Integration of Design Thinking, Innovation, and Transdisciplinary Studies for Student Teams Competing in the Solar Decathlon Latin America and Caribbean

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Thesis

• At Purdue University we have discovered that with a learning environment designed to foster curiosity, imagination and innovation, Transdisciplinary Studies encourages student-directed exploration of a technical area and mastery of important concepts via competencies needed in the Solar Decathlon.
Fig. 1. Solar Decathlon Latin American and Caribbean - December 2019 in Cali, Colombia

http://solardecathlonlac.com/
Background

In addition to the founding principles of the Solar Decathlon student competition, the Solar Decathlon Latin America and Caribbean (SD-LAC) competition focuses on four explicit components:

• Social Housing
• Urban Density
• Rational Use of Environmental Resources
• Regional Relevance.
Challenge

Fig. 3. Net Zero Energy Building for Latin America and the Caribbean
Planteamos proyectos de vivienda de interés social de calidad, sostenible y accesible, adaptando a las condiciones de América Latina y El Caribe. Creando conciencia acerca del impacto ambiental e informando de los beneficios que tiene una vivienda que aproveche las energías limpias.
Project AYNI Presentation

• https://www.youtube.com/watch?v=q0BSem5D2A8
  • Construction of Project AYNI via a Drone
    https://www.youtube.com/watch?v=LOn1QBZDW6M
  • Animation
    https://www.youtube.com/watch?v=VV0JfCWTa0U
Transdisciplinarity

• How can we communicate effectively and efficiently?
• How can we foster a team environment conducive to success?
Visual Communication
Visual Communication II
The University SD-LAC Team

• Team
The university SD-LAC Team shall conform to specific roles with appropriate titles: faculty advisor, project manager, construction manager, project architect, project engineer, electrical engineer, student team leader, health & safety team coordinator, safety officers, site operation coordinator, contest captain, instruction contact, communications coordinator, decathletes. The SD-LAC team should have between 25 and 40 members.

• Team Crew
In addition, each SD-LAC team can have external advisors from the staff of the sponsoring members with a maximum of six members to form the Team Crew. The Team Crew will serve as external advisors for a SD-LAC team but should be unaffiliated with the participating team.
The Example of Charrette

• “highlights the value of authentic design participation of ‘designing with’ rather than ‘designing for’ to encourage optimal design outcome”

(Howard and Somerville 2014)
Revisiting Project AYNI

- Project AYNI dance and song
  https://www.youtube.com/watch?v=a1BoQBERc94

- LIPDUB Project AYNI lip-sync “Libertad” by Laguna Pai
  https://www.youtube.com/watch?v=yt86rgKMcsM
Questions