Implementing Guided Inquiry in the SEI Science Classroom

Strategies and Approaches

Introductions

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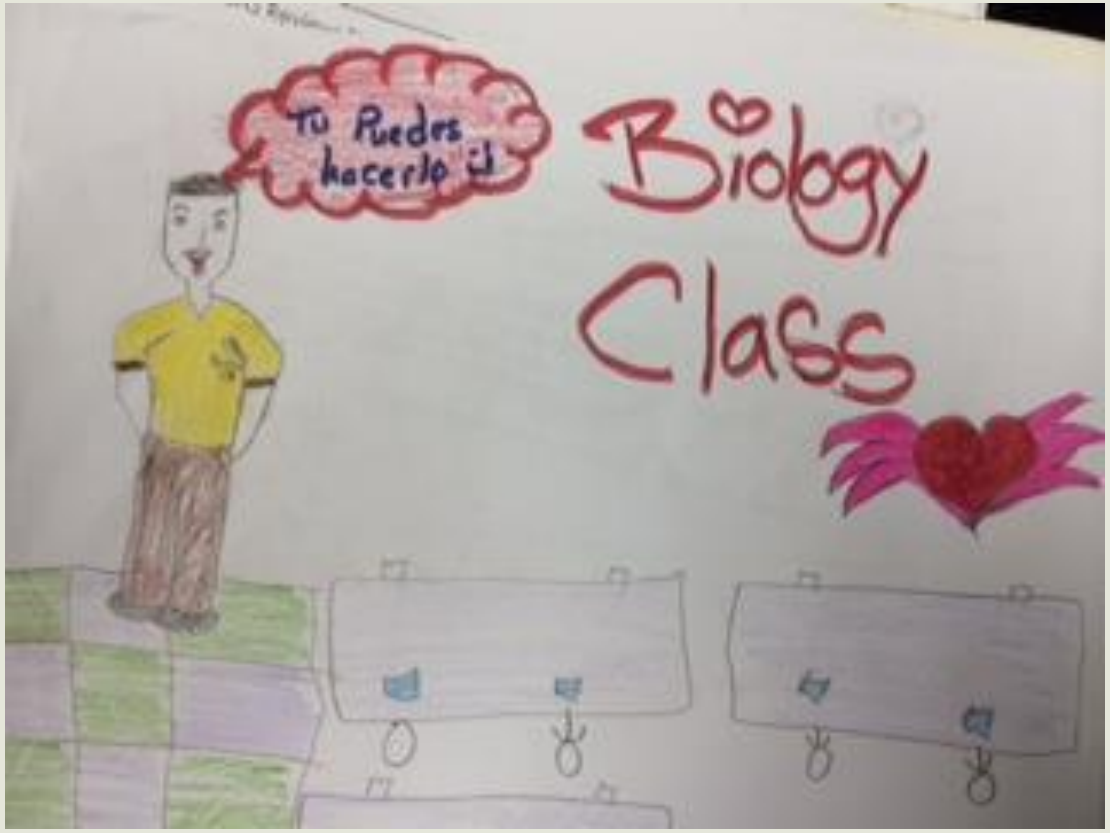
- Biology teacher at Revere High School since 2009
- Teaching SEI Biology for about 4 years
- Licensed in Biology, Earth Science and ESL

Introductions

- Revere High student population about 12% ELLs, 58% of students' first language is not English
- About 80% of ELLs are Spanish-speaking, but many languages are represented.
- About 85% of ELLs who are counted are passing MCAS
- RHS is a Level One school

Goals for this session

- Explain the nature of guided inquiry
- Demonstrate why guided inquiry matters for ELLs
- Share examples used in the classroom
- Provide a lesson plan template
- Discuss and share ideas
- Suggest a plan for follow-up and collaboration
- Provide a list of resources



What is guided inquiry?

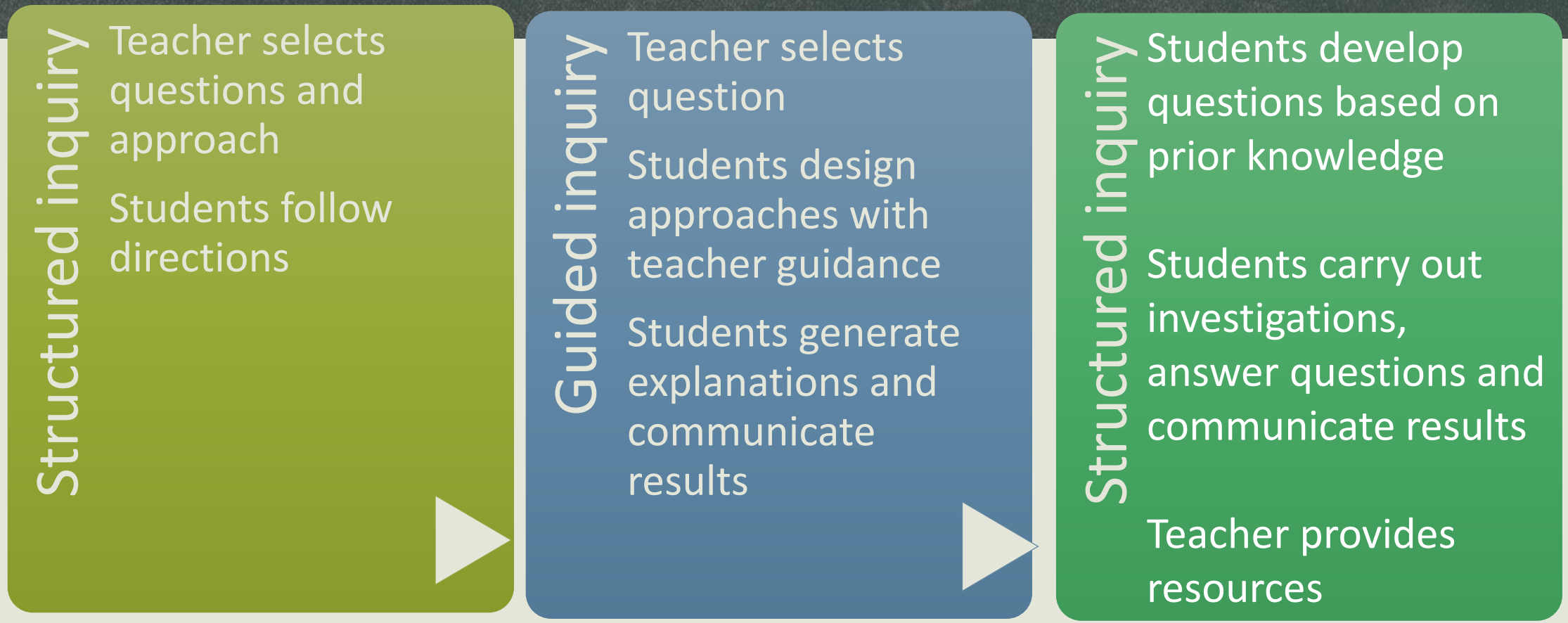
- The National Science Education Standards (NSES p. 23) defines scientific inquiry as “the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work. Scientific inquiry also refers to the activities through which students develop knowledge and understanding of scientific ideas, as well as an understanding of how scientists study the natural world.”

  - NSTA positon statement on scientific inquiry

What is guided inquiry?

- Inquiry-based strategies in science education
  - Address a central question which can be explored through development of ideas, experimentation, and reflection
  - Are student-centered
  - Build on students' prior knowledge
  - Focus on discovery rather than facts
  - Engage students' natural curiosity
  - May be "hands on" (but not necessarily!)

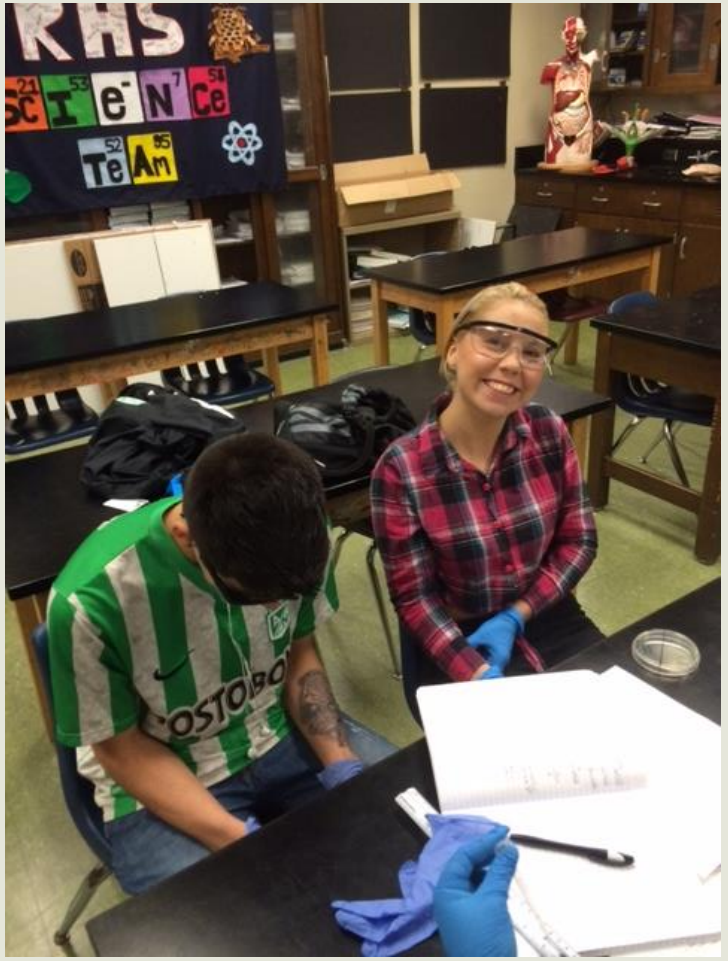
What is guided inquiry?



Source: The Science Teacher, February 2002 Vol. 69

Why does guided inquiry matter for ELLs

- Allows for clear development of content and language objectives
  - Content objective in form of a inquiry question- provided by the teacher
  - Students are working in groups communicating results
- Introduces students from more traditional school backgrounds to practice inquiry
- Leverages prior knowledge and student contexts
- Facilitates the introduction and use of academic vocabulary
- Supports SIOP and RETELL instructional models

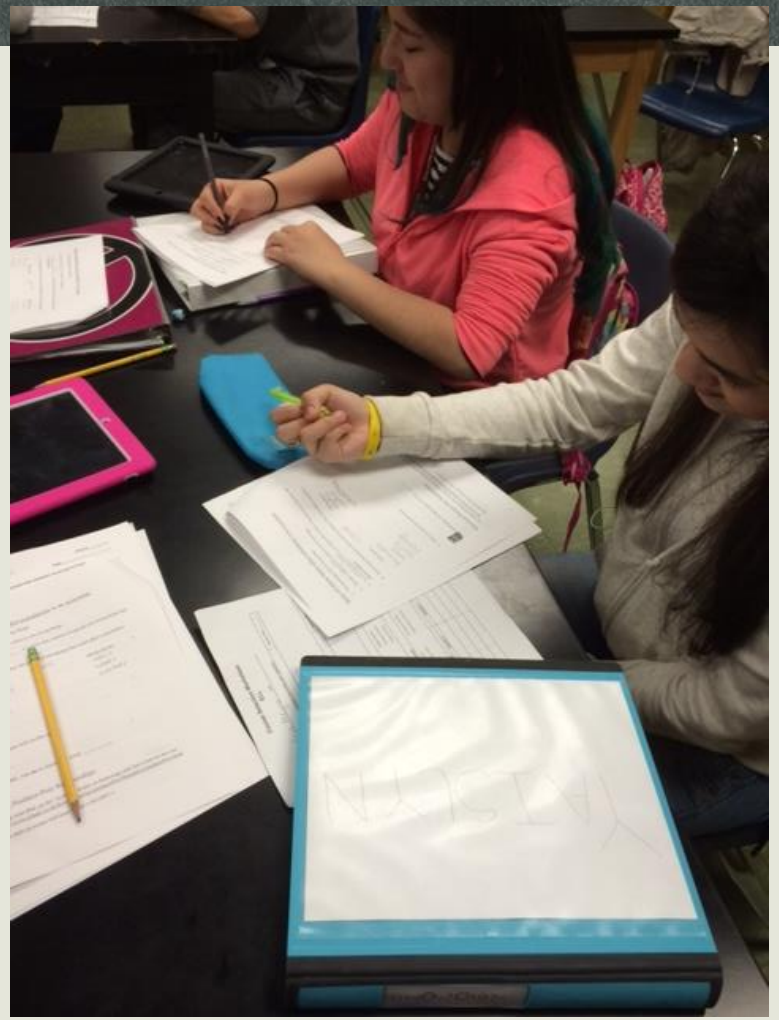


Examples from the classroom- group work to examine a process

- Modeled after POGIL
- Cell transport example
- Bacterial resistance example (used to introduce evolution)

Examples from the classroom- group work to conduct an investigation into a biological phenomenon

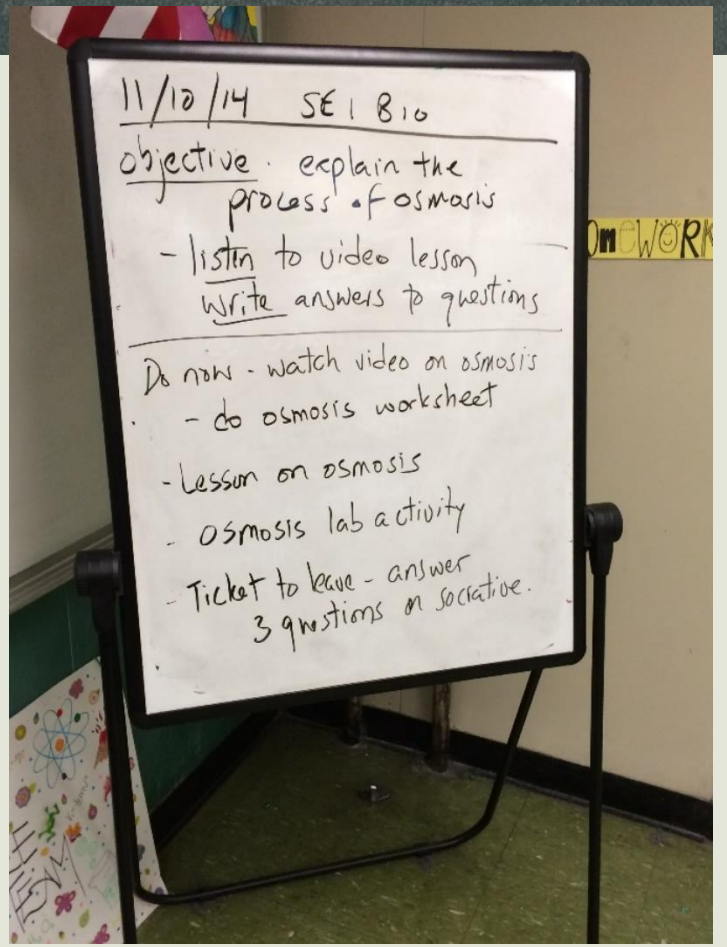
- Founded on the classic "predator/prey" lab activity
- Pre-lab inquiry
- Lab activity



Lesson planning template

- Helpful to post objectives and agendas in class

- Helpful tool: PlanBoard
- Link to an example



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Collaboration proposal

“We may have all come on different ships, but we're all in the same boat now.”

-Martin Luther King Jr.

“In the long history of humankind those who learned to collaborate and improvise most effectively have prevailed.”

-Charles Darwin

- Teacher collaboration contact sheet
- ELL Science Teacher Blog- use with Google account

Source: http://quotes-for-teachers.blogspot.com/2000/06/cooperation-and-teamwork.html

Resources

NSTA Article on inquiry: http://www.nsta.org/publications/news/story.aspx?id=46515

POGIL: www.pogil.org

SIOP model for science: https://www.pearsonhighered.com/program/Short-SIOP-Model-for-Teaching-Science-to-English-Learners-The/PGM74386.html

PlanBoard
http://planboard.chalk.com

Collaboration Google Sheet
https://docs.google.com/spreadsheets/d/1CzCwoSXx0IryPdCk0JhX5MQCWwJVD7eZU8vp5vD4mD4/edit?usp=sharing

Resources

ELL Science Teacher Blog: https://ellscienceteacher.blogspot.com/

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