Transdisciplinary Course Development: Tips, Tricks, & Best Practices

Transdisciplinary courses allow students to make connections across disciplines, creating opportunities for depth and complex and critical thinking (Citation). When developing transdisciplinary courses here are some key questions for instructors to consider:

What is the context of the course?

- What is the year level and how will this influence students' understanding of how transdisciplinary learning works? First year students may have limited space within their respective programs, or not have enough disciplinary knowledge to do more advanced forms of transdisciplinary learning. Consider making the course at the very least **a restricted elective within relevant programs**.
- Second year courses are often a good fit as they expose students to transdisciplinary ways of thinking early on in their degree and are less likely to have lots of pre-requisites. **Access should be a key consideration** in the design of your course.

What are best practices in course design and content?

- Learning Outcomes should be discipline-agnostic, focusing on **transferable skills learning.** Focus on helping students develop skills that are relevant regardless of discipline and consider getting them to reflect on how the skills will help them in their disciplinary context.
- The topic of the course, and topics within the course, should be **relevant and meaningful to all students**. Students will decide whether they should join based upon the actual topic, which will inadvertently lead to reinforcing disciplinary silos or boundaries.

What are logistical considerations while teaching the course?

- Best practice recommends **including experts from as many disciplines as possible** with a smaller number of instructors as the 'leads'. This also ensures more sustainable participation if faculty needed only to prepare for a short contribution, rather than an entire course. Experts can be other faculty members or industry and community experts.
- Consider a **panelist model** (e.g., the Pandemics Course) with a strong facilitator and active learning techniques offered in a weekly lab/seminar format.
- When it comes to utilizing a guest lecture model, consider how individual differences in teaching style may interfere with learning.
- **Teaching responsibilities need to be shared among Colleges, or Departments, and your time designing and teaching the course needs to be recognized.** Resourcing of instructors/teaching assistants etc. requires careful consideration.

What should I be thinking about from a student perspective?

- The topic needs to be a big 'wicked' problem that all students, from any discipline, can relate to. Think: Climate Crisis, Food, Pandemics, Water, Air, Humanity, Space, etc.

- Transdisciplinary thinking is DIFFERENT. Students may be confused or will not have encountered this kind of perspective taking before. Make sure you **prepare learners for this at the beginning**, so they understand how the expectations differ from more 'traditional' university courses.
- Remember that **students are not a monolith**. They are a large group with unique experiences and perspectives. This is a creative advantage in the classroom, so it is a good idea to leverage their disciplinary expertise and knowledge so help them learn from each other, as well as from the instructors. Also consider how diversity, equity, and inclusion play a role in your course.

New Course Development

Year level and course value:

- It should be sooner rather than later.
- But maybe not a 1000 level course; many programs have limited flexibility in their first years and students may be reluctant to take a 1000 level course outside of their first year.
- A second-year level course with no prerequisites (or only a total credit requirement) should work to allow accessibility
- The course should be designated as a restrictive elective in as many programs as possible. (General electives are less valuable and harder to recruit students to)

Learning Outcomes should be discipline-agnostic, focusing on transferable skills learning. A modified example of relevant learning outcomes from UNIV*4200:

- Critically evaluate information to formulate and apply effective knowledge translation strategies to identified audiences.
- Demonstrate effective skills in collaborating with, learning from and sharing information with others in small and large group settings.
- Create effective communication strategies that recognize and respect the needs of a community.
- Devise and execute a multidisciplinary research protocol for addressing a societal challenge.
- Identify discipline specific biases, and the impact these have on problem solving.
- Employ a systems-thinking mindset that recognizes the interconnectedness of research to identify an audience, define problems and propose real-world solutions.

The design of the course should be discipline-agnostic such that it can be 're-skinned' easily. Assessment should also be topic independent.

The focus-topic should be relevant and meaningful to all students. We do not want them deciding whether they should join based upon the actual topic.

Teaching the course:

- Workload and recognition are big issues that need to be addressed. Our dive into understanding how to build new courses has revealed, not surprisingly, that much of the

innovation is done on a volunteer basis. This framework is unsustainable and doesn't support the notion that it is valued.
- Best practice would be to include as many faculty/experts from as many disciplines as possible with a smaller number of instructors as the 'leads'. This may also ensure more sustainable participation if faculty needed only to prepare for a short contribution, rather than an entire course.
- A panelist model might work well (e.g., the Pandemics Course) with a strong facilitator and active learning techniques could be offered in a weekly lab/seminar.
- A guest lecture model would be riskier because individual differences in teaching style may interfere with learning.
- A flipped model with asynchronous video interviews with different experts may also be effective though it would limit cross-disciplinary interactions among experts. It would help focus the presentation though. Synchronous/active learning engagement could happen in labs/seminar groups.
- Teaching responsibilities could be shared among Colleges, or Departments. Resourcing of instructors/teaching assistants etc. would need.

Marketing to students:
- The topic needs to be a big 'wicked' problem that all students, from any discipline, can see themselves in. Think: Climate Crisis, Food, Pandemics (for the next little while, anyway!), Water, Air, Humanity, Space (because awesome!!! And SO transdisciplinary - I attended an incredible talk by a lawyer who specializes is Space Law).
- Could even have a bit of a gamification of the selection of the topic! A vote, United Way Auction…. Something fun.