

COASTAL AND OCEANOGRAPHIC ENGINEERING WITH DR XIAO YU

TALKING POINTS

KNOWLEDGE:

1. What is submerged aquatic vegetation (SAV)?

COMPREHENSION:

2. Why is it important to understand the physical-biological-ecological links between the structure of SAV and the ways in which water flows in relation to it?
3. Why is SAV important for aquatic ecosystems?

APPLICATION:

4. How might Xiao's modelling of flow help other research in the area of hydrology and oceanography?

SYNTHESIS:

5. Why do you think the interactions between multiple blades might produce different results to the sum of each individual blade?

EVALUATION:

6. So much of the reported impacts of climate change focus on humans and the effects of rising water levels on land – can you see why Xiao's research into what happens below the surface might matter in similar ways?
7. To what extent do you think that coastal and oceanographic engineering is arguably more important than ever before?

ACTIVITIES

CAN YOU PRESENT XIAO'S RESEARCH?

Create a presentation that introduces the key points of Xiao's research.

- Include some images of submerged aquatic vegetation and the flow of water that surrounds it, and be sure to label them to show your understanding.

- Ensure you also include a glossary to explain the subject terminology you use in your presentation.

ESTIMATE THE FLOW RATE OF A LOCAL RIVER!

Teach Engineering has created hands-on activities to help you gain an understanding of flow rate and how it pertains to engineering and science. From your experiment calculations, you will be able to hypothesise the flow rate in a nearby river, and then use streamflow data from the United States Geological Survey to check your hypothesis:

www.teachengineering.org/lessons/view/csm_lesson1_flow_rate_experiment

HEAD TO XIAO'S WEBPAGE FOR A POWERPOINT, WHICH SUMMARISES HIS ARTICLE:

futurumcareers.com/what-if-we-understood-the-role-underwater-plants-play-in-the-flow-of-water

MORE RESOURCES

XIAO'S SOCIAL MEDIA

Xiao and his organisation have several social media profiles where you can keep abreast of his studies and the progress he is making in his research:

- www.facebook.com/UF.ESSIE/
- twitter.com/essie_uf
- www.linkedin.com/in/xiao-yu-bb242a37/
- www.instagram.com/essie_uf/

As part of Xiao's research project, a K-12 lesson plan will be developed using a portable racetrack flume at the University of Florida's Coastal

Lab. Keep an eye out for this lesson plan through the social media platforms listed above.

SCIENTIFIC RESEARCH AND EDUCATION NETWORK (SciREN)

SciREN is a graduate student-led network that connects educators and researchers. SciREN was founded by several graduate students from the Institute of Marine Sciences (IMS), University of North Carolina at Chapel Hill. "When I worked as a postdoctoral research at IMS, I joined a SciREN event at North Carolina Aquarium at Pine Knoll Shores," says Xiao. "Later, I developed a lesson plan on the geometric measures of irregular sediment particles for K12 educators. I am excited to see what the future holds for SciREN." sciren.org/about-sciren/