Creating Personalized Learning Pathways through Authentic Scientific Research

Dr. James P. Fry
Malvern Preparatory School
Malvern, PA
The questioning begins...
Sometimes change is what we need.
unknown
livelifehappy.com
Malvern Prep Campus

- 100 acre campus
- 15 buildings
- 10 athletic fields
- 2 naturally occurring ponds
On Campus Research
“Tell me and I forget, teach me and I may remember, involve me and I learn.” - Benjamin Franklin
“Learning opportunities which are designed to provide visual information in a hands-on fashion work best.”

(Abigail James and Joseph Cox)
Marathon, FL

Location: Middle dock | Time: 4:30 | Water depth: 2.5 feet | Tide & Current: no tide | Water Temp: 76 degrees Fahrenheit | Sky conditions: Grey skies, just rained | Algae & Plants: Mangroves | Salinity: 1.027 ppt, 36 pcp | Dissolved oxygen: 5 ppm | pH: 7.9 | Nitrate: 0 ppm | Nitrates: 5 | Ammonia: 0 pph
Final Exam Time
Write down 2-3 marine organisms, ecosystems, or current events that you are interested in learning about.
What is it about those topics that you find so interesting?
Tell your story - TPS
The Process

1. Topic Identification (question v. title)
2. Literature Review (becoming the expert)
   a. Connect with experts (ie. FWC, Wetlands Institute, Rutgers, Plymouth)
   b. Consider alums and parents
3. Experimental Design (procedures and what to do if?)
4. Data Collection (Qualitative v. Quantitative)
5. Data Analysis (What does the data tell us?)
6. Conclusion (further studies, limitations, applications)
“Learners need endless feedback more than they need endless teaching.”

-Grant Wiggins
Student Feedback

“The doctoral students asked thought-provoking questions that helped me expand my research.”

“It was great being able to ask and answer questions from people that were truly interested in my project.”

“The organisms that we talk about in class, I get to study right here. I really enjoy this type of learning.”

“Since we are gathering almost a full school year of results from our experiments, we are receiving constant feedback, and I can improve or adjust if something is not working or I did something wrong.”
Success!!

Questions???