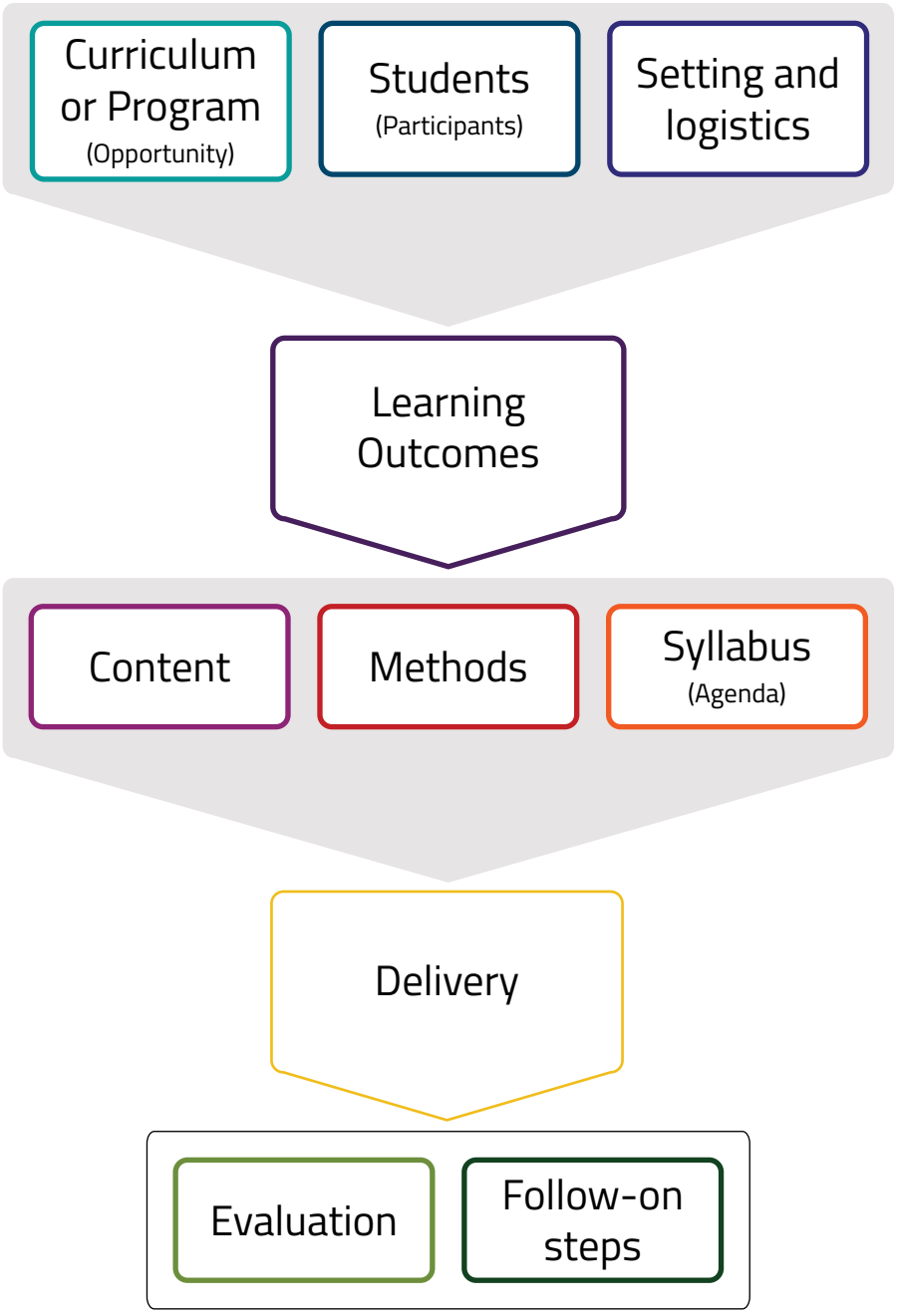
Using the Guide

Worksheet for designing a TD training course

This worksheet is intended to illustrate how you can use sections of Designing Inspiring Workshops and Courses in Transdisciplinarity: A Guide to create a course for teaching Transdisciplinary Research approaches and methods. The questions outlined in each section of the *Basics of Training Design* (pages 11-41) serve as a checklist, adapted to a course-based format where we assume a lengthier timeframe, punctuated delivery (e.g. 4 hours per week over 12 weeks), and assessment requirements. Refer to the Guide sections as you complete the worksheet.



Transdisciplinary Training Collaboratory (2025). Using the Guide: Worksheet for designing a TD training course. Stanford University, Stanford, CA. https://itd-alliance.org/resources/design-guide/dg_additional-materials/

☑ Understand the context and position of this course in relation to other learning

Opportunity

Participants

Does it relate to a wider curriculum or program? Are there any format requirements (e.g. hours per week over number of weeks, assessment etc)? Consider the student level, background and learning context (e.g. postgraduate training? professional development?) and the need for TD training.

☑ Given the context of the curriculum, develop a preliminary statement of the purpose of the course and a set of intended learning outcomes.

Outcomes

See *Proficiencies*, Design Guide page 47

Use the proficiencies to help you think about what you want the students to learn.

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Design effective assessment processes

Content

See *Concepts & Practices,* Design Guide page 61

Considering both learning outcomes and proficiency levels, develop assessment instruments that support and enhance learning and engagement. While conventional assessment items such as essays or exams may have a place in the course, more flexible assignments such as Learning Portfolios or student-directed assessment are typically more aligned with the TD attributes we want to foster. Reflexivity can be integrated into many assessment instruments and is a fundamental skill to develop.

Refer to Section IV: *Transdisciplinary Research: Key concepts in theory and practice* to identify concepts you want students to understand and apply.

Draft a course overview that can be used to promote the course to prospective students.

Content

If there are formal course approval processes to be followed, ensure all requirements are met. Use the Design Guide as a reference to support your content development and assessment instruments if needed.

See *Concepts & Practices,* Design Guide page 61

☑ Develop your course content that supports strong connections between the TD concepts, methods and applications, relevant to the learning outcomes and context.

Structure the flow of the course by building a week-by-week agenda with logical growth through the content of both TD and any application issues or topics, and clear connections to assessment. Develop a detailed agenda or run sheet for each session.

Consider integrating interactive, real-world, real-time case studies or field trips where there are opportunities to engage external partners in setting the scene and demonstrating different lived experience and diverse perspectives. This demonstrates plurality and normativity, and highlights the relevance of TD methods in grappling with complex issues.

See Section IV: *Transdisciplinary Research: Key concepts in theory and practice* , including Further Reading, which may be a source of good case studies. Is there an opportunity for students to engage with relevant, contemporary real-world challenges or issues?

If you are new to teaching, refer to Section II, *Basics of training design* (p. 11), A*dult learning* (p.42), and *Leadership* (p. 52) in the Design Guide.

☑ Ensure excellent teaching and learning facilitation and support.

In face-to-face teaching spaces, be familiar with the layout of the teaching room/s and any limitations they may impose. For example, conventional tiered seating in lecture theatres should be avoided, if possible, as they are inflexible spaces that offer limited space for peer interaction.

If you are teaching in collaboration with others, provide a copy of the Design Guide to all your teaching team! Be sure that all tutors, demonstrators or teaching assistants are familiar with the theory and practice of TD. Re-read descriptions for any tools you've selected for use in class and discuss it thoroughly with any tutors or teaching assistants. Ensure any materials required are available and accessible. Add instructions and notes for your teaching team so that everything is in one place. If you are new to facilitating an activity, it can be useful (and fun!) to practice it with your teaching team prior to the actual delivery of that activity in the course. Debrief with your team after each session to gauge student progress and capture feedback and lessons learned.

Demonstrate TD attributes in action.

Methods

See *Attributes*, Design Guide page 63

Use Section V, *Tools*, to select appropriate interactive methods and activities to demonstrate engaged, interactive approaches to teaching and learning that align with the principles and attributes of TD. Follow the guidelines on timing from the activity descriptions so you know that you have enough time.

Attend to relationship-building between you and the students by including how you will begin and end each learning session.

Week	Topic/Issue	TD Concept, Attribute	Activity/Tools	Supporting material, reading
1				
2				
3				
	Assessment			
4				
5				
6				
	Assessment			

☑ Prepare evaluation or develop a feedback process.

Evaluation

See *Reflection & Reflexivity,* Design Guide page 97

Even where there are standard end-of-course evaluation processes in place, it is useful to have non-standard feedback and evaluation both at key points during the course (formative evaluation) and at the end (summative evaluation). These can be delivered as quizzes or online check ins, or as an in-class collaborative activity.

☑ Debrief the whole course.

Evaluation

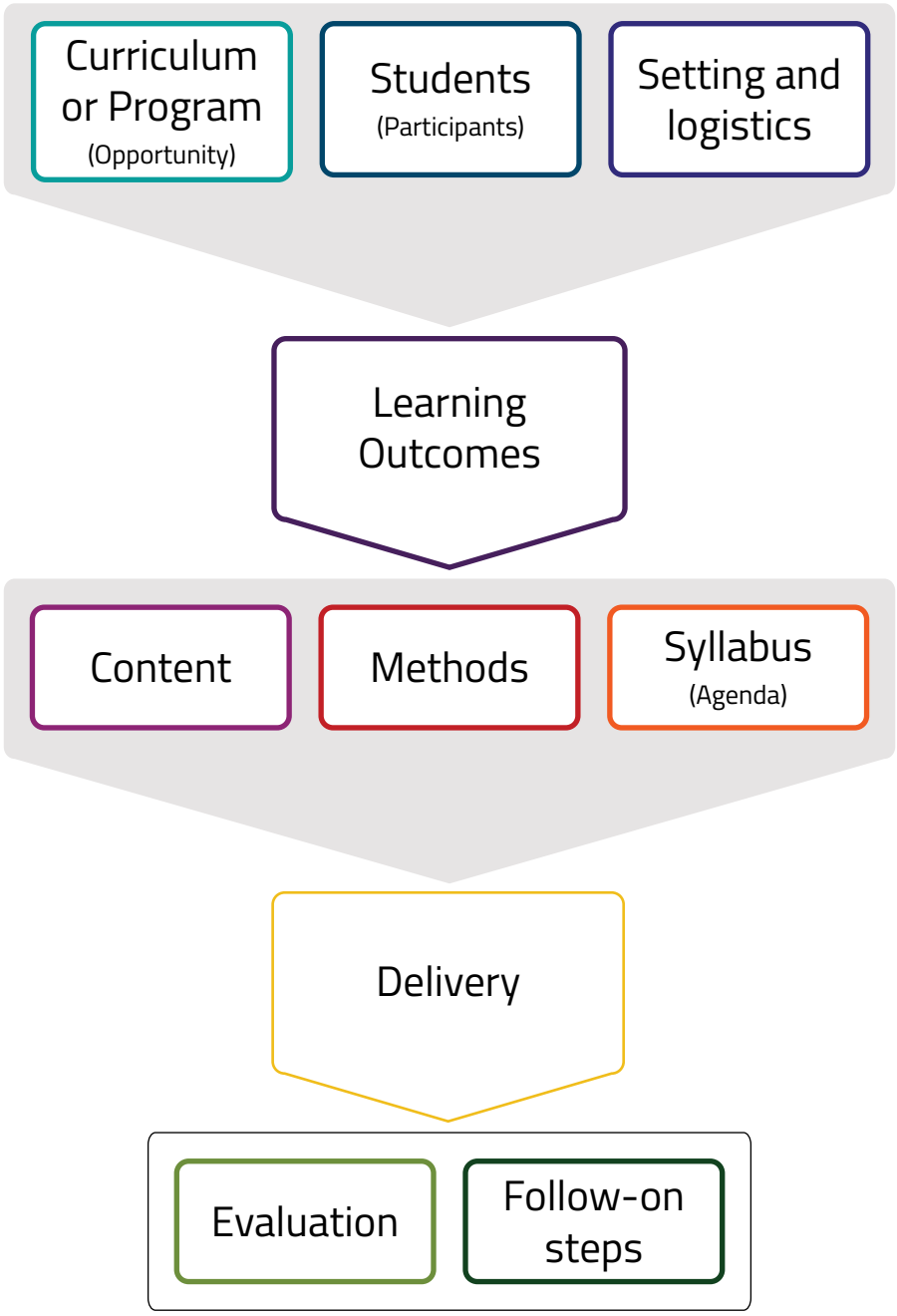
Follow-on Steps

After the course and assessment are concluded, make time to debrief with the teaching team. Revisit the Learning Outcomes and consider any unexpected new learnings, or redundant old ones. While it is still fresh, make your own notes on what went well, what you'd like to improve, and any questions you have.

Sample worksheet

for designing a TD training course

This example is based on a real course taught at the Australian National University, see https://programsandcourses.anu.edu.au/2024/course/envs3040



☑ Understand the context and position of this course in relation to other learning

Course title: Complex Environmental Problems in Action

Participants /students: final year undergraduate capstone course, BScience, BArts, BEnvironment & Sustainability.

Opportunity / curriculum: Flagged as a transdisciplinary course. General intention is to prepare students about to graduate for addressing complex environmental problems in holistic and collaborative ways, relevant to workplace settings.

Setting and Logistics:

- Delivery: 4 contact hours per week over 12 weeks
- Assessment: at least 3 assessment items, equivalent to approx. 6000 words total
- Flexible teaching space

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☑ Given the context of the curriculum, develop a preliminary statement of the purpose of the courses and a set of intended learning outcomes.

This course aims to develop a multi-faceted, research-based understanding of complex environmental problems that graduating students can apply in future research or work environments. The course emphasises transdisciplinary, integrative, engaged, and research-based approaches to complexity. Students engage with real-world, real-time issues by drawing on a range of theoretical concepts and practical tools. The focus throughout is on case studies as vehicles for learning and reflection, as well as a testing ground for tools, techniques and approaches discussed in the course.

Learning outcomes (LO):

This course works towards the Intermediate proficiency level "informed and enabled participant: awareness and understanding; skills for use and application; foster and develop an identity and accompanying values of a TD researcher." See *Proficiencies*, page 47.

Course learning outcome	Proficiency
Understand the methodological and practical challenges posed by complex environmental problems.	From the Design Guide Intermediate Proficiency KNOW p.49: "Trainees appreciate that TDR processes are often emergent and iterative, and that directions and activities may change"
Characterise and effectively describe the complex nature of environmental problems.	DG KNOW p.49: "Trainees understand the relationships between context, problems and the aspirations of TDR in facilitating societal change in relation to a specific project" DO p. 50 "Trainees can express their knowledge, experience, values and perspectives with confidence and authenticity"
Apply problem solving skills in environmental studies and environmental science, including problem framing, synthesis and critical reflection	DG DO p.50: "Trainees can recognize, discuss and contribute to potential pathways for societal change." BE p. 50 "Trainees can reflect effectively on their own learning and the learning of the group, with guidance and humility"
Create innovative, collaborative research-based responses to complex environmental problems.	DG KNOW p.49: "Trainees recognize complexity and uncertainty" BE"Trainees develop a personal commitment to achieving the shared goals of the project, and willingness to learn from others"
Understand and apply effective stakeholder engagement practices.	DG DO p.50: "Trainees can contextualize difference or conflict between participants as diversity and a potential source of richness and maintain respectful participation"
Understand and apply the case study approach to participate effectively in integrative, team-based research projects.	DG BE p.50: "Trainees are prepared for and comfortable with sharing their personal experiences, perspectives, values and beliefs"

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☑ Consider assessment requirements and expectations and design effective assessment processes and outputs.

Content

Assessment

- Learning portfolio including group work products and individual reflection [LO 1,2]
- Learning portfolio including an individual research essay and short individual reflection [LO 2,3,4,5]
- Final case study learning portfolio, including compulsory client deliverable, in-class group work products, and individual reflections [LO 1,3,4,5,6]]

☑ Draft a course overview.

Content

How can we tackle complex problems productively? In a world where environmental problems are becoming increasingly complex, it is easy to feel overwhelmed and not sure where or how to begin. In this course we explore three case studies of complex environmental problems, where we engage with real-world, real-time issues and the decision-makers who are grappling with them. We develop skills using transdisciplinary concepts and tools to formulate solid understandings of the problems, synthesise across different knowledge bases, and engage with decision-makers and their stakeholders to identify or support innovative, robust courses of action. Students will leave this course equipped with understanding and experiences that set them up for taking on complex problems, leading multi-disciplinary teams and navigating processes for finding innovative solutions.

☑ Develop your course content that supports strong connections between the TD concepts, methods, and applications, relevant to the learning outcomes and context.

Content

Agenda

Structured with three case studies focusing on each of:

- Co-design
- Co-production
- Co-implementation. See attached syllabus

Methods
Evaluation
Settings and logistics

☑ Ensure excellent teaching and learning facilitation and support.

Design guide distributed.

Key concepts for this course: Co-design, co-production, co-implementation, reflexivity, pluralism

Key skills/practices: Identify actors, roles, expectations; embrace differences and tensions; integrating different fields of expertise

Methods

☑ Demonstrate TD attributes in action.

Drawing on the ANU Framework for transdisciplinary problem solving (p.66 of the Design Guide) create processes that create opportunities for students to engage with peers from different disciplines; demonstrate effective communication e.g. minimise 'lecturing' and maximise engagement; and is change-oriented, with student work being made available to decision-makers.

See syllabus on the next page.

Sample Syllabus

The course Complex Environmental Problems in Action runs for 12 weeks, with 4 contact hours structured around one pre-recorded online 1 hour lecture, one live 1 hour "presentation and discussion" and a 2 hour workshop each week. This table shows the first case study of the course which runs for two weeks. In this case study the class works with the campus team responsible for implementing the University's carbon reduction program towards net zero, and ultimately below zero, emissions. It is an ambitious real-world, real-time challenge that faces many hurdles. Students are required to integrate their own lived experience as citizens of the University with the perspectives and knowledge of the campus staff charged with making it happen.

Week	Topic/issue/ content	TD concept, attribute	Activity/tools	Supporting material, reading
Case study 1: Implementing ambition carbon reduction policy on campus				
1	Case study 1: Setting the scene and context for the case study Understanding different perspectives Bigger picture	Co-design and problem framing (Design Guide p. 67) Pluralism Reflexivity Problem framing	**Online lecture:** What are problem framing and co-design, and why do they feature in tackling complex environmental problems? **Presentation and discussion (1 hour):** Campus Facility managers panel to discuss challenges and goals ▪ facilitated discussion with student questions **Workshop (2 hours):** In randomly allocated teams of 5 or 6, students apply the Problem tree activity to brainstorm their own experiences of carbon reduction actions, specifically drawing on their own lived experience. The similarities and divergences are noted. They compare these perspectives with Campus Managers' issues and concerns, and from both sources build a problem tree around a specific carbon reduction target. They identify causes and effects, and consider how different roles and life experiences influence how different people understand the problem.	Webb, R., Bai, X., Smith, M.S. et al. Sustainable urban systems: Co-design and framing for transformation. Ambio 47, 57–77 (2018). https://doi.org/10.1007/s13280-017-0934-6 Bardwell, L.V. Problem-Framing: A perspective on environmental problem-solving. Environmental Management 15, 603–612 (1991). https://doi.org/10.1007/BF02589620

Week	Topic/issue/ content	TD concept, attribute	Activity/tools	Supporting material, reading
Case study 1: Implementing ambition carbon reduction policy on campus				
2	Case study 1: workshopping creative solutions to waste management challenges	Problem framing – reframing	**Online lecture:** Reflexivity – why it is important and how to do it well. **Presentation and discussion (1 hour):** Problem framing and reframing, class discussion around worked examples using the Think-Pair-Share technique to connect with the previous week's work. **Workshop (2 hours):** Teams use How might we...? and Angel's Advocate to co-produce creative solutions based on their own experience and integrating Campus Managers' perspectives on challenges. Class-generated proposed solutions are returned to the Campus Management team as new ideas toward policy implementation.	Wedell-Wedellsborg, T. Are You Solving the Right Problems? Harvard Business Review 2017.
Assessment		Case study 1 Learning portfolio including: ▪ Structured team-based short report demonstrating application of a problem framing / reframing approach; ▪ Team-based proposal for a creative solution to a relevant carbon reduction issue; ▪ Individual reflective commentary (link to Learning Outcomes)		

☑ Prepare evaluation or develop a feedback process.

Evaluation

Formative evaluation: examine student engagement with online material via student access logs and online forums. If online engagement is low, check accessibility issues, content challenges; ways to improve format or presentation.

Developmental evaluation: Weekly check ins; informal evaluation / feedback at the end of each case study, evaluations/grading from early assignments.

KNOW: What concepts are students finding most challenging?

DO: how are teams functioning? Can students effectively apply the concepts and bridge theory and practice? Can students reflect deeply, and is this skill growing across assignments?

BE: How are students seeing themselves in relation to the complex problems they are engaging with? Are students growing comfort with complexity and uncertainty, emergence and ambiguity?

Summative evaluation: Anonymous online space for student feedback at the end of the course: "If I ran this course I would…"; formal course survey results.

Evaluation

Follow-on Steps

☑ Debrief the whole course.

Book this in early! What worked? What didn't? How did we track with regard to 'know, do, be' proficiencies and learning outcomes?