

# Designing transdisciplinarity: logistics & strategies for co- teaching higher-order collaboration

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CONFERENCE ON HIGHER EDUCATION PEDAGOGY

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# Presentation overview

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Defining transdisciplinarity

Why design transdisciplinary courses

Example course - VT SuperStudio

Data & methods

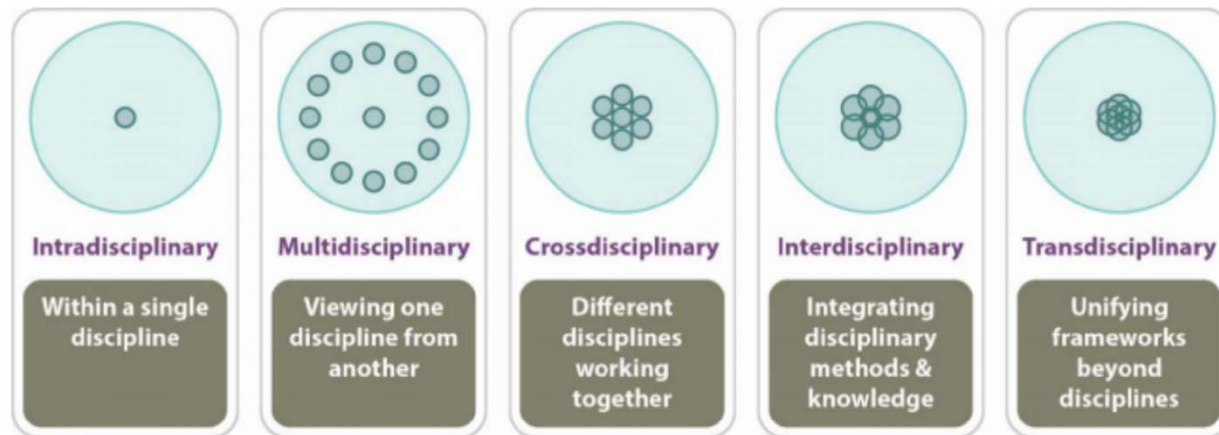
Logistics & strategies - institutional, course, & faculty

Activity



# What is transdisciplinarity?

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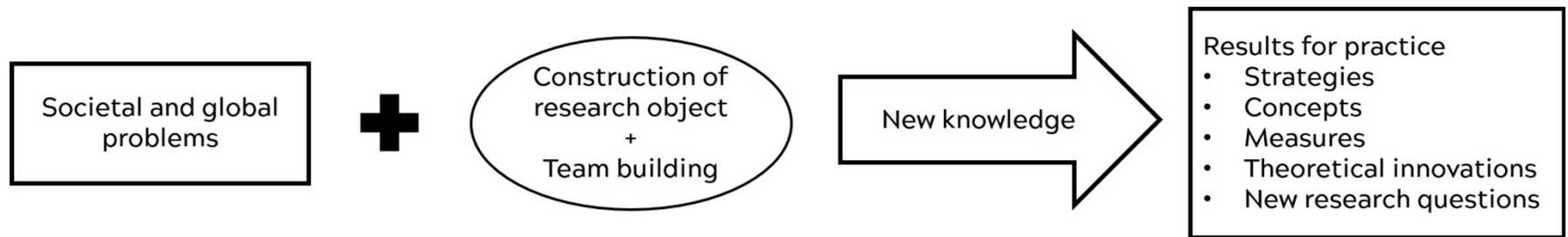
*Image credit: teaching.vt.edu*

Transdisciplinarity aims to:

- “**integrate** the natural, social, and health sciences in a humanities context, and **transcends** their traditional boundaries” (Choi & Pak 2006)
- challenge traditional disciplinary boundaries & “seeks to **assemble new approaches from scratch**” (Bernstein, 2015)

# What is transdisciplinarity?

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Adaptation of Bergmann et al. (2012) model for the Institute for Social-Ecological Research model of transdisciplinary research.

## transdisciplinary skills:

- teamwork, collaboration, communication, and conflict resolution;
- disciplinary and cultural standpoints;
- transdisciplinary analysis;
- and engagement across societal sectors (Barrett et al., 2019)

# Why design transdisciplinarity?

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Employers & hiring managers care

Students care

Alignment with institutional goals



# Why design transdisciplinarity?

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Employers & hiring managers care

- Ability to work in teams & across boundaries among most desirable traits in recent grads (Hart Research Associates, 2018; Selingo 2019; Kinsella & Waite, 2020)

Students care

Alignment with institutional goals



# Why design transdisciplinarity?

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Employers & hiring managers care

Students care

- Important experience & skill development (Barret et al. 2019)
  - Discovery & definition of real-world problems (their interest, their choice)
  - Iteration & comfort with uncertainty
  - Reflection on problem solving
  - Matching communication to intended audiences

Alignment with institutional goals



# Why design transdisciplinarity?

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Employers & hiring managers care

Students care

Alignment with institutional goals

- Curricular redesign toward inter & transdisciplinarity depends largely on institutional support (Risopoulos-Pichler et al. 2020)



# What did we design?

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## VT Honors-Urban Affairs & Planning SuperStudio

Concurrent, collaborative, co-taught, co-requisite

5 transdisciplinary 3 credit topics courses

- (1) environmental policy and social change, (2) data analysis for health reform, (3) innovation for the public good, (4) the future of higher education, and (5) the future of employment

+ a co-requisite one-credit team-taught policy context lab

- focused on Green New Deal
- provides common context in which to interrogate overarching concepts like equity, representation, ethics, etc. (VT & outside guests as expert facilitators)

# How does it work?

**Meets 3x week, so 45 times over semester (75 mins T/Th; 50 mins W)**

Week	Day 1	Day 2	Day 3
1	Common topics (all 5 sections together)	Policy theme discussions (all 5 sections together)	Individual topic (solo section meetings)
2	Individual topic (solo section meetings)	Policy theme discussions (all 5 sections together)	Individual topic (solo section meetings)
3	Common topics (all 5 sections together)	Policy theme discussions (all 5 sections together)	Common topics (all 5 sections together)
4	Individual topic (solo section meetings)	Policy theme discussions (all 5 sections together)	Individual topic (solo section meetings)
5	Common topics (all 5 sections together)	Policy theme discussions (all 5 sections together)	Common topics (all 5 sections together)
6	Common topics (all 5 sections together)	Policy theme discussions (all 5 sections together)	Collaborative topics (2 or 3 sections meet together)
7	Collaborative topics (2 or 3 sections meet together)	Policy theme discussions (all 5 sections together)	Collaborative topics (2 or 3 sections meet together)
8	Collaborative topics (2 or 3 sections meet together)	Policy theme discussions (all 5 sections together)	Collaborative topics (2 or 3 sections meet together)
9	Common topics (all 5 sections together)	Policy theme discussions (all 5 sections together)	Common topics (all 5 sections together)
10	Project work sessions (Transdisciplinary groups)	Policy theme discussions (all 5 sections together)	Project work sessions (Transdisciplinary groups)
11	Project work sessions (Transdisciplinary groups)	Project work sessions (Transdisciplinary groups)	Project work sessions (Transdisciplinary groups)
12	Project work sessions (Transdisciplinary groups)	Project work sessions (Transdisciplinary groups)	Project work sessions (Transdisciplinary groups)
13	Project work sessions (Transdisciplinary groups)	Project work sessions (Transdisciplinary groups)	Project work sessions (Transdisciplinary groups)
14	Project work sessions (Transdisciplinary groups)	Project work sessions (Transdisciplinary groups)	Project work sessions (Transdisciplinary groups)
15	Project work sessions (Transdisciplinary groups)	Common topics (all 5 sections together)	

Common topics (all 5 sections together)	
Individual topic (solo section meetings)	
Policy theme discussions (all 5 sections together)	
Collaborative topics (2 or 3 sections meet together)	
Project work sessions (Transdisciplinary groups)	



# Considering logistics & strategies

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Case study approach, using:

- Observations from our experience designing & delivering the course
- Content of discussions from summer WS with others working on transdisciplinary or team-taught courses
- Semi-structured key informant interviews to better understand administrator/institutional perspective

# Logistics & strategies

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- Institutional context
  - Whole institution
    - Alignment with goals
    - Funding models
  - Sub-unit (college, school, department)
    - Space collaboration
- Course context
  - Resources required
- Faculty context

# Institutional considerations

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Whole Institution:

Alignment with institutional goals

- “V”T-shaped student initiative: disciplinary depth + transdisciplinary capabilities (Guest, 1991; Saviano et al. 2017)
  - Calls for capstones to include problem-based, interdisciplinary teamwork, and transdisciplinary solutions
- VT Destination Areas initiative: encourages research & teaching collaborations across disciplines “to address complex problems that impact the human condition”
  - +Policy (secured funding & recognition through affiliation)

Institutional goals take time to reconcile with one another & to translate to sub-units



# Institutional considerations

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Whole Institution:

Budgeting model decisions/changes shape decisions across levels

- VT replaced incremental budgeting model w/ performance budgeting
  - Partnership for Incentive Based Budgeting (PIBB) aim: self-sufficient sub-units
  - Creates challenges for collaboration & co-teaching b/c of competition for revenue generation from enrollment
  - Confusion about allocation details, even among admins

Budgeting models may conflict with broader goals

Very likely need dedicated space; requires funding & support

# Institutional considerations

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## Sub-Unit

- Opportunity to think differently about collaboration between units that do not grant degrees & degree-granting units
  - Non-degree: Typically not held to same budget models
  - Programming typically built on ideas not schedule logistics to fit degrees
  - Often have access to flexible spaces, maker spaces, laboratory space etc.
    - Honors (diplomas based on flexible curricular choice); Institutes (experiential learning & collaborative research)
- Opportunity to collaborate based on goal/mission alignment, faculty relationships & interests




# Course considerations

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## Time involved

- Planning must start months or weeks in advance
  - Even when previously taught; requires good relationship among faculty
  - Coordination: Weekly planning meetings during semester
    - Grading checks, feedback about students, adjusting lessons
  - Course management system (we use Canvas)
    - Takes time to structure - different use assumptions than single course
    - Semester fully mapped; clear assignments & rubrics

## Requires shared context co-requisite (policy; GND)

- Ties together faculty experience & interests
  - Clear relationship between sections & co-requisites for students
  - Creates shared foundation of knowledge from which to interrogate ideas & relationships
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# Faculty considerations

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Shared context labs involve hidden labor

- One instructor of record but several participate – or – fractional credit each
  - Recognition/credit for effort varies widely by unit (know your unit)
- Requires serendipitous mix of teaching experience, research background, teaching style, & collaboration style
  - Likely organic, not dictated or curated from above
- Requires excellent TA; great relationship with TA

# Actionable takeaways - considerations & lessons learned

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	Considerations & Lessons Learned
Institutional	<ul style="list-style-type: none"><li>• Align with both higher-level institutional goals and initiatives</li><li>• Consider budgeting models; seek exceptions when necessary</li><li>• Provide internal support &amp; seek external funding to advance course design</li><li>• Recognize the contribution of highly collaborative and transdisciplinary courses/studios (FAR, P&amp;T, etc.)</li><li>• Ensure adequate and flexible space for course requirements</li><li>• Be patient; it takes time to align higher goals with sub-units</li></ul>

# Actionable takeaways - considerations & lessons learned

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	Considerations & Lessons Learned
Course	<ul style="list-style-type: none"><li>• Ok to start small, iterate/grow integration &amp; collaboration over time</li><li>• Requires shared <b>context lab</b> in addition to <b>complementary topics sections</b>; find overarching policy context that interests all faculty</li><li>• Requires identification of overarching topics like ethics and equity &amp; explicit overlaps in topics</li><li>• Class management portals (Canvas, Blackboard, etc.) should be seamless; one portal for all student access &amp; interaction</li><li>• Communicate structure clearly: explain to students up front the differences in course structure &amp; aims; repeat during semester</li></ul>

# Actionable takeaways - considerations & lessons learned

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	Considerations & Lessons Learned
Faculty	<ul style="list-style-type: none"><li>• Find good team fit; support one another</li><li>• Meet weekly; communicate often &amp; openly</li><li>• Use mentored feedback sessions as basis for communicating with other faculty &amp; setting common expectations for students</li><li>• Seek just compensation and recognition</li></ul>

# Discussion groups

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1. Introduce each other and your disciplines/interest areas
2. What are some common themes/concepts that fit across the group's disciplines?
3. What topics connect with the GND?
  - Alternatively, is there another globally relevant theme that fits your disciplines and could be used as the shared focus?
4. Who might you invite to co-teach these topics?

[Jamboard](#)

# Details of how it works

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**Meets 3x week, so 45 times over semester (75 mins T/Th; 50 mins W)**

1,2- whole group

3,4- individual topics

5- whole group,  
environmental justice

6,7- individual topics

8- whole group, problem  
framing

9 – individual topics

10, 11- whole group, final  
project intro & decision-  
making processes...

...19- individual topics

20- whole group, policy  
change & innovation

21, 22- topics paired

23- whole group, data  
visualization

24,25- topics paired

26- whole group, visual  
thinking

27,28- topics paired...

...32- group work, faculty  
advising

33- formal presentation

34-38- group work, faculty  
advising

39- formal presentation...

...45- final group  
presentations