reACT ThinkTank

resilient Adaptive Climate Technology reACT ThinkTank

UNIVERSITY OF MARYLAND – COLLEGE PARK

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reACT ThinkTank
Outline of Presentation

1. Guiding Principles, Definitions and History
2. Structure and Shared Leadership Aspects
3. Accomplishments and Deliverables to Date
4. Opportunities to get Involved
5. What Does the Future Look Like

What is reACT?
How did we get here?

LEAFHOUSE
2007 SOLAR DECATHLON

WaterShed
2011 SOLAR DECATHLON

reACT
2017 SOLAR DECATHLON

reACT ThinkTank Fast Facts

Team reACT evolved into the reACT ThinkTank with invitation to compete at the 2020 Solar Decathlon Middle East which subsequently was cancelled due to the Pandemic.

Academic Year 2022-2023 awarded an Experiential Learning/Energy Justice Curriculum Program Grant "Decolonizing Education to Meet Climate Change Demands"

- 20 Courses / 7 Departments
- 400+ Students / 13 Instructors
- 3 Native American Tribal Collaborators / 5 Expert Consultants

UMD Sustainability Grant awarded to upgrade house to state-of-the-art technology 2022-2023

Pending Constellation Foundation Energy^2 Education

Opportunity to permanently exhibit reACT at DOE headquarters in DC

ZEDD DOE Zero Energy Design Designation for Post-Secondary Programs

reACT ThinkTank Guiding Principles

Change sustainability paradigm

Incorporate Traditional Indigenous Environmental Knowledge (TEK)

Interact positively with place-based climate & environment

Regenerative & restorative qualities

Demonstrate innovations and technologies

Functions as an independent ecosystem

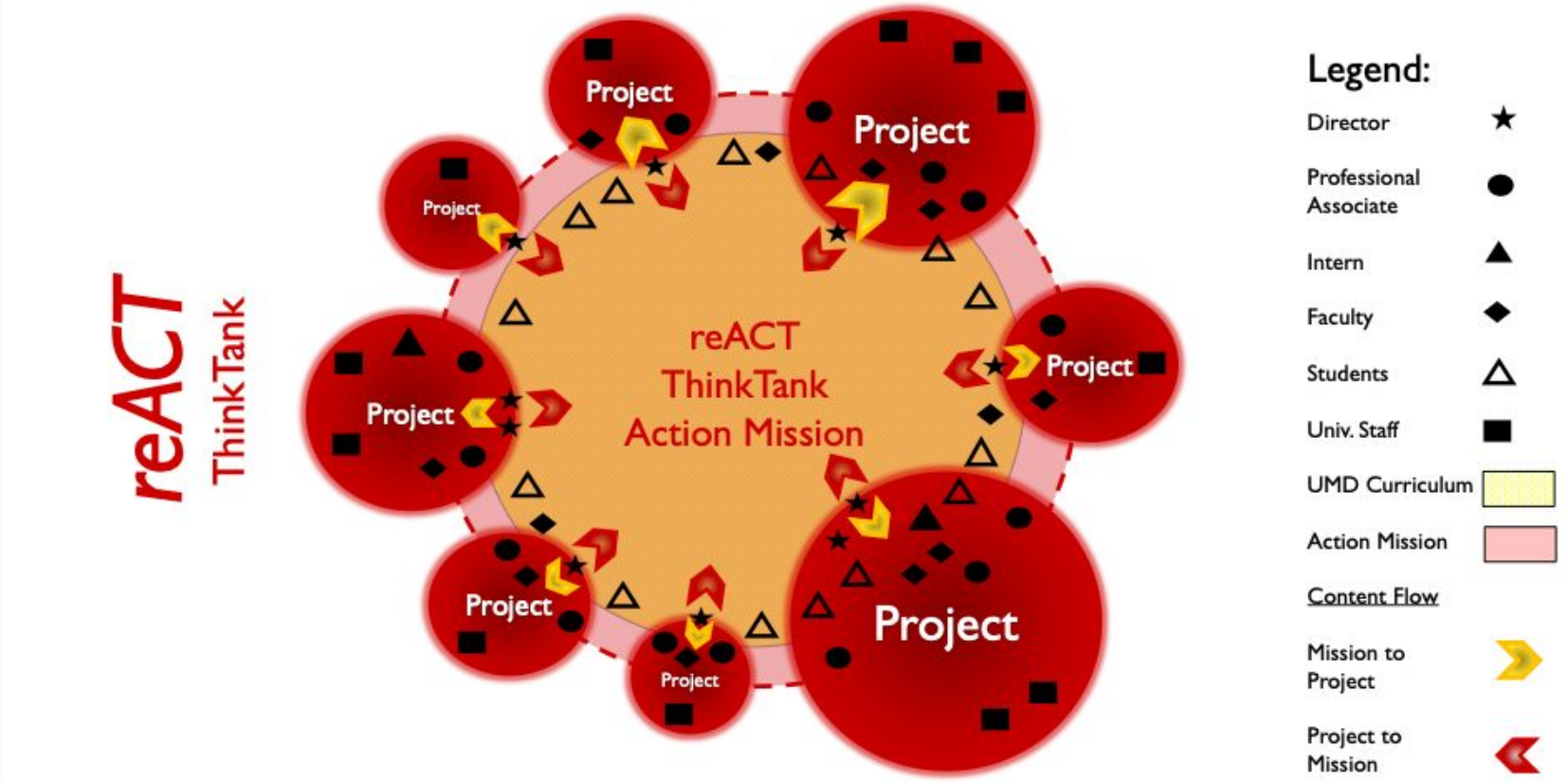
SmartSystem automation for energy storage and resale

Support health, comfort, and self-reliance

Scalable to communities

Collaborate with Piscataway Conoy Indians, Choptico Band of Piscataway, Nanticoke Indian Association and Maryland Commission on Indian Affairs

How Does the ThinkTank Operate?



ThinkTank acts as an active, dynamic framework within which to design, evolve, build, and test/study various systems to support STEM, Building, Environmental study, teaching and research.

Accomplishments & Deliverables: A Few Highlights

1. The Solar Decathlon
2. Open Educational Resources (OERs) (e.g. Living Systems, Engineering Systems, etc)
3. Forestville Sustainable Development
4. Curriculum Project
5. UMD and other agency Sustainability Grants and Contracts

reACT ThinkTank Forestville Project

Provenance: Pepco and Redevelopment Authority of Prince George's County

Site: Forestville Road and Suitland Parkway

Actionable Research:

Consult on Environmentally Sensitive Sustainable Development

RFP co-writers (Sustainable Development Guidelines)

Magnolia Bog Ecosystem

GreenStreets Grant from Chesapeake Bay Trust to develop 30% designs

Discovery of a Suitland Parkway Archeological Collection at NPS with potential 1. Pre-European Contact human remains, and 2. Pre-European Contact human material culture, e.g., pottery, weaponry, tools, jewelry, clothing, etc.

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reACT ThinkTank Curricular Program

Decolonizing Education to Meet Climate Change Demands

Description: Our award-winning reACT ThinkTank utilizes a decolonized educational paradigm that frames nature as living, dignified, intelligent, and deeply connected to humanity–a perspective that is place-based, nature-based, ecologically guided, reflecting patterns of life, natural rythms of energies, and the spiritual, mental, physical, and emotional needs of human beings.

Learning Outcomes for the Program:

Inspire students to rethink their relationship to the world so that they are aware of their agency to steward and advocate for nature while pursuing sustainable building careers and designing innovative high-performance, low-carbon buildings powered by renewable energy and to be sensitive to the colonial structures that trap them inside, with nature as a distant "other."

reACT ThinkTank Curricular Program

Decolonizing Education to Meet Climate Change Demands

AGNR Faculty

- Naomi Sachs
- Amro Hassanien
- Peter May
- Chris Ellis

reACT ThinkTank Curricular Program

Provenance: 2022-23 Teaching & Learning Transformation Center

Fall Deliverables:

ENST 415 Renewable Energy Amro Hassanein

ARCH 460 Site Analysis and Design Michael Ezban

ENEE 476 Renewable Energy Alireza Khaligh

LARC 640 Graduate Studio I Naomi Sachs

Guide to Decolonizing Education to Meet Climate Change Demands
https://lib.guides.umd.edu/indigenousknowledge

Native American Archive [Delmas Foundation]

Native Plants/Native Uses project (Ethnobotany)

reACT ThinkTank New Curriculum

Provenance: 2022-23 Teaching & Learning Transformation Center

Three new courses: Decolonizing Education to Meet Climate Change Demands

Embodied Energy/Life Cycle Analysis – Peter May, ENST

This course evaluates the full life cycle of a building, from cradle to grave. "Circular economy" for a building refers to an economic system in which buildings are designed with a focus on minimizing environmental impact from material extraction and manufacturing to transportation, construction, and use, while also considering "Re-X"—reclamation, refurbishment, repair, reuse, recycle, etc.—of materials throughout its life cycle. Within the sphere of a circular economy, various measurements and calculations are used to quantify the environmental impacts that are embodied into the building at each life cycle stage.

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Climate Innovations & Justice through Design Thinking – Hooman Koliji, ARCH

Climate Change is the largest problem humanity is facing. Its impacts encompass a wide range of issues beyond environmental crises and include issues of Justice and Equality in the context of society. Tackling this issue requires foundational research as well as experiential learning and action. The course explores fundamental notions and principles and provides detailed strategies and practices in building design and construction relevant to the Climate Innovation and Justice and the Built Environment. practical frameworks, knowledge and skills that will be examined in the course include: Sustainable Design, Net-zero design, Circularity in architecture, integrated environmental systems, environmental technologies, passive and active climate design solutions in architecture.

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Rethinking Teaching & Learning Through the Integration of IK – Angela Stoltz, TLPL

Current curriculum and instructional pedagogies are unable to fully address the catastrophic social and environmental impacts of climate change. This is largely due to the mismatch of educational paradigms that exclude non Western European ontologies and epistemologies, such as IK which is absent from our current STEM teacher preparation programs and courses. This project will sustain existing collaborations with local tribal consultants to organically incorporate IK into the STEM teacher preparation curriculum and instruction using the built environment as the primary context.

reACT ThinkTank Future Opportunities

Center for Climate, Culture, and the Environment

ZEDD: Develop curriculum for DOE Zero Energy Design Designation for Post-Secondary Programs

Support

- the Campus Creek Wellness Walk
- the LEAFhouse Cooperative
- the Native American/Indigenous Studies Cluster Hire

Potential Exhibit at DOE Headquarters

Thank you!

We Invite you to Learn More!

https://arch.umd.edu/research-creative-practice/special-projects/resilient-adaptive-climate-technology-react-thinktank

(or Google UMD Thinktank)

Questions?

Discussion

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