



Building international academic programs from Europe to America

the ISA lab programme



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Process, Improvisation, Holarchic Learning Loops and all that Jazz
Experiences in Transdisciplinary Education for Sustainable Development

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HACU 33rd Annual Conference
Chicago October 2019



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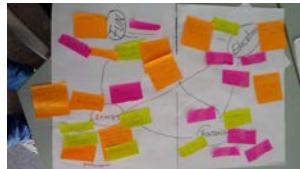
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What is ISAlab?

The collage includes several screenshots from the ISAlab platform:

- Sustainable tourism in NEB**: A project page featuring a map of the Northeastern Balkans and a brief description.
- Sustainable tourism in "Via Augusta"**: A project page featuring a photograph of an arch and a brief description.
- Sustainable future for ABS**: A project page featuring a photograph of a landscape and a brief description.
- Objectives**: A section listing objectives such as "Economic development", "International understanding", and "Sustainability".
- Background**: A section providing context about the project's purpose and goals.
- Preservation**: A section detailing the preservation of ancient Roman structures.
- Objectives**: A detailed list of project objectives including "Oriented protection", "Sustainable tourism", "Added value creation", and "Integrated performance".



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Real Project as
thesis

Interdisciplinarity

Multi-level
interaction

Faculty
development and
collaboration

One team for
Project Individual
original thesis



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Motivation

Inter- and transdisciplinary approaches and opportunities are recognised as critical for sustainability teaching and learning

(Coops et al., 2015; Byrne & Mullally, 2016)

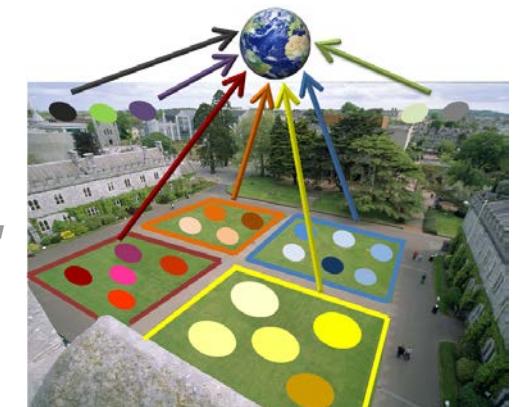
Aim

Give students an inter and transdisciplinary experience in finding sustainability oriented solutions to real problems across the Valencia [Spain] Community

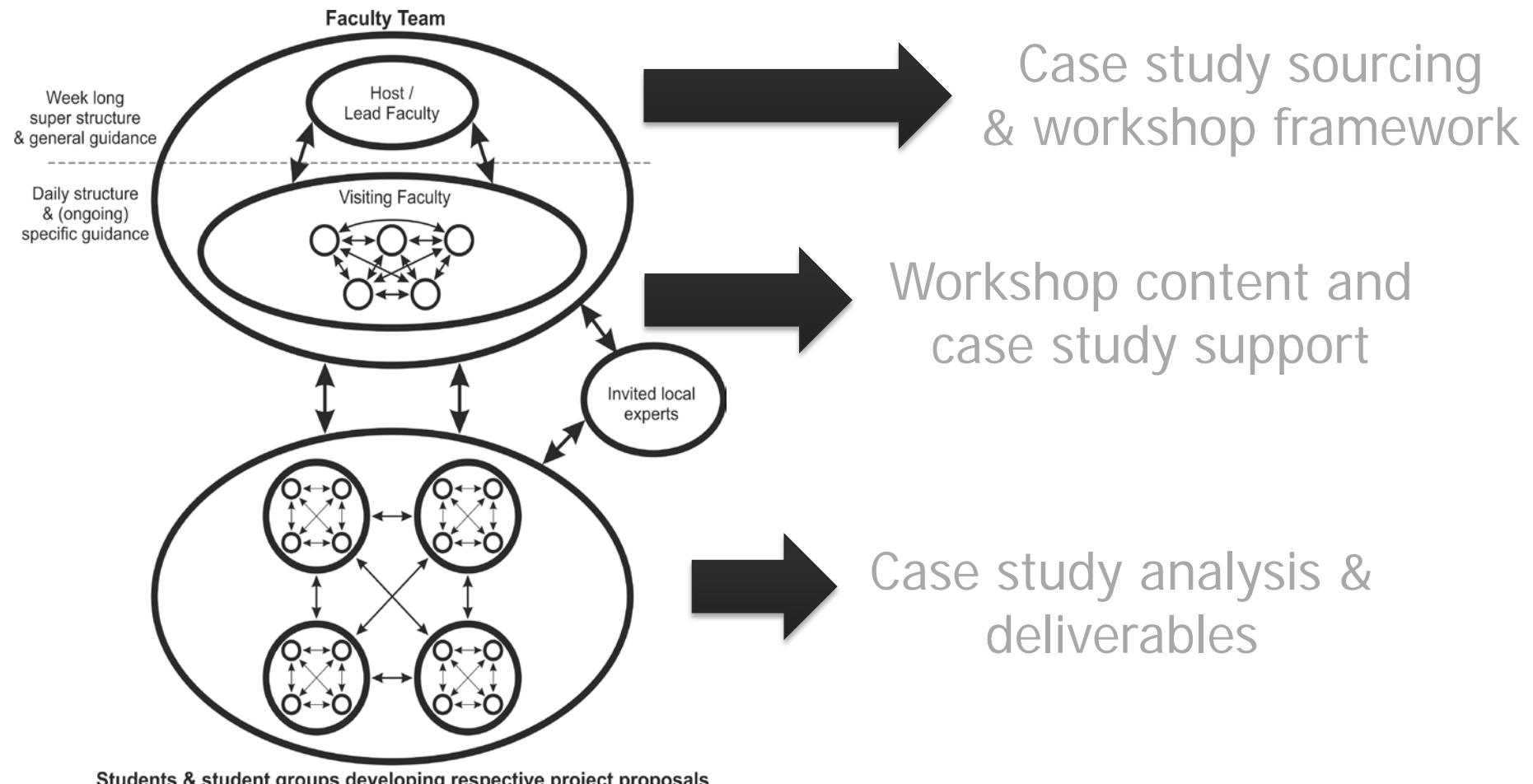
Design Challenge – Integration & Coordination

Global: Europe, North and South America and Asia

Disciplinary: Sus Dev, Chem Eng, Energy, Built Environ, Arch, Green Infrastructure Law,



An emergent holarchy in Valencia



Inspired by holarchic ecosystems model proposed by **Kay *et al.* (1999)**
and panarchic model (**Holling *et al.* 2002**)



Real problems...

How could areas be sensitively developed as an amenity... within an overall 'sustainability' ethos, while considering a mix of environmental, social, economic and technical dimensions?

Benicalap, Valencia

- Low income neighbourhood bounded by a busy highway
- Historic building (Casino del Americano)
- Public park/gardens which had potential



Tabarca Island, off Alicante

- Popular island destination in summer but with low winter trade
- Old lighthouse and building available for development
- Environmentally sensitive area



The framework – a daily structure

OBJECTIVES DEFINED

- Set the tone of the sessions
- Make the daily tasks clear
- Manage expectations of students and faculty

STIMULATION PROVIDED

- Faculty introduce new ideas & disciplines:
- Problem framing
 - Carbon Capture Tech
 - Planning
 - Design
 - Energy infrastructure

CASE STUDY WORK & SUPPORT

Students to take lead in defining and refining the brief and their response
Faculty providing support through facilitation

REFLECTION

Students asked to reflect on aspects of the experience
Staff reflected on progress and context, adjusting presentation delivery

9 AM → 5 PM



Improvisation as a metaphor

*'We don't micromanage in jazz.
..if I want the music to get to a certain
level of intensity, ..the best way for me
to it is to listen' and in doing this
'you engage and inspire the other
musicians – and they give you more and gradually it builds'*



Steffon Harris, TEDSalon, 2011

Influence on:

- Student interactions & design process*
- Staff interactions & workshop emergence*



Examples of staff 'jazz' in practice



Flexible approach to group support

Sense making & reflecting on process

Adjusting aims and objectives of each session / day

Listening and adapting

Reviewing pre-designed presentations



	Daily objective	9-11	1130-1300 Working Session A	1500-1700 Working Session B	Evening Activity / Task
Mon	Meet greet & settle	Faculty coordination and workshop design and development	Introduce tasks and groups	Evening meal task & reflection	
Tue	Creativity	EB/NO	Ice-breaker	Assessing success	Reflection
Wed	Set goals & evaluate concepts	DM/KH	Detailed case work w/ local experts	Clustering ideas and refining concepts	Group brainstorms on presentation style
Thurs	Refine the design	SN & AMC	Continue design and presentation development		
Fri	Prepare & deliver the presentation	Work continues	Deliver presentations & review		



How the week progressed...

	OBJECTIVES DEFINED	STIMULATION PROVIDED (9-11)	CASE STUDY WORK & SUPPORT(11-5)	REFLECTION
Mon	Meet greet & settle	Faculty coordination and workshop design and development	Introduce tasks and groups	Evening meal task & reflection
Tue	Creativity	EB/NO	Ice-breaker & ideas	Assessing success
Wed	Set goals & evaluate concepts	DM/KH	Detailed case work w/ local experts	Clustering ideas and refining concepts Group brainstorms on presentation style
Thurs	Refine the design	SN & AMC	Continue design and presentation development	
Fri	Prepare & deliver	Work continues	Deliver presentations	Workshop reflection



'No transdisciplinarity without disciplinarity!'¹

- Evidence of contribution from each of the participants
- Attention to individual disciplinary contributions e.g. Energy, water, waste,..
- Engagement with feasibility, cost, safety, etc. & sustainability credentials

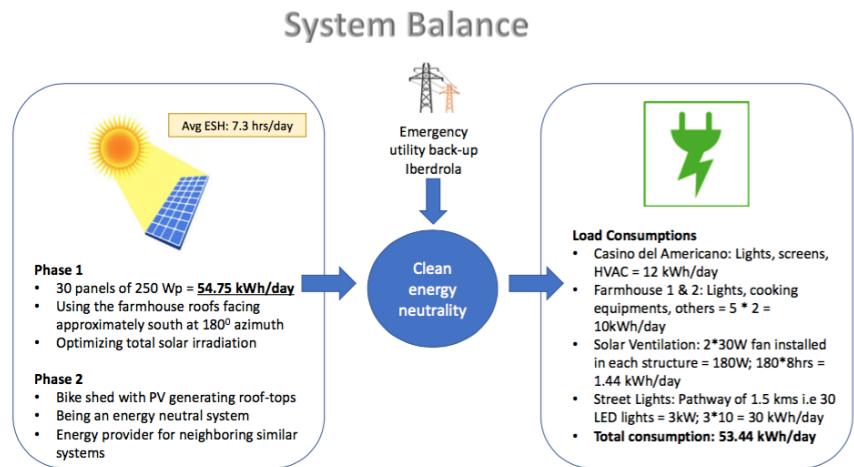


Image Credit: Marisa
Henry Carlota
Hernandez Martin
Irene Ovejas Casas
Sahil Karambelka

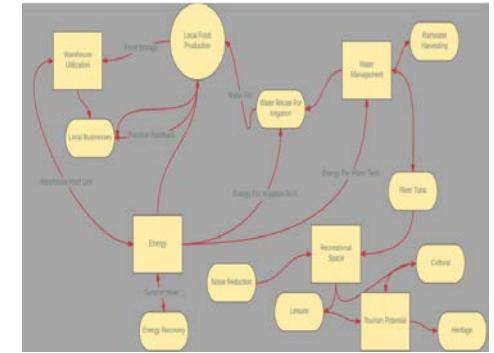
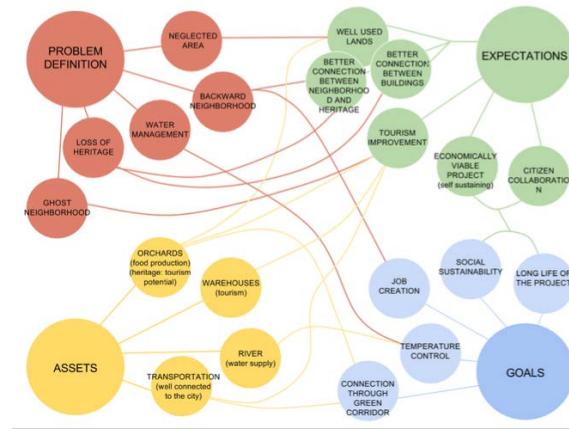
Sustainability Matrix					
Environment	Economy	People	Traditional and non market activities	Institutional Arrangements and Governance	
Cultural space	3	4	5	4	3
Food Production	3	5	5	4	4
Connected neighborhood	3	5	4	5	2
Warehouse utilization	4	4	3	3	5
Fallas Materials	4	2	3	4	2
Recreational space	4	5	5	5	4
Re use and recycling	5	3	4	4	3

Image Credit: Giorgia Puccinelli Hector
Muñoz Jörg Winter Sanaj Mehta



Evidence of disciplinary integration

- Attempts to integrate and build on each others perspectives e.g. conceptual & systems maps, multifaceted solutions
- Adoption of ideas and principles from the presentations. e.g. 7 Qs, Green Infrastructure



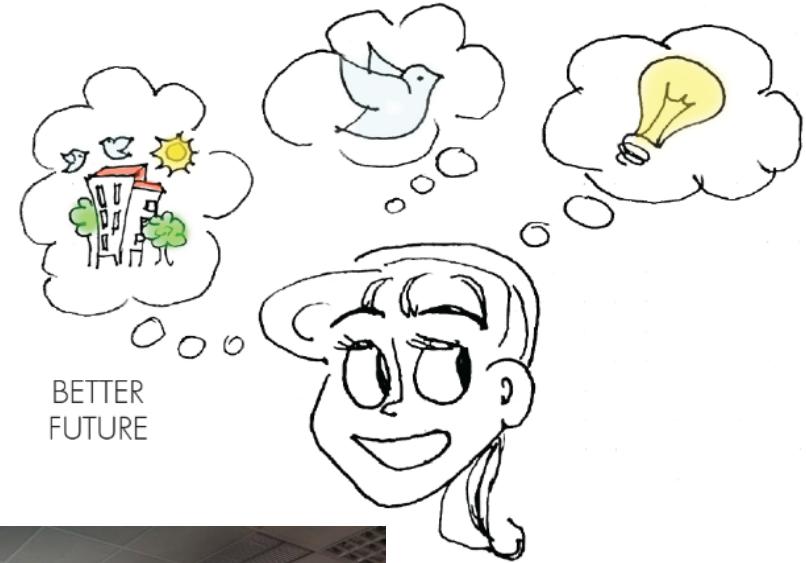
Concept: Energy, Water & Education

- Photovoltaic panels to generate electricity
 - Energy needs
 - Possible educational activities: efficiency of solar panels, tilt angles, incident irradiation, etc.
- Solar thermal to heat water
 - Hot water needs
 - Possible educational activities: heat angles, different covers, etc.
- Small-scale solar water desalination devices
 - Possible educational activities: effects of salinity on plants, irrigation system, etc.



Stakeholder engagement & empathy

- Recognising the role of stakeholders in tackling complex challenges
- Engaging in the projects from a beneficiaries perspective
- Imagination and stepping beyond disciplinary constraints



Student reflections - Creativity

“The TED talk video played during one of the afternoon sessions resonated strongly with me and I thought that it was very useful in helping us build on top of each other’s ideas instead of simply discarding them as ‘wrong’ or ‘outlandish’”

Student reflections - leadership

“I also think that the faculty did a good job of supervising our team work without narrowing down the scope of our brainstorming sessions”

“We were all leaders at different stages of the workshop and that worked very well for me”



What did we (re)learn?

The value of

- exposure to a variety of perspectives
- structure to foster creativity & integration

Open challenges

How to create space for creativity & interdisciplinarity in already packed curricula?

- How well does this experience prepare people for delivering SD in practice?





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