

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



Project AYNi Presentation

- <https://www.youtube.com/watch?v=q0BSem5D2A8>

- Construction of Project AYNi via a Drone

<https://www.youtube.com/watch?v=LOn1QBZDW6M>

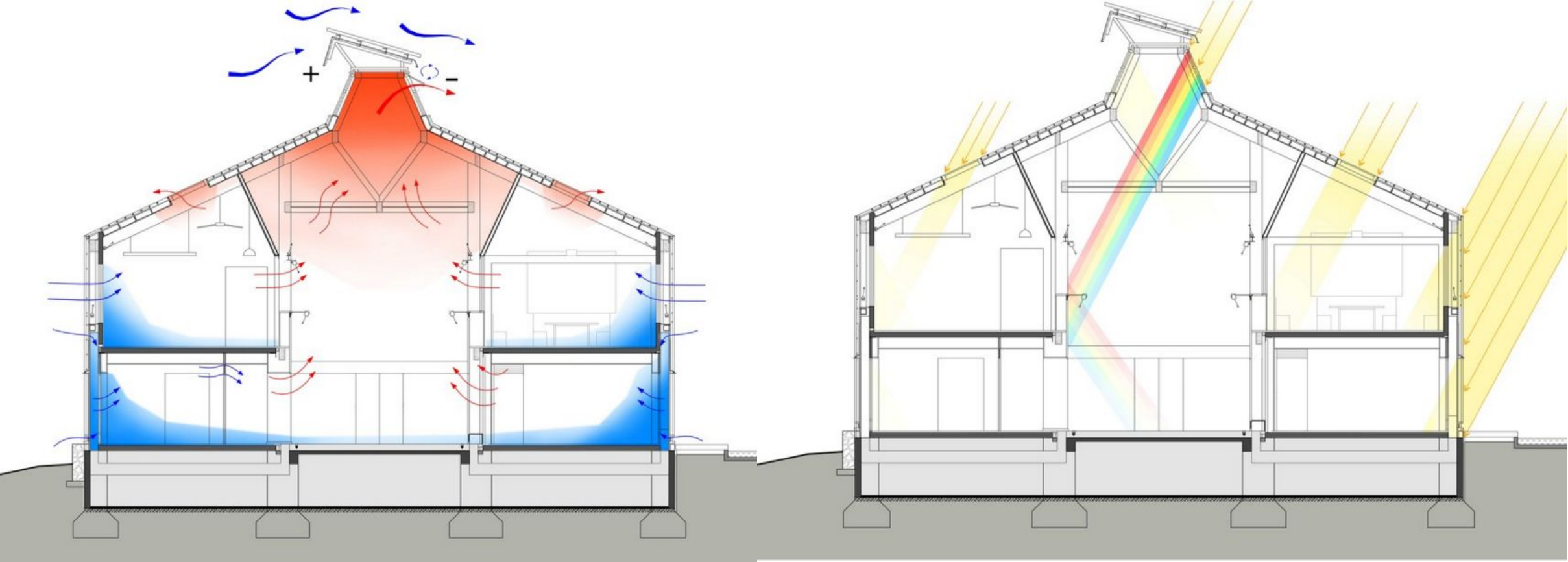
- Animation

<https://www.youtube.com/watch?v=VV0JfCWta0U>

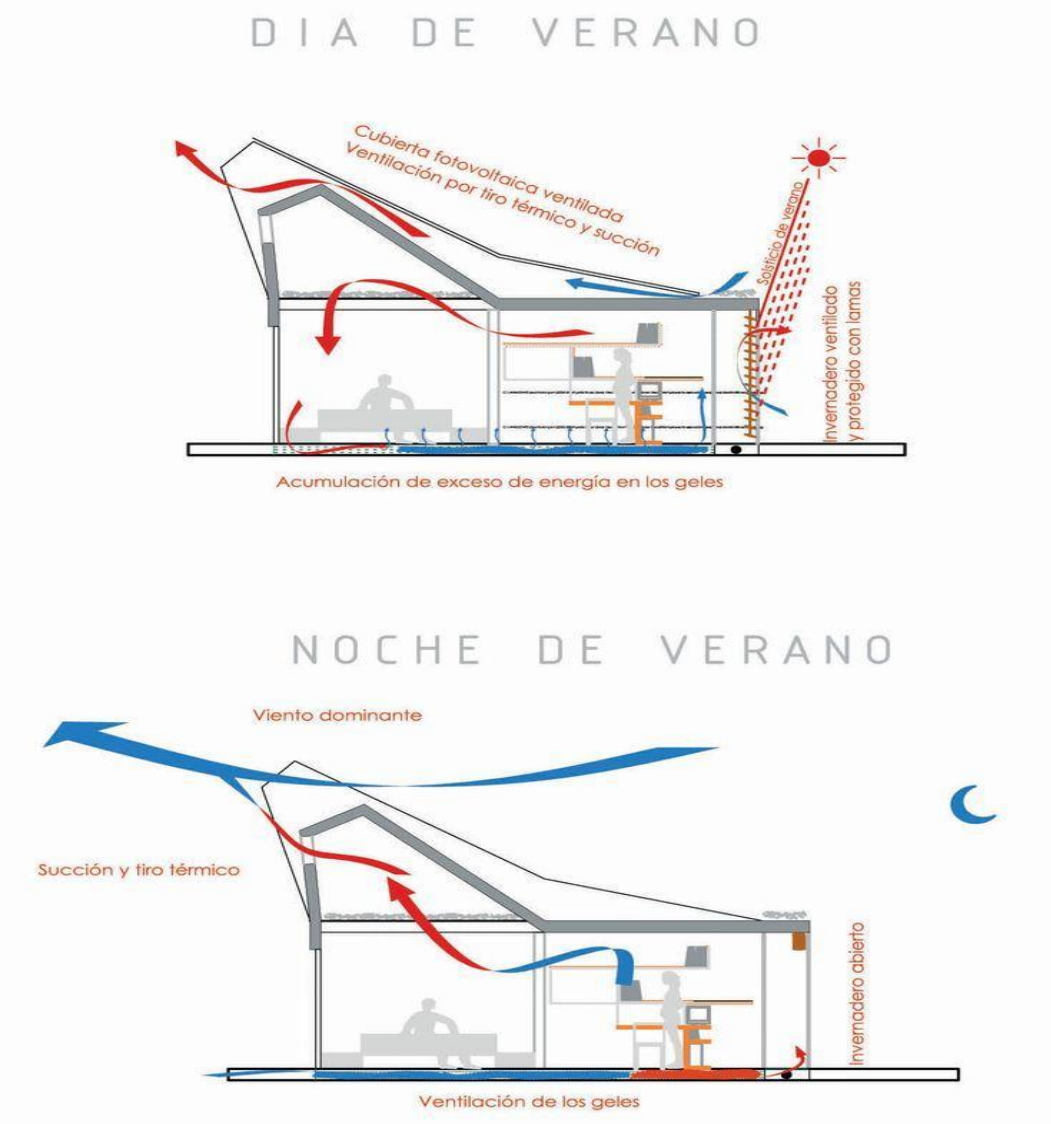
Transdisciplinarity

- 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