Florida Organization of Instructional Leaders
November 15, 2017

Problem-Based Learning in Science

PJ Duncan, Secondary Science Program Specialist

FLORIDA DEPARTMENT OF EDUCATION
fldoe.org

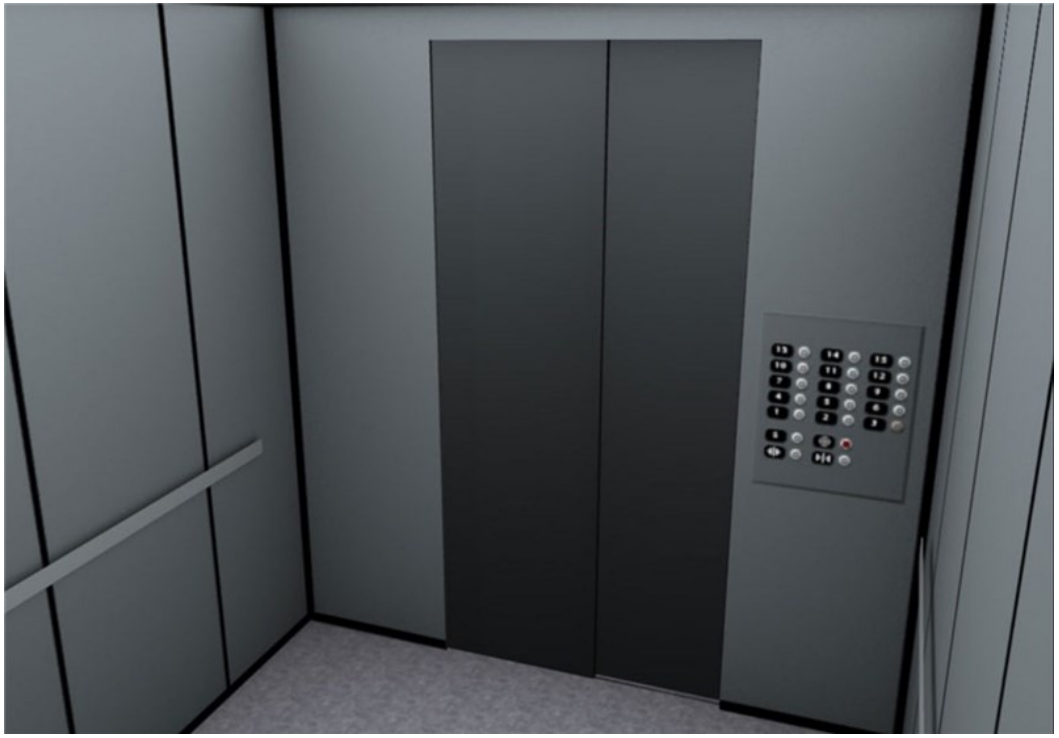

Wilson
Fixemer
YAMAHA

Why use Problem-Based Learning?

- Student **collaboration**
- 21st Century Life Skills
- Communication Skills
- Student engagement
- Bottom line…. It is the way our students will work!

Learning Objectives for Today

- Define problem-based learning
- Describe how PBL's are implemented in science



What does problem-based learning look like in your district?

It all begins with a……

Welcome to Mrs. Duncan's Biology I class!

Memo to the Joint Commission for Environmental Health Related Issues

JOINT COMMISSION FOR ENVIRONMENTAL HEALTH RELATED ISSUES

The Problem Statement

Sample Problem Statement

How can we as _____(role) _____(verb and problem plan description) in such a way that: _____(condition one), _____(condition two), _____ (condition three), _____(condition four).

The Problem Statement

How can we as Members of the Joint Commission work together to develop a proposal to restore Lake Munson's water quality to an acceptable level for recreational activities in such a way that: our budget is maintained, is presented by November 22, 2017, is a long-term, environmentally sustainable solution, while the relevance for all stakeholders is represented.

Know	Need to Know

Know	Need to Know
✓ Lake Munson had very heavy vegetation ✓ Lake Munson was ranked by the State of Florida as the seventh most degraded lake in 1982. ✓ A survey taken in 1986 indicated an overall 75% percent decrease in the fish biomass from the 1976 survey. ✓ The Lake Munson basin was modeled as part of the 1991 city of Tallahassee and Leon county Storm water Management Plan developed by the Northwest Florida Water Management District. ✓ Sewage from Tallahassee once flowed into this lake ✓ An impaired lake ✓ Over a third of the urban storm water from Tallahassee flows into lake Munson ✓ A thick layer of organic muck coats its bottom ✓ 70% percent reduction in fish biomass ✓ Fish kills occur when the dissolved oxygen concentrations bottom out	

Know

- ✓ Lake Munson had very heavy vegetation
- ✓ Lake Munson was ranked by the State of Florida as the seventh most degraded lake in 1982.
- ✓ A survey taken in 1986 indicated an overall 75% percent decrease in the fish biomass from the 1976 survey.
- ✓ The Lake Munson basin was modeled as part of the 1991 city of Tallahassee and Leon county Stormwater Management Plan developed by the Northwest Florida Water Management District.
- ✓ Sewage from Tallahassee once flowed into this lake
- ✓ A impaired lake
- ✓ Over a third of the urban stormwater from Tallahassee flows into lake munson
- ✓ A thick layer of organic muck coats its bottom
- ✓ 70% percent reduction in fish biomass
- ✓ Fish kills occur when the dissolved oxygen concentrations bottom out

Need to Know

- ➢ How can we fix the water quality?
- ➢ How much water is in the Lake Munson?
- ➢ When does the Blue-Green algae bloom?
- ➢ How much money does it take to make a commercial?
- ➢ How can we keep Blue-Green algae from blooming?
- ➢ How can we make sure the apple snails stay there?
- ➢ How can we get the toxins out of the lake?
- ➢ How can we get fish to the lake?

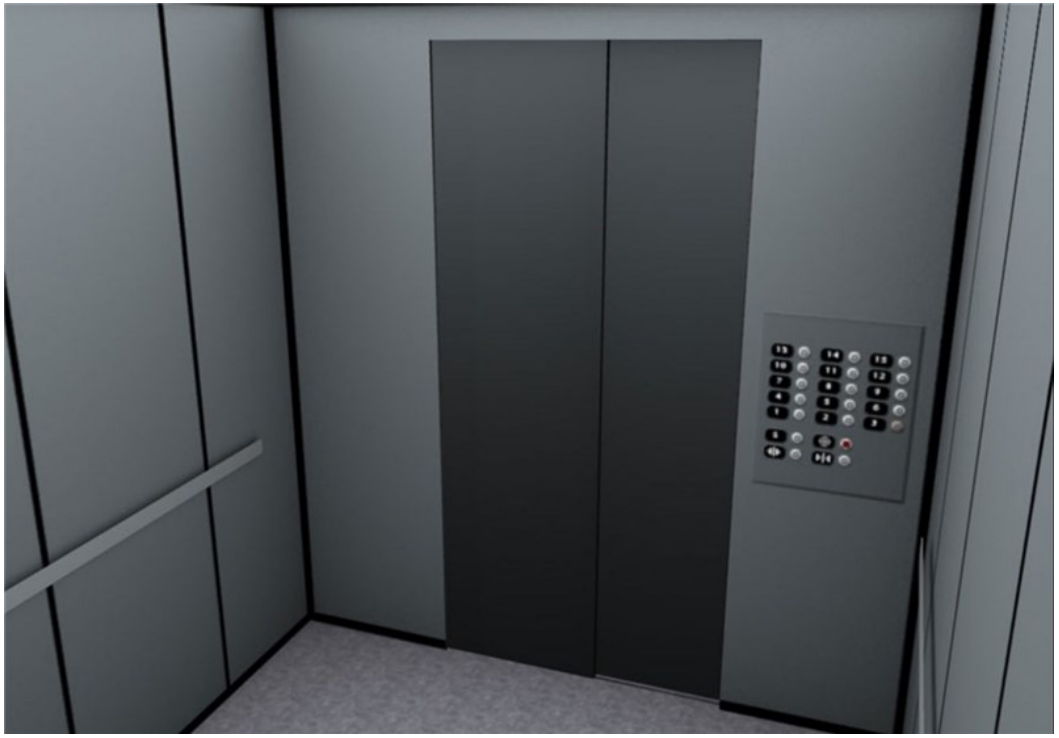
Sample Proposals

1. Make flyers and put them up around the community.
2. Go to schools to talk about ways to prevent more troubles to Lake Munson.
3. Keep the population of apple snails up so they will eat most of the aquatic vegetation up so the boats can get into the lake.
4. Put 1 gallon per acre of algaecide to control the toxins in the algae.
5. Get the fish that is left in Lake Munson and put them in a environment where they can repopulate until Lake Munson is cleaned out.

Next Generation Sunshine State Standards NGSSS

SC.912.L.17.2
Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.

SC.912.L.17.8
Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.



What does problem-based learning look like in your district?

FLORIDA DEPARTMENT OF EDUCATION
fldoe.org

Contact Information

PJ Duncan

Patricia.Duncan@fldoe.org

850-245-0808

www.FLDOE.org