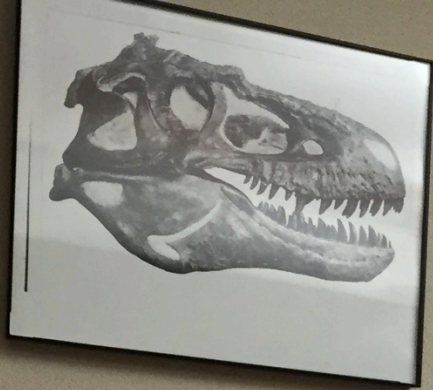
¡¡¡ LARGA VIVEN LOS AJOLOTES!!!

TE QUIERO
PARA
SALVAR
LOS
AJOLOTES



TE QUIERO
PARA
SALVAR
LOS
AJOLOTES





AJOLOTES

Salva el Ajolote

Salamandra Mexicano

Pez Caminante Mexicano

Los Ajolotes viene en muchos colores

Pueden vivir para siempre pero el lago está contaminando

Normalmente son marrones con motas de oro



Los eucísticos son rosados con ojos negros

Son anfibios

A los Aztecas les gustaba comer los ajolotes



Los Albinos son dorados con ojos de color oro

Viven en el Lago Xochimilco

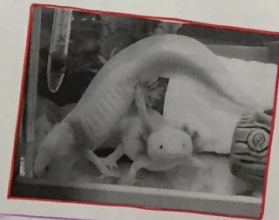
Parecen contentos pero peligro de extincion



Los Melaniodes son todo negro

Sección de Ciencias

AJOLOTES



¡Proteja los ajolotes! Estos animales inocentes se están extinguiendo! Es su trabajo para salvar a los ajolotes. Los humanos están matando a los ajolotes y tenemos que salvarlos.

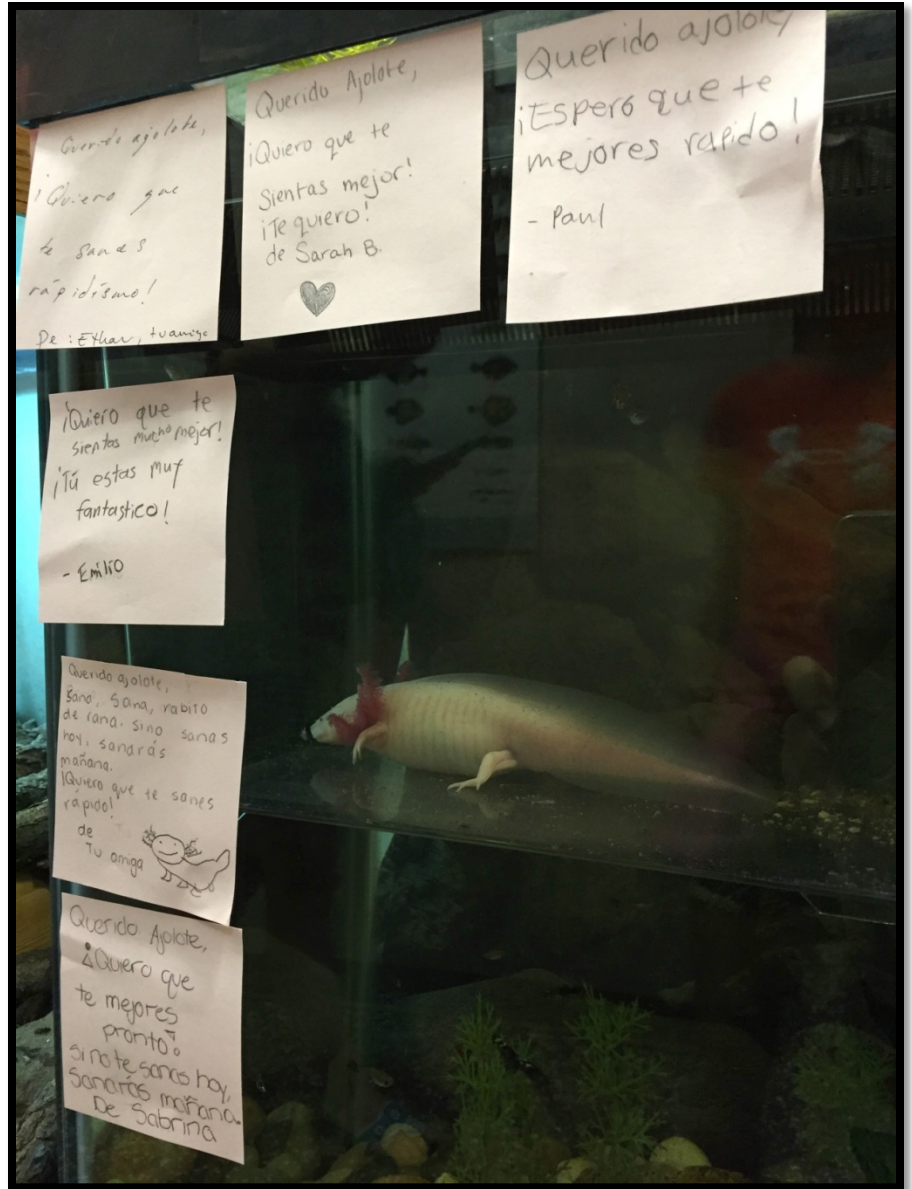


¡Guarde los ajolotes! Son criaturas lindas con 3 branquias y siempre sonrien.



Los seres humanos están destruyendo su hábitat, y que están perdiendo sus casas.

By Sarah Baker



El ajolote de la 89



Cuento por Lori Langer de Ramírez, Ed.D. | Dibujos por Ricky Campos

Middle School Axolotl Science

- Human impact on ecosystems
- Pollution and water studies
- Classification/Amphibian crisis
- Life cycles

RIP Einstein



RIP Mely

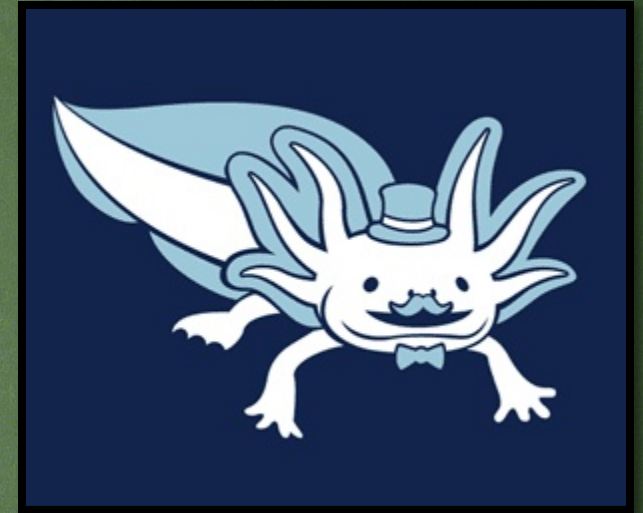


RIP Allie



Active Learning Strategy #4: Two Column Method

With a partner, contrast learning tasks that can be used with novice and intermediate learners in a T-chart like the one below:



| Novice learners | Intermediate learners |
|-----------------|-----------------------|
| | |
| | |
| | |
| | |

**Axolotls
in the
HIGH SCHOOL**



never grow up

AXOLOTL

DE JULIO CORTAZAR



LUGAR : TEATRO NACIONAL
ENTRADA: 5000 COLONES
NOVIEMBRE 10 Y 11
HORA: 6:00PM
CONTACTO: 22 43 35 67

EL AXOLOTL



JULIO
CORTAZAR

AXOLOTL

THEY ARE ABLE TO RE-GROW MISSING TISSUE IN ITS ENTIRETY, EVEN A WHOLE LIMB

LITTLE DUDE IS AMAZING! (That is why he has been used for research. Somebody trying to get the perfect soldier)

Listed as Critically Endangered because its Area of Occupancy is less than 10km², its distribution is severely fragmented, continuing decline in the extent and quality of its habitat and in the number of mature individuals.



External gills Feathery filaments for gas exchange.



Albino individuals have been bred in captivity, but are known to live in the wild

Public message brought to you by:



MAIN THREATS

- Biomed, physiological research
- International pet trade
- Consumption
- Pollution of the lakes and canals
- Sewage
- Captured for medicinal purposes (Brujos leave him alone!)
- Invasive species like Tilapia and carp are giving him a beating. literally, they eat him

A RECENT SCIENTIFIC SURVEY REVEALED NO AXOLOTL

BUT

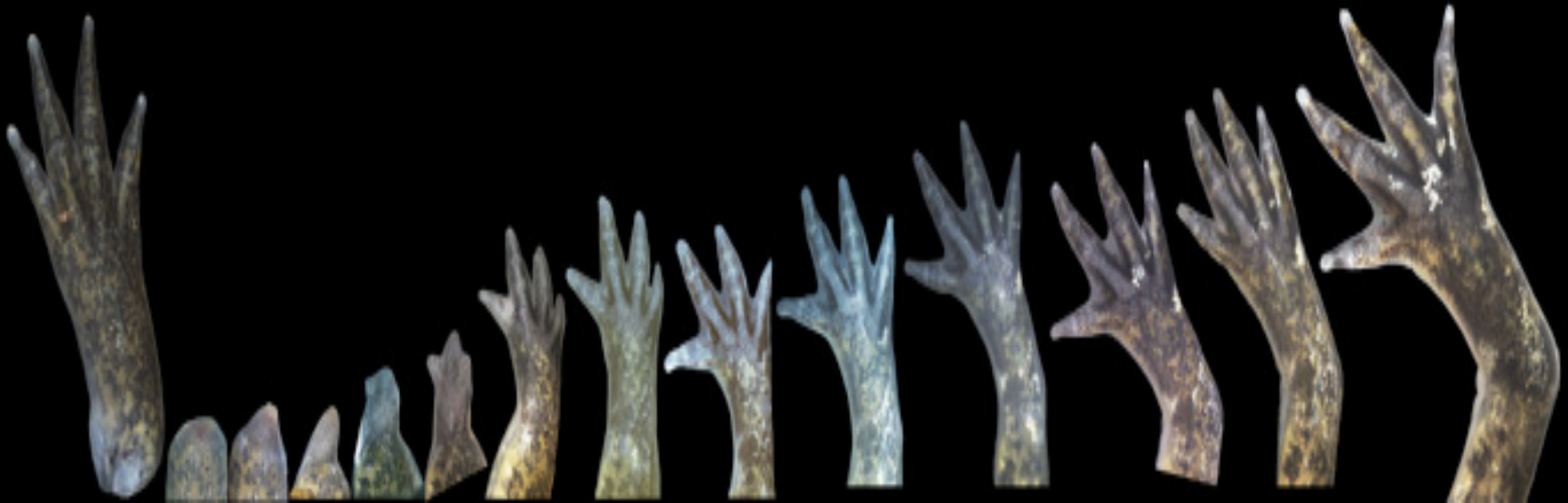
Under special protection the Axolotl and its habitat. In Mexico City lakes; Chalco and Xochimilco are being restored.

AND

There is a plan to re-introduce captive-bred Axolotes. So there is hope that the population can be restored.

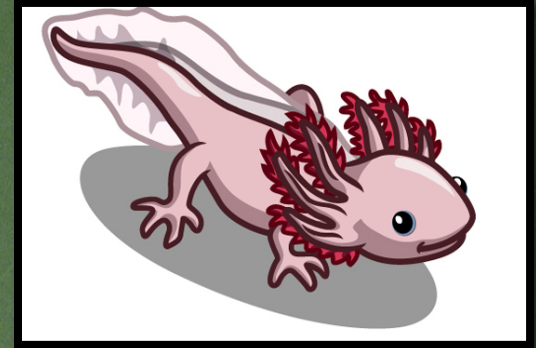
High School Axolotl Science

- Model organisms
- Regeneration capabilities
- Metamorphosis
- Evolutionary adaptations



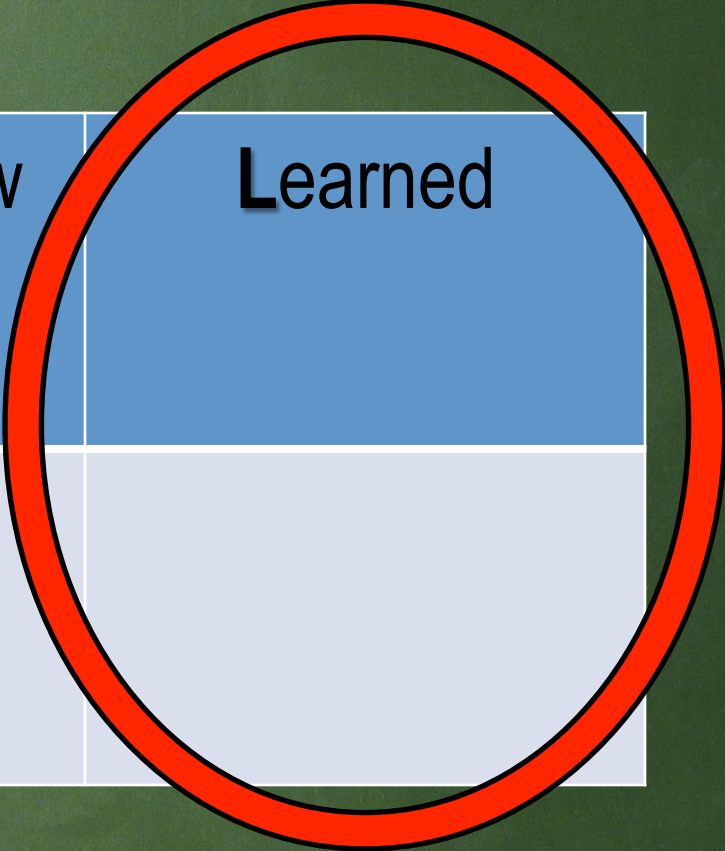


Active Learning Strategy #1: K-W-L chart



Fill in the final column of your K-W-L chart. What have you learned about axolotls?

| Know | Want to Know | Learned |
|------|--------------|---------|
| | | |



Axolotl Resources





A Lot of Axolotls! A thematic unit for teaching Science and Spanish



Resources for teaching about *los ajolotes* in Spanish:

- PowerPoint: [A Lot of Axolotls](#)
- Article: [A Whole Lot of Axolotls](#) by Lori Langer de Ramirez and Paula Cuello from *Language Magazine*
- Picturebook: [El ajolote de la 89](#) by Lori Langer de Ramirez with illustrations by Ricky Campos

El ajolote de la 89



A WHOLE LOT OF AXOLOTLS

Paula Cuello and Lori Langer de Ramirez explore environmental studies in the Spanish classroom

It all started with my sixth-grade son. After returning from summer vacation, he visited our fourth-floor science wing and was thrilled to notice a large fish tank with five new creatures inside. The axolotls (*Ambystoma mexicanum*) intrigued him, and it wasn't long until he convinced me to have a look. At first I was turned off. These small creatures look oddly unfinished. They are somewhat squishy and, as they don't have eyelids, they never blink, giving them a creepy air. But after seeing them through my son's eyes, I started appreciating their cuteness. Their mouths are arranged in perma-smiles and their black beady eyes are quite endearing. Over time, the ratio between love and hate moved heavily over into the "love" column, and I was hooked.

It wasn't until I saw the label on the tank—"Axolotl: Mexican Salamander"—that I started seeing my new little friends as possible fodder for teaching Spanish. I began by doing some simple internet research and found out that this creature, called *el ajolote* in Spanish, is an endangered species. Native to Lake Xochimilco outside of Mexico City, the axolotl is an important character in Aztec (or Mexican) mythology. The word *axolotl* comes from the Náhuatl language and means "water dog." Xolotl was the dog-headed god of lightning and death. His job was



"Native to Lake is an important Xochimilco outside character in Aztec of Mexico City, (or Mexican) the axolotl mythology."

to protect the sun from the dangers of the underworld, and he was known to accompany Quetzalcoatl on trips to Mictlán to retrieve bones of the ancestors and regenerate the human race on Earth. There was so much interesting history, science, and culture wrapped up in this small, strange creature that I knew I had to design some curricular materials to connect him to my Spanish courses.

SPANISH CONNECTIONS—ELEMENTARY

In our STEAM-based FLES program, the axolotl feels right at home. The story of this intriguing creature fits easily into our discussion of other animals, such as snails and frogs. It also has good connections to our first thematic unit on the five senses. Our curriculum strives for a constant mix of language, culture, and content (Curtain and Dahlberg, 2015). The language associated with the axolotl can be body parts (*cabeza, cola, patas, ojos, nariz, boca, branquias*), colors (*blanco, rosado, amarillo, café, negro*), and prepositions of location (*encima de la piedra, debajo de la hoja, enfrente de la planta*, etc.). To connect to culture, we read myths and legends about the axolotl, such as "Axólotl," "el Ajolote," and "El Ajolote de Xochimilco." For interpretive communication activities, young students read simple comic strips about the mythical Xolotl and color in black-and-white line drawings of the axolotl according to directions in Spanish by the teacher (see resources for links). For our content connections, I created a simple matching game for students in which they stick different-colored axolotls onto different habitats. Students are then asked to describe their scenes with simple sentences. For example: "*El ajolote marrón vive en el lago.*" Finally, our elementary students take a trip to the secondary building to have a quick lesson about the *ajolotes* in situ.

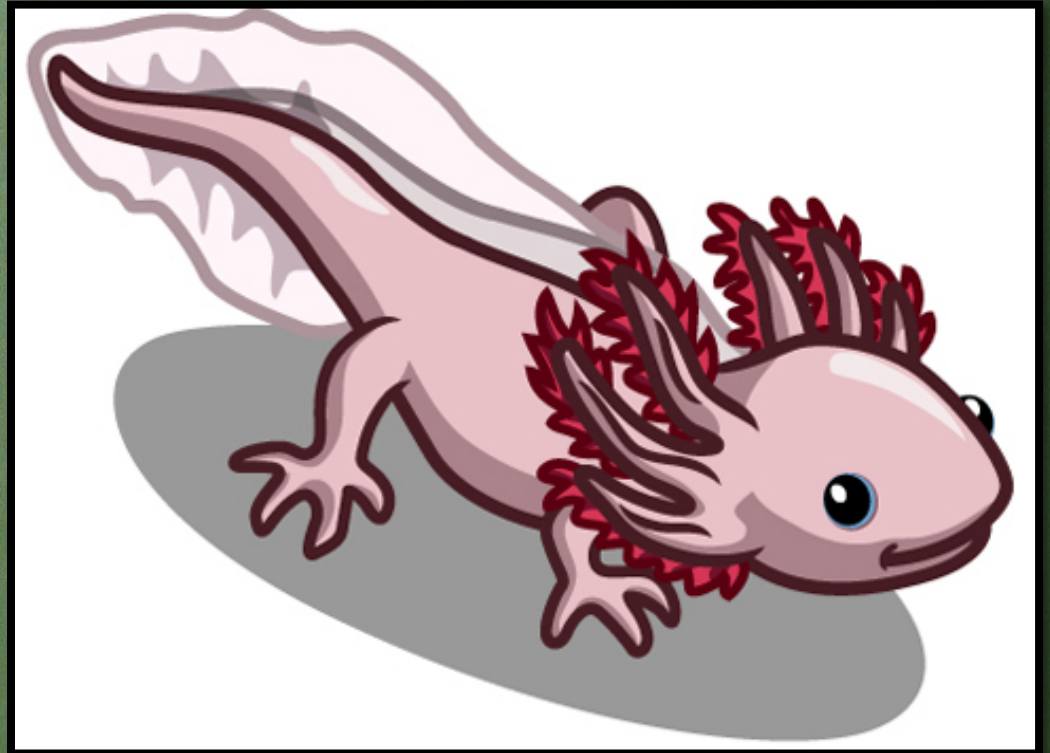
SPANISH CONNECTIONS—SECONDARY

One of the strongest connections to the axolotls for our middle school Spanish classes is the link to environmental themes. The axolotl's habitat—Lake Xochimilco—is highly threatened due to chemicals, human influence, draining of the lake in some areas, and the introduction of foreign fish species that prey on the axolotl. There are several organizations that are working to save the axolotl. In our eighth-grade classes, students are asked to research some of these organizations' websites (in Spanish), as well as others that describe the challenges facing the axolotl around the world. We took a class "field trip" to visit the axolotls on the fourth floor and discussed the challenges that face them in the wild. Students then designed and developed PowerPoint presentations in which they incorporated infographics and other images and then narrated their slides for the class. These presentations led to debates of the pros and cons of preserving the Lake

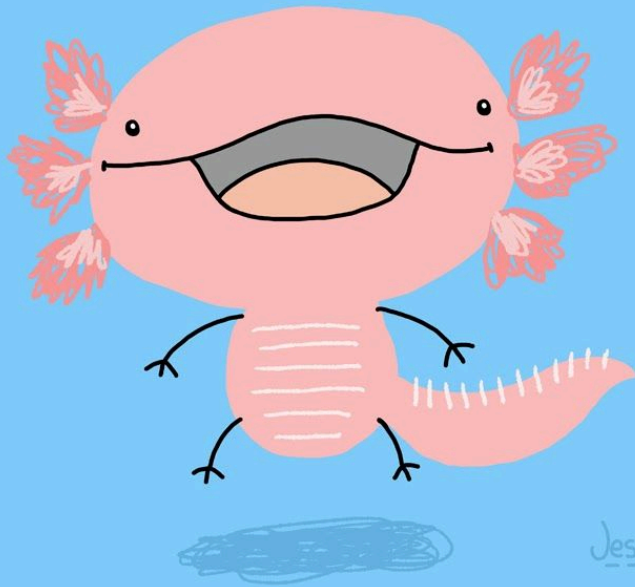
Active Learning Strategy #5: Write-Pair-Share

Write answers to the following questions. Then turn to your partner and share your answers.

1. How can you incorporate more STEAM topics into your own teaching?
2. What supports would you want/need in order to incorporate STEAM into your classes?



Questions?
¿Preguntas?



AXOLOTLI



IS ANOTHER WORD
FOR AWESOME

jaffajam