Biolearn

‘How do you inspire students for biomimicry at secondary schools?’

This workshop is organized by foundation GAIA Netherlands

Program

- 1. Introduction
- 2. Assignment ‘How do you inspire students for biomimicry?’
- 3. Theory U in steps
- 4. Practical things you can do in the classroom (our top ten)
- 5. Responds of the students

How do you inspire students for biomimicry at secondary schools?

Van Nautilus tot watermixer in opslagtanks……

PAX Water Technologies VP of Marketing, Jason Oppenheimer, discusses the advantages of active mixing in potable water storage tanks.

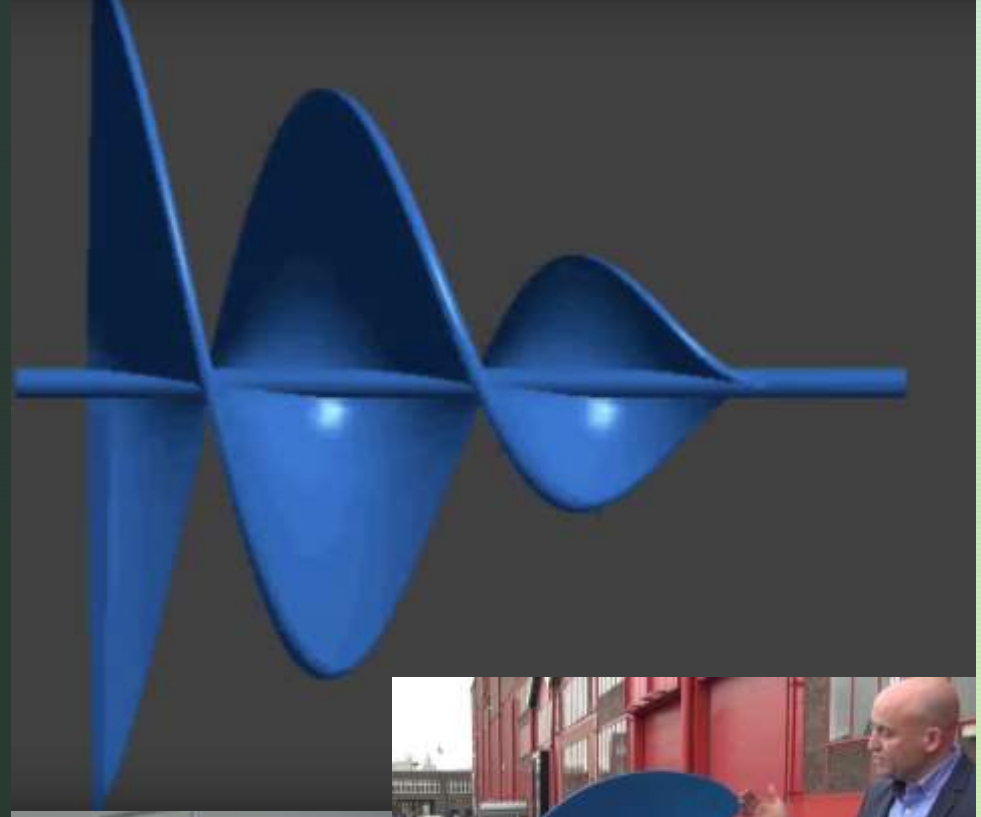
As you can see in this video .

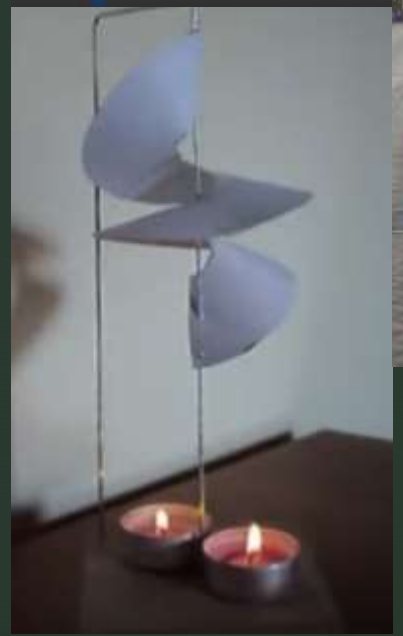
https://www.youtube.com/watch?v=cczMOmu2ZH4

And the Archimedes windmill

- This is a small wind turbine that makes use of the Archimedes screw principle. It is powered by the hot air that rises from the candles. It was made for a school project at the KSE Etten-Leur to make students understand more about heat & temperature.

Source: https://www.youtube.com/watch?v=IkmRy7oy9aI





Exercise

1) Form groups of three.

2) Look outside for an object or something from nature that answers the question:

"What can we learn from nature in relation to technology?"

3) Bring this inside.

4) Make a collage with your group of what was found outside

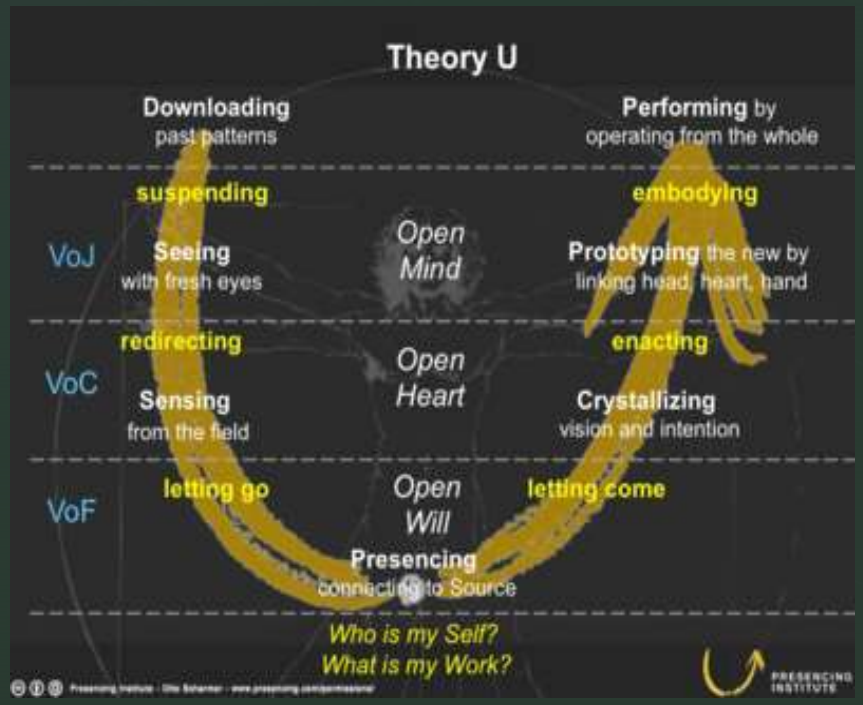
Ask yourself…

- Answer the following questions for yourself:
- a) **Thoughts**. Consider why your find is reminiscent of innovation, nature and technology. What are your thoughts about that?
- b) **Observations**. Observe your find. What do you see? (Facts, characteristics, etc).
- c) **Feeling with the heart**. What feelings does your find evoke?
- **Share what you thought, saw and felt with your find. Do this in 1 minute per person. The other two persons in your group are listening and they write down statements of your sharing.**

Collective wisdom

- Share with each other what you can learn from the collective collage about learning from nature in relation to technology. Do this in 1 minute per person.
- Silently think about the following questions:
- **a) What have you learned from this experience?**
- **b) What you can do with this experience when working with students in the classroom?**
- Come together as the whole group again. Express in 1 sentence: what is the most important thing you have learned from this exercise.

Theory U step by step



- 1. **Attend.** Create a common field
- 2. **Connect**. Loosening and getting acquainted
- 3. **Co-initiation**. "Look differently, refocus
- 4. **Clarify essential questions, take deep-dive journeys, observe, observe, observe and practice deep listening and dialogue**
- 5. **Letting go, letting come and intentional silence**
- 6. **Letting come and power of intention**

Best practises in the classroom…

Our top ten!

- 1. Egg protector, (packaging material egg, naturally packaged, biomimicry assignment)
- 2. Cactus, reinforcing bars (threads, wax, melting pan, trays)
- 3. Bird wings, aircraft wings (biomimicry digital learning environment, biomimicry lesson booklet)
- https://gaia-nederland.moodlehub.com/mod/quiz/attempt.php?attempt=4853&page=1&cmid=1180
- 4. Fish fin, gripper (template, cardboard, ruler, scissors, pencil)
- 5. Palm leaf, corrugated sheet (palm leaf, plain leaf, cardboard, weights)
- 6. Nautilus, water rocket (nautilus, water rocket from a cola bottle with valve and cork)
- 7. Lotus / cabbage leaf, paint / space suits (cabbage leaf, East Indian cherry, rhododendron leaf, honey, water, pipette)
- 8. Velcro, (the big burdock, Velcro)
- 9. Bat, propeller plane (template, paper)
- 10. Biomimicry memory (https://matchthememory.com/biomimicry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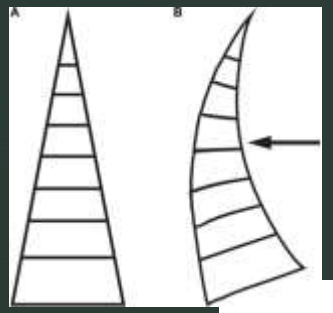

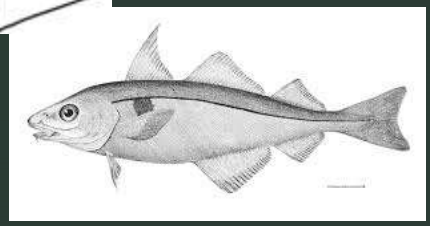

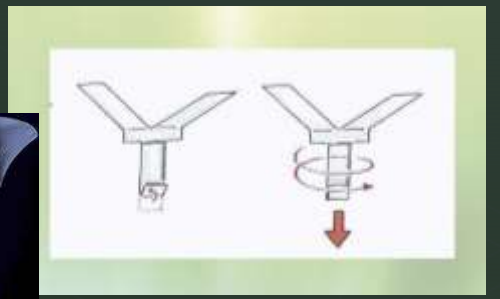

Structure Biotechno student magazine

1. Introduction, wonder
2. Investigate and orientate
3. Problem definition design assignment
4. Define program of requirements
5. Designs
6. Creating a prototype
7. Present and reflect