

THE LEIDEN UNIVERSITY GUIDE TO *TRANSDISCIPLINARY EDUCATION*

Welcome! This guide aims to help teachers and course coordinators to (re)design a transdisciplinary course. With the increasing popularity and [institutionalisation](#) of transdisciplinary education (and research¹), the Leiden University Honours Academy and the Leiden Learning and Innovation Centre (LLInC) have created this practical resource to help you start with this contemporary type of education. It provides tips, templates and examples of teaching materials, based on best practices from Leiden University and beyond. All the tools suggested or included within this guide are free to adapt and use for your own teaching. Because this short guide cannot do justice to all variations and intricacies of this exciting type of education, we also include links to some of the pioneers within Leiden University. We encourage you to reach out to learn more in personal conversations, and that we can start building a network around this topic.

We are all learning, so this guide is meant to be an evolving document. Please contact us with any remarks or suggestions to keep this guide updated and relevant.

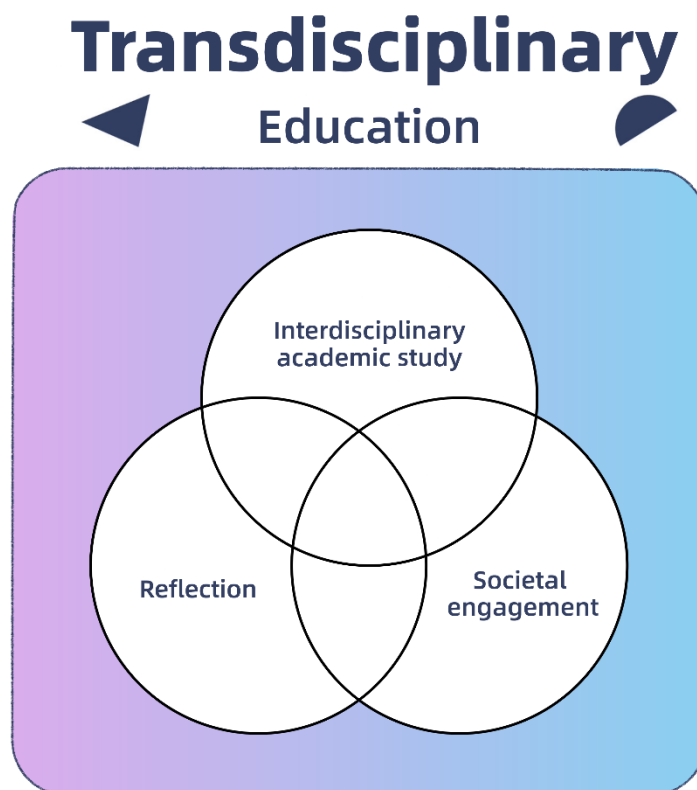


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Transdisciplinary education: what is it?

Transdisciplinary education refers to learning experiences which involve equitable co-creation with societal partners, and which are focused on tackling local, context-specific problems. In a transdisciplinary course, students work (in groups) on a project that is designed together with a societal partner, such as a municipality, NGO, or private company. Both in gathering knowledge and designing solutions or advice, insights from the stakeholder, relevant organisations, citizens, interviewees etc. are just as important as academic knowledge. A transdisciplinary course has three core elements:

- 1) an interdisciplinary academic component, in which a complex/layered problem is analysed from multiple perspectives;
- 2) a societal-engagement component, in which students work on a real-life challenge from, and typically co-created with, a societal stakeholder;
- 3) a reflection component that enables students to integrate their learning across different disciplinary and real-world contexts as well as consider their own roles and perspectives in addressing societal challenges.

Transdisciplinarity thus transcends multi- or interdisciplinary teaching.² While discussing definitions of these approaches goes beyond our scope, please be mindful that this type of education carries different labels in other contexts, such as Community Engaged Learning (CEL) or Society Based Education.³

Transdisciplinary education requires a shift in mindset for teachers as well as students, such as being able to connect and communicate with external partners and having the ability to deal with uncertainty and short-notice adjustments to course organisation. Ultimately, however, students find it a highly empowering and practical learning experience to work on and make a positive contribution towards addressing real societal issues, while deepening their own knowledge and skills.

There are many ways in which you could design a transdisciplinary course, depending on the course duration and preparation time available, the selected topic, learning goals and (potential) external partners, and the disciplines, methodologies or approaches to be incorporated. In general, you must first identify and decide on the format which works best for your specific context, but here are some examples of previous transdisciplinary courses to help inspire you.

News items:

- > [Students trace plastic pellet pollution in the Port of Rotterdam](#)
- > [Cycling away from inequality](#)
- > [Future Foresight: how to anticipate future challenges](#)
- > [Sustainability firms on partnership LLP: 'An opportunity for reflection'](#)

Prospectus pages:

- > [Landscape Heritage: Spatial Planning and Sustainable Development](#)
- > Minor '[Co-creating a Healthy Society](#)' (in Dutch)
- > [Leiden Municipality Challenge: Citizen Science and The Most Sustainable Kilometre](#)

Brochure:

- > [Overview of the community engagement courses at the VU \(local link\)](#)⁴ per faculty, including questions and brief description of end products

Before: aligning skills, stakeholders & challenges

Topic and disciplines, team and learning goals

The first step is to define the main topic or theme of your course and then brainstorm about how additional perspectives might enrich the course. For instance, what would a legal, technological, psychological, ethical, political, biological or medical perspective add? It's useful and inspiring to co-teach a course with a colleague from a different faculty (or different university, such as from the Leiden-Delft-Erasmus cooperation), with one teacher taking on the role of coordinator. To find colleagues, either as co-teachers or guest lecturers, use your own network, Leiden's [five interdisciplinary profile themes page](#), or get an easy overview with the AI prompt in this endnote.⁵ Also consider non-academic guest lecturers, as they are often highly appreciated because of their insight in how academic concepts work in practice. It also shows that you value non-academic knowledge. Employees from your partner organisations are excellent candidates for this. If you invite guest-lecturers, make sure their talk is aligned with the course structure and knowledge students have acquired.

A transdisciplinary course requires different and additional learning goals. Besides the academic part, you will also need to formulate goals relating to the societal and reflection part. A good starting point is the university's [13 transferable skills framework](#). The Honours Academy developed six of those further in its [vision document](#), with additional learning objectives for Societal Awareness, Reflecting, Resilience, Collaborating, Project-based working and Generating Solutions. You can easily pick and adapt the goals that suit your course, just make sure you don't try to tackle too many at once, since these types of learning goals require sufficient time.

A nice addition is to ask students to create a 'Personal Development Plan in which they indicate what they want to learn, how they are going to do this and why this is important to them. In addition, students could define the criteria for how to measure success and for achieving these personal objectives and let them repeatedly reflect on their progress towards their goals (with peers, a tutor or the teacher).'⁶ It's also worthwhile to consider co-creating the rubric with students, as it increases engagement and establishes the practice of cooperation between teacher and student, which is conducive to fruitful learning in transdisciplinary courses. Erasmus University Rotterdam provides a [good framework](#) ([local link](#)) to do this in class.

Challenges and inviting stakeholders

Challenges from the core of a transdisciplinary course (as we approach it). These are real-life projects or problems supplied by a societal partner (stakeholder, or 'commissioner') that students work on in groups during the course. Hence the course should be structured so that

- 1) students have enough time to work on the challenge;
- 2) the knowledge they acquire during the course is relevant for the challenge;
- 3) students are equipped to engage in the challenge in terms of skills, ethics and attitude.

In practice, the course design is an iterative process in which learning goals might be revised based on contacts with stakeholders and their challenges.

Stakeholders can be societal partners in the broadest sense: NGOs, municipalities, corporations, foundations, networks, hospitals, ministries, etc. One stakeholder might provide multiple challenges. For instance, one group might work on 'how might we make our website better accessible to visually impaired people?' and another might work on 'how might we increase brand recognition of our NGO with students?'. You do not need to arrange contacts yourself: there are several groups and professionals who's goal it is to help you connect to external stakeholders, so be sure to make use of them: [Leren met de Stad](#) (in Dutch, for Leiden, via [Marieke van Haaren](#)) and the [The Hague Southwest Thesis Hub](#) (via [Mandy Koenraads](#)), [LDE Centres](#) or [Medical Delta](#). Both Leren met de Stad and the Hague Thesis Hub Southwest have large networks with societal partners who are already used to working with education. You might also contact knowledge brokers and other experts at the university, currently [Lara Ummels](#) (university-wide and [Leiden Kennisstad](#), just use l.ummels@leidenkennisstad.nl rather than her leidenuniv-address), [Marlieke Ernst](#) (Humanities), [Susanne Roodhuijzen](#) (Social Sciences), [Mijanou Blaauw](#) (Law), [Richard Jansen](#) (Archaeology) and [Kim Duistermaat](#) (Campus The Hague). For Citizen Science, contact [Margaret Gold](#) from the Citizen Science Lab, who might connect you to active citizen science projects. [Esther van der Ent](#) (LDE Centre for Sustainability/CML) can help with Sustainability Challenges, and uses the approach of sending out request for challenges to societal partners, see these examples (to serve as inspiration for your own use) for the [Minor Sustainable Development](#) and the [LDE Honours Programme Sustainability](#). Partners can then send in proposals through [this form](#), with includes examples of previous editions. They also discovered that sending these requests out in Dutch helps to lower the barrier for partners to send in a proposal and that alumni of the programmes are great ambassadors and potential stakeholders. They are often still in junior positions, so it's best to ask them to include a more senior person as well.

Another way to get into contact with these stakeholders is to use your own network or ask colleagues for suggestions. It might be a great way to connect your research, teaching and outreach activities. Regardless of how you approach stakeholders, be sure to allow enough time for process, as you need some time to hammer out the details, so start arranging this at the beginning of the semester before the course begins.

Especially if you are working with underfunded civil organisations, it's important to consider the ethics of the partnership and make sure you are not exploiting their time. Utrecht University puts it well: *"Two principles are fundamental to ensuring the effectiveness of transdisciplinary education initiatives. **Equivalence** ensures that the project is a true partnership, based on cooperation rather than pure consultation. **Reciprocity** means that both the project partners and students benefit from the project."*⁷ Read more about ethical aspects of designing partnerships in this interactive guide from EUR/TU Delft ([here/local link](#)) as well as below.

Stakeholder expectation management

In your initial contact with a stakeholder it's useful to sketch the context of the course, such as what the course is about (including language, level, and number of students), type of challenge you are seeking, timeline (start/end date, contact moments, time investment), what results or deliverables they will get out of their participation, some examples of (other/previous) challenges to give a mental picture, and any potential disclaimers.⁸ More on all of this below, but [this LDE Thesis Labs' Letter of Commitment](#) provides a nice example of what to include.

Once you have an interested stakeholder, it is important to establish agreements. Firstly, it is important to communicate the requirements on their side. These are often fourfold:

1. Be *present*, both at the start to explain their challenge and answer questions from students and at the end during the Final Presentations when students deliver the outcomes of their project
2. Provide *access* to or via their organisation. Students will need to talk to people to gather insights, whether these are employees of the organisation or stakeholders in society. The challenge owner needs to facilitate this, which means actively making connections and introducing students, and sometimes providing access to their location.
3. Hold *progress meetings* with students: short (30 min-1 hour, possibly online) progress meetings. Because challenges are typically open-ended, students might struggle with what to do exactly, who to talk to or determine the right type of end product. In a real-life problem, stakeholders often also don't know exactly which steps will lead to 'success', so it's important to keep talking to each other. Depending on the duration of the course, *every two or three weeks* is a good rhythm. This greatly increase the chances of success and prevents delays by tackling issues quickly.
4. Provide *feedback*. To make sure the deliverable is of practical use, it is important the stakeholder provides timely feedback, and not just at the end. Two rounds of feedback before the final submission is advisable. You might also ask the stakeholder to play a role in assessment. (see below).

It's highly advisable to have more than 1 contact person/challenge owner within an organisation, so that students have an alternative contact in case one person doesn't reply or changes teams. You can also have one more senior person who acts as 'challenge owner' and is present at start and finish, and one more junior person who holds the progress meetings and provides access to their network. At this stage, it's also useful to discuss how and how often you will remain in contact.

Our offer to partners is typically twofold: new perspectives from an interdisciplinary team of motivated students who can look at a problem from a fresh perspective + opportunities to get into contact with possible new employees. Our experience is that *groups of around five students* work well: smaller groups mean you need more challenges (and run into trouble if someone drops out) while larger groups introduce risks of freeriding.⁹ Thus, if you want students to work on the challenge for 50% of your 5 EC course in teams of 5, that's 5 x 70 hours = 350 hours of work for the partner organisation. (Or 700 hours for a 10 EC course.) This is one of the reasons why it's important to allow enough time for students to work on the challenge, as this cannot be done in two weeks, so it's advisable to spread your course out over a longer period if possible. Make sure the partner organisation understands the students are *not* doing an internship but are exploring a challenge.

Caveat: This is still education, not consultancy.¹⁰ That means that students should be *allowed to fail* and the organisation should not count on the final product for its core operations. It's important to communicate this clearly to partners. They can count on the best effort of students, but if they want guaranteed results, they should hire a consultant. However, we can offer a great opportunity to explore *a question they would really like to pursue, but don't have the time for*.

Usually, we don't ask partners for a financial contribution.¹¹ However, if you are working with larger or well-funded organisations, like government bodies or corporates, you can discuss contributions of 1000 up to 2000 euros (often possible within their Social Return budget).¹² This money could then be used for project costs (not for salaries), such as hosting a pizza party at the local community centre to reward participating citizens for their time, compensate guest speakers from the community, or to create budget for high-quality communication materials for partners (posters, flyers, hiring audiovisual equipment).

Transdisciplinary education thus sits between consultancy (university bringing knowledge) and consultation (university gathering data). In your choice of partners and framing of the challenge, thus make sure it's a win-win situation for both parties.

You might also consider shifting some of the teaching to take place on-site, i.e. the community centre or offices of the partner and invite their employees, if relevant. It might be a way to offer value to the partner yourself as well but make sure you are not adding a burden by asking them to facilitate such meetings.

Scoping the challenge & deliverables

After initial discussions with a partner about the topic, expectations and organisation, you will enter the next phase: formulating the challenge the students will be working on. Both questions that are too broad ('what would our organisation look like if you could start all over again?' 'How can we do more with AI?') and those that are too narrow ('can we make better use of the features in MS Teams?') are demotivating for students. A good question should therefore be defined enough to give focus and direction without being restrictive, while being sufficiently open-ended to allow unexpected ideas to surface. For instance: 'How can we foster a sense of belonging in our organisation?' could work but might be too broad. Conversely, 'Which non-Christian holidays should we include in our Outlook calendar?' is too narrow. 'How could we have more inclusive festivities or team outings?' could work better. A helpful way to focus a question is to make it location specific ('...in streets X and Y', or '...at The Hague Central Station' instead of 'in The Hague'). This has the added benefit of having a clear location for students to do their fieldwork. A question should also be formulated in a way that it provides real value for end-users.

Organisations might come up with questions that are too broad, because they don't have a proper sense of the problem or solution yet (f.i. 'How can we work more data-driven?'). As teacher, in your talks with the stakeholder, try to dig deeper into the underlying issue to uncover 'the question behind the question. 'Problem definition', or 'need finding', is an important step in the transdisciplinary process, and if you don't do this now, it will fall onto the students later to figure out what the actual, underlying issue is.

It's often better to err on the side of having a too narrow/specific challenge, because it gives students a clear starting point. During their talks with clients/citizens/employees, students might discover that the real issue is bigger, and then branch out. A question that's too broad leaves students clueless and stakeholders with too much space to change their mind constantly on what they really want.

Importantly, all parties (students, partners *and* teachers) should accept that the *question will likely change along the way*, based on gathered insights. For instance: "How might we stimulate mentoring within our organisation?" could work well as a starting point for an organisation looking to become more inclusive. Yet if there is structural discrimination or a lack of social safety, the solution should be sought elsewhere. It might also be possible that employees see the value of mentoring, but would prefer group support networks over individual guidance, in which the solution should be tailored in that direction. Flexibility is key, and by being open to change and emergence, the course can provide the most value for everyone involved.

In addition to the starting question, it's also useful to discuss the deliverables. Because they don't know any better, students will likely come up with something that contains jargon, but societal partners are typically not interested in a deeply scientific discussion of their topic, and more in a tangible product with practical use value. This might be things like flyers, videos, a workshop design, or (often, at least) an advisory report. While the desired product can certainly change depending on how the challenge goes, it gives some structure for students if they know what's expected. Be sure to make room for workshops in the course to help students learn how to make a podcast/poster/video/infographic, if that's what you agreed upon with the stakeholder.

[Leren met de Stad](#) (in Dutch, for Leiden, via [Marieke van Haaren](#)) and the [The Hague Southwest Thesis Hub](#) (via [Mandy Koenraads](#)) can assist in defining the question and deliverables, by facilitating a discussion with the stakeholder. Since they know both the academic and non-academic side, they can make sure the partnership starts on a solid foundation.

Sensitive information, intellectual property and non-disclosure agreements

Students might be working with sensitive personal or organisational information, so it's important they are instructed to treat this carefully and confidentially. Remind students that for outsiders they are seen as *representatives* of the university and should thus uphold high standards. To instil this belief, you might adapt this informal Non-Disclosure Statement as used in the Leiden Leadership Programme ([English](#) / [Dutch](#)) and ask students to sign it. Some organisations will have their own, which is also useful if students are expected to develop a real product like an app, where issues of intellectual property might arise. Transdisciplinary education benefits from openly sharing knowledge so don't overly complicate this if not necessary.

This is what Luris has to say about Intellectual Property and Non-Disclosure Agreements: "The intellectual property of the results of the student's work belongs to the student. However, external organizations that collaborate with students usually require them to sign their own confidentiality statement or non-disclosure agreement (NDA), primarily to protect their own knowledge and information. These agreements often also include a transfer of rights to the results of the student's work to the external organization. The supervising lecturer can have such confidentiality statements or NDAs reviewed by [Luris](#). If the external organization does not have its own confidentiality statement or NDA but still wishes to have one signed, [this model agreement](#) can be used [*choose 'Download', 'Enable Editing' and fill in the details, red.*]. This covers the minimum necessary requirements but does **not** include a transfer of rights to the results. Therefore, the external organization must explicitly request this."

Structuring the sessions: time and method

Depending on the course goals and duration, the time spent on a challenge might vary. The challenge might be a way of putting interdisciplinary theory into practice or be the main component around which the course is designed. In any case, it is advisable to spend at least half of the time on challenge-related work, such as interviewing people, reflecting on progress, making prototypes of products and gathering feedback on those. Furthermore, the sooner you start with the challenge, the better. You might divide the challenges in week 2, so students can start working on the challenge in week 3, while combining theoretical and challenge-related classes in the subsequent weeks. That way, students are up and running quickly, which is important as arranging meetings with stakeholders, (re)defining the problem and testing solutions take a lot of time. See the infographic below for a suggestion of a course outline, while keeping in mind many different variations are possible.

You will also need to determine which method students will use to engage with the challenge. There are many options, but three popular ones at Leiden University are Design Thinking, Participatory Action Research and Citizen Science. One is not better than the other. It depends on the type of question and your familiarity and preference which one is the best fit.

Project Method A: Design Thinking (DT)

Presented as 'human-centred' design, Design Thinking is typically presented as five-phase or [Double Diamond](#) process of diverging and converging. You gather insights first, *before* you try to define or frame the problem, i.e. you are starting with a complete beginner's mindset. You then brainstorm ideas to build prototypes to gather feedback from users/clients/citizens and iterate to build your way further.

Design Thinking is a new methodology for most students, and while many students are enthusiastic about the creative aspect, they must also learn to navigate the uncertainty and need for adaptability that comes with the open-ended nature of the process. Not knowing the end results until quite late in the process enables students to remain open to and engage with various insights, ideas and formats, but also requires suitable guidance and coaching as they navigate it. One way of familiarising students with this methodology is by practising it in the classroom step-by-step and by using sample cases. This helps students to learn and experiment with the process in a hands-on manner before they apply it to their own group projects. They also benefit from training in the methods and tools of Design Thinking, such as conducting interviews to gain insights about the project's target audience, to make sure that relevant and actionable information is gathered in an appropriate manner and then used effectively.

Further reading:

> [Short, interactive overview](#) from Erasmus University Rotterdam ([local link](#))

- > Great overview of the [various interpretations](#) of DT, and a list of tools for the five phases: [Empathise](#), [Define](#), [Ideate](#), [Prototype](#), [Test](#) and clear articles on additional tools (see [here](#))
- > [Design Method Toolkit by the Digital Society School](#) a collection of design and research methods to help you plan and execute a design research, ideation, experimentation and creation within short iterations.
- > Excellent handbook (in Dutch): Guido Stomppff, [Design Thinking. Radicaal veranderen in kleine stappen](#) (Boom, 2018).
- > In general, it's advisable to contact [LLInC](#) as they have plenty of experience with Design Thinking

Project Method B: Participatory Action Research (PAR)

[Participatory Action Research](#) (PAR) is an approach that works towards social change together with people participating in the research. While there is some overlap with Design Thinking in that PAR also involves creatively working towards concrete and tangible outcomes, the overall goal of PAR is more towards collective learning and sustainable solutions. In this process, participants are active partners in the research, they together with the researchers define problems, conduct research, and implement change. If you want to know more, contact: [Coen Wirtz](#) (FSW) or the [Leyden Academy on Vitality and Ageing](#), for example [Miriam Verhage](#).

Project Method C: Citizen science

While different definitions exist, citizen science is about doing research in cooperation with the general public. There are highly accessible e-learnings from introductory to advanced [here](#). This LERU position paper ([link/ local link](#)) also gives a good overview of the most important principles. However, the easiest way to get acquainted with this method is to reach out to [Margaret Gold](#) of the [Citizen Science Lab](#).

Further reading:

- Roche et al., Citizen Science, Education, and Learning: Challenges and Opportunities, *Front. Sociol.*, 2020, <https://doi.org/10.3389/fsoc.2020.613814>

During: structure, guidance & reflection

The first session

During the first class meeting it's useful to spend a considerable amount of time on creating connection, considering that students will spend a lot of time on group work and need to feel comfortable enough to share their feelings and failures regarding the project. If you are comfortable with demonstrating vulnerability yourself, a powerful option is the Happy/Sad Memory (credit: Aminata Cairo): ask students to pair up with someone they don't know yet and ask them to share a happy memory (2-5 mins), after you have shared yours. Then you share a difficult memory and ask the same pair to do the same. Subsequently, you ask them to reflect what that was like, which one was harder, and what it yielded.

In the first weeks: Dividing challenges & initial contact with partners

You can either divide students yourself over the different challenges or let the students indicate their preferences. In case of the latter, it works well to have the partners present their challenges during a 'Challenge Fair'. Depending on the number of partners, you might give each partner 15 minutes to present and 5 minutes for questions from students. This can be done online but it's way nicer to invite the partners on campus. If possible, allow some time for informal questions, networking and relationship building during breaks or afterwards.

After the Challenge Fair, ask students to rank their preferences for the challenges in an online form (at least their top 3 and perhaps a least-favourite option to avoid), so you can divide the groups. Expectation management is key here, so that students are mindful that while they may not get their first choice of projects, there will be a conscious effort to match them with something that holds their interest. Some people might not get their first choice but once they get going it's usually fine. After the challenges are divided, students need to arrange a meeting with the partner as quickly as possible, to discuss further details, lay contacts and get going. As much as possible, encourage them to do this on-site rather than online as this will be beneficial for everyone involved.

While some students may have previous experience with group projects, most will be new to working on such an open-ended project and with external partners. It is thus crucial to provide students with guidelines and tips on professional communication and project management. This can be as basic as how you address someone in an email, but also includes: scheduling regular, recurring meetings with the stakeholder as well as deadlines; being proactive rather than reactive in communicating, especially about obstacles; agreeing on channels of communication (email, Whatsapp, Slack, Teams, etc.); and assigning one person (and one back-up) for communicating with the stakeholder.

It's wise to check-in with the partner organisations in these first weeks, to verify students are indeed contacting the partners, and to resolve any potential difficulties. You can also advise students to copy you in all correspondence with the stakeholders, to enable you to monitor the communication and step in if needed. In general, it's good advice to check in regularly with partners to see how things are going, because students might not tell you if there is an issue. If possible, it's worthwhile to check-in on site mid-way through the course. This gives you a better idea of the environment and strengthens the relationship with the partner.

Ethics, power and privilege

Ethical aspects are not only important before the course, in selecting organisations and designing the partnership, but also during the course. Depending on the challenge, students might be engaging with disadvantaged communities, so should be behaving in a sensitive way and make sure they are not just 'taking' or 'gathering data' from people. Some disadvantaged neighbourhoods experience 'research fatigue' as a result of too many researchers surveying them, so people might not be interested to answer more questions about safety or poverty. This is why it is important to reaffirm the importance of equivalence and reciprocity. What can students offer in exchange for asking for the community's time/effort? Remind students that "to enter another's world as a researcher is a privilege, not a right"¹³

Many students are unaware of their own privilege and may find it difficult to empathize with people with different backgrounds. Without preparation, students might come up with solutions that are ill-matched or even insulting to a target audience (i.e. proposing campaigns about healthy eating for household experiencing financial stress). Michigan State University offers class activities to help students reflect on their privilege: the [Paper Toss Game](#) (or Appendix N [here](#), about unequal positions), the [Social Identify Wheel](#) (or Appendix O [here](#), reflecting on different parts of one's identity) or the well-known Privilege Walk (4 min [video](#) and [instructions with questions](#)). In any case, it's worthwhile to spend a class session on ethical dimensions. You might also ask students to fill out the ethical checklist developed by [Coen Wirtz](#) ([local link](#)). You could also contact [Mandy Koenraads](#) to share her expertise as coordinator for the [The Hague Southwest Thesis Hub](#).

Reflection: Types and templates

Reflection is an essential component in a transdisciplinary course that ties the application of academic knowledge together with the societal engagement and personal aspects. Three types of reflection are useful to include: *Cognitive* reflection (about students' new knowledge and skills), *affective* reflection (how students feel about their experience and how this changed their opinions or sensitivities), and *process* reflection (about what they learned from this type of education, including cooperation, set-backs).¹⁴ Reflection should take place at the *start* (regarding expectations, positionality), *during* (on experiences) and at the *end* (on their growth and changes in attitudes) of the course.

A nice format to structure reflection is by using the DEAL model (Describe, Examine, Articulate Learning), see [here](#) ([local link](#)) for a list of prompts covering all three types of reflection. The [What? So What? Now What?-structure](#) is also useful framework, and you can find an example of its operationalisation at the [EUR](#) ([local link](#)), including an example of student work.

Reflection can be done in various ways, such as by keeping a personal log/journal (as part of the assessment), by writing a reflection assignment or portfolio, or through class discussions. Preferably through a combination of both, so be sure to reserve class time for this (15-20 minutes on a few occasions already goes a long way). See [here](#) for a more activities you can do inside and outside of class.

Data collection and necessary training

Your students will need to gather data, often qualitative in nature, and they probably have no prior experience with the method (Design Thinking/PAR/Citizen Science) and the associated instruments, such as focus groups, semi-structured interviews, empathy maps, how-might-we-statements or brainstorming. It's therefore recommended to organise sufficient training activities, and it's preferable to select 1 method rather than multiple, so you can go into more depth. You may pick the method that is most relevant to the course's topic and the orientation of the students' projects. The more students can practice in class, with each other, the better they will do in the project, so reserve enough time for practice. You might train the skills when they become relevant, i.e. divide the five phases of Design Thinking over five weeks. This also allows students to put their skills into practice immediately (see syllabus of the course Tackling Inequalities below for an example).

You can practice in class with topics relating to students' own experiences. Regarding Design Thinking, there is an often-used one-hour workshop format from Stanford's design school to ask students to engage with each other to redesign the wallet, or the gift-giving experience (see [here](#) for materials and [here](#) for a 30 min video on how it's done). You can of course change the topic to redesign the cafeteria/the library/'the lunch experience'/a night out/'the exam preparation experience'/etc.

Knowledge integration

Integration is important at two, overlapping, levels. Firstly, students must be able to move beyond separate disciplinary perspectives and create a new, interdisciplinary perspective on the topic. Secondly, and in order to do so, students must be able to work as an (interdisciplinary) team. To develop an interdisciplinary perspective, students must agree on things like concepts and the problem definition to create common ground. In connection with the core topic/theme of the course, the key relevant disciplinary perspectives should be introduced in class, along with recommended resources. It is also useful to have an overview of the academic backgrounds of your students. Utrecht University has a short, helpful video explaining how to work on [knowledge integration](#), and the VU has another one on the four different [types of team work behaviour](#) you might observe (naïve, assertive, accommodating and integrative). The VU also has a well-tested '[Frame reflection workshop](#)' to help students overcome disciplinary boundaries (see these local links for the [manual](#), the [materials](#) to print, the [reflection questions](#) and an [explanatory article](#)).

> Further reading: Repko, A. F., & Szostak, R. (2021). *Interdisciplinary research: process and theory*. Sage publications

Supervising project teams (team qualities, team contract and group dynamics)

For most students this type of education is unfamiliar, so it's wise to spend time on how they work as a team as well, at the *start* and *mid-way*. At the start, it's useful to take time to reflect on Team Qualities and establish a Team Contract. If you want to reflect on team qualities in class, you might use this poster-building activity from Wageningen University ([here/ local link](#)). If you want to ask students to reflect on their qualities and needs and preferences in teamwork *before* coming to class, the [Brightspace tool](#) developed by Marit Guda and colleagues at FSW is very useful (available from the second semester 2025-2026, requests via samenwerkingstool@fsw.leidenuniv.nl). Students also need to agree on things like medium of communication, meeting frequency and ways of conflict resolution, and drafting a Team Contract is thus highly advisable. Erasmus University Rotterdam has a clear class outline for this (see [here / local link](#)). ITP Metrics (associated with the University of Calgary) also has a useful slide deck ([local link](#)) and word template ([local link](#)).¹⁵ They advise 75-90 minutes to discuss and create a team contract in class.

As the project moves along, friction might start to occur within the group, and the sooner you are aware of this the better. It's therefore wise to meet with your students, in groups, on a regular basis - a check-in every 2-3 weeks works well. You can use this time to answer questions, discuss how the project is going, or how well the team is functioning. This can be a 15-30 min online meeting for which the students send in a progress report, reflection or assignment. You could also use the time during breaks in the classroom to check in informally with groups and show your own approachability, so that students don't hesitate to come to you for help or intervention. In general, try to be mindful of the developing dynamics in the classroom and groups and try to be proactive in your approach. In case disputes occur, remember to include students in the resolution process rather than try to fix their issues for them, since they also need to learn to take ownership over their group process.

You don't necessarily need to do this supervision yourself. You can also invite others as *coaches*. For example, on a Citizen Science project, you might ask [Margaret Gold](#). In general, supervising a group might also be an interesting way for PhD researchers to gain educational experience.

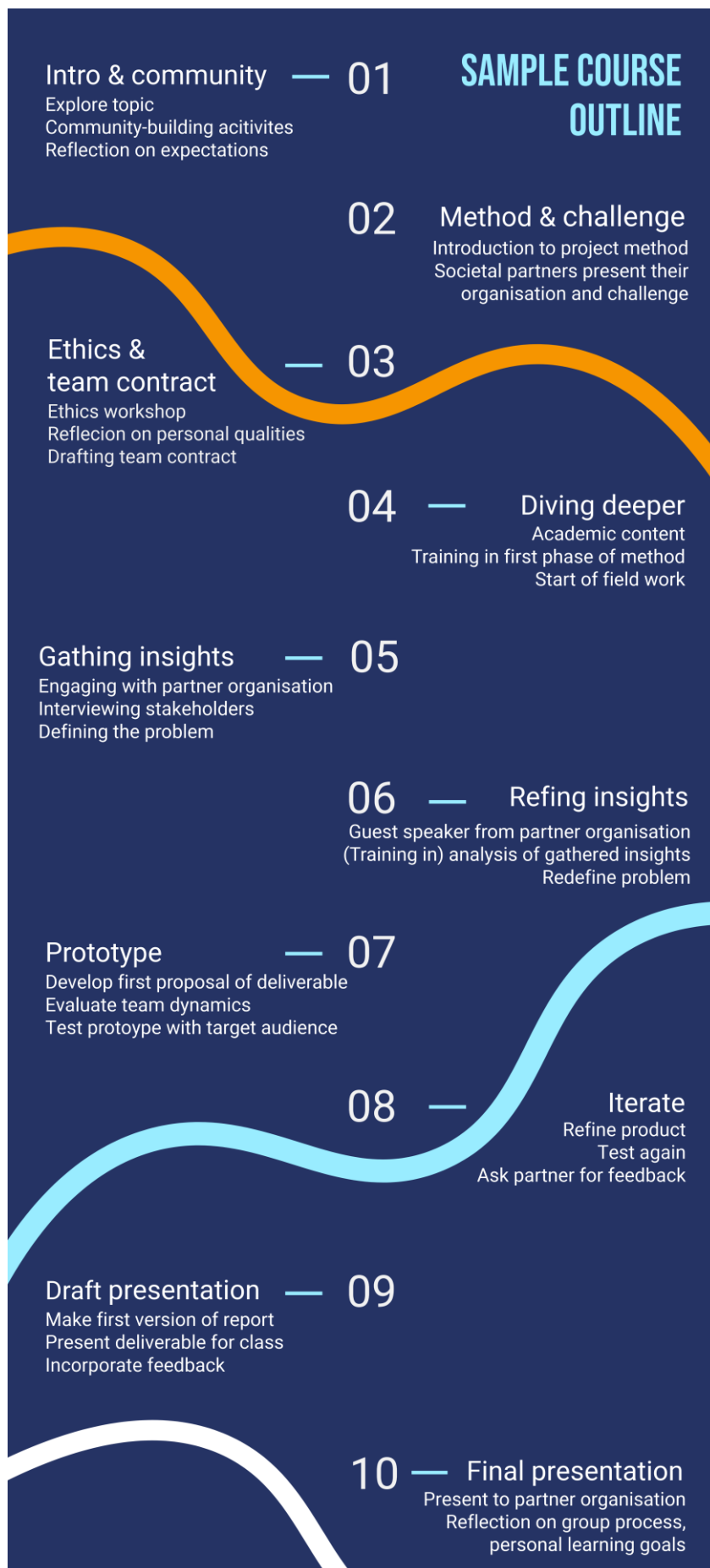
Students are typically unfamiliar with group dynamics or communication styles, so they benefit from more awareness and reflection on those. There are various online tools to support this process. You can direct them to the short [Team Role test from the LU Career Zone](#), which gives a score per role (like Expert, Innovator, Chairperson), thus giving more insight in how you tend to function within a group. To make it more specific to the current group project, the aforementioned ITP metrics has nice tools, such as Team PLAYER (see [sample report/local link](#)), in which students first rate themselves on things like reliability and leadership and then receive peer feedback to compare. Another one is about Conflict Management Styles ([sample report/local link](#)). These tools could be used as a basis for discussion and to update the team contract, for instance with new agreements and personal learning goals. In any case, a mid-term evaluation of team dynamics is highly advisable. The ITP Team Dynamics assessment (see [sample report/ local link](#)) can be a useful input, although it takes 20 minutes to complete the questionnaire. To create these assignments, go to itpmetrics.com and create a free account. A less time-consuming option for students is to use the mid-term feedback tool from Guda et al. in Brightspace (see above). You can ask students to reflect on this group process in their final reflection (see *Student debrief* below).

Final products & closing event

Transdisciplinary education is typically more about the learning process for students than the exact outcome, but of course the outcome still matters. To ensure students take the final product seriously, invite the stakeholders to the final presentations on the closing event and ask them to give feedback. Preferably, they have given feedback on one or more intermediate versions as well, because a first version is unlikely to be of high quality. You might also organise the presentations to take place on the partner location, focusing specifically on their needs.

Stakeholders require something to the point and without jargon, so prompt students to test their products with a lay audience outside of the class (i.e. friends, family) to get honest feedback if the product is understandable. You could also organise a workshop on the basics of science communication with students, as a relevant skill for their presentations and beyond.

It's advisable to organise a presentation practice round before students present before the real stakeholders. This could be a week or two before the closing event, so students still have time to incorporate any feedback or lessons learned. If you didn't organise such presentation practice (f.i. because you only gave written feedback on the product), it's wise to do this on the day of the Closing Event: ask students to present to each other in the morning, so they are ready to present to stakeholders in the afternoon. If possible, you can also discuss with communication services to make a news item of the final presentations, to give publicity to this type of education. [Leren met de Stad](#) (in Dutch, for Leiden, via [Marieke van Haaren](#)) and the [The Hague Southwest Thesis Hub](#) (via [Mandy Koenraads](#)) have experience organising such events and can provide guidance on how to organise this.



After: assessment and debriefing

Since a transdisciplinary course is typically more about the learning *process* than the specific outcomes or *products*, the assessment should reflect that as well.

Intermediate products can be graded well, both in a formative and summative way. For instance, if you are using Design Thinking, you might evaluate an Empathy Map or an Ideation Report (see Course Manual Tackling Inequalities by Aayushi Shah and Niloufar Daneshkhah, below). The feedback on those products is most important, of course. When designing the schedule for assignments and deadlines, be mindful of the feasibility for students and ensure that there is sufficient time between deadlines for students to be able to use the feedback from a previous assignment to improve their work for the next one. Some form of mid-term assessment is recommended, to make sure students stay on track. This could be things like problem statement, insights from interviews, or a first prototype of a solution. Try to keep the assignment size realistic for your grading load, for instance, by adjusting the word limits, considering various assignment formats (story board instead of written essay), and using group assignments. If this sounds like too much grading to incorporate, you might consider assessing their progress through class presentations. Of course, you can also organise peer feedback of written work or have student groups go through an Intervision process themselves (see [this format](#) / [local link](#)) from Utrecht University). A final reflection report can be graded as well, with a qualification being dependent on the depth of reflection. [Here](#) is an example of a pass/fail rubric (including the reflection prompts) from Coen Wirtz from his Participatory Action Research course. [Here](#) ([local link](#)) is four-level one from Erasmus University Rotterdam.

Regarding the final product, you might grade the presentation (a small percentage) but might feel uncomfortable grading the quality of, for instance, an infographic or video. You can ask the stakeholder to provide a grade, but be cautious as that might introduce bias, since there is no uniform yardstick across groups and some stakeholders might think a 7.5 is a good grade, whereas others might give a 9. You might still ask them to provide a grade, as a motivation for students, but weigh it yourself. Another option is to invite a colleague with sufficient experience with this type of education as external evaluator. This increases exposure for the interesting course you have created, while providing an objective outsider perspective for students.

In general, it's advisable to use *qualitative* grading. Think about using pass/fail (for example for reflection essays) or insufficient/sufficient/good/excellent. Trying to attach a decimal grade to this kind of work is tricky and might trigger discussion and competition between groups, while putting too much emphasis on the grade rather than the learning experience.

A well-tested and validated rubric from the WUR's Boundary Crossing framework can be found [here \(local link\)](#) - on pages 12 and 13 -, which is easily adaptable to your own courses. It's recommended to share the rubric with the students before the submission deadline. If you spend time with students co-creating learning goals, don't forget to adjust your rubric accordingly and incorporate enough flexibility. It's advisable to have a balance between the weight of individual and group work. For example, an individual reflection portfolio besides a group report (with an interdisciplinary problem analysis, intermediate products and progress reflection), and a group-based assessment of the final product. You can be creative in the format, i.e. let students reflect on their process through a video, podcast, blog. Oral examinations are also an option, although time-intensive.

If students document their process and receive frequent feedback, there is less need for a heavy assessment at the end to determine whether they have met the learning goals. A nice and practical way of giving feedback and assessing learning goals at the same time is using a 'Single point rubric', like the example below from Twente University.¹⁶ You can tick off whether a student met the described 'planning' goal, while simultaneously give compliments and points to improve. A more detailed example from the same authors can be found [here \(local link\)](#) and for further reading see [here \(local link\)](#).

	What can be improved	Standard level	What exceeds standard level
Planning their work		The students made a clear planning with an overview of activities, milestones and task division. Planning was adapted when necessary.	

Student debrief

Your students will likely have engaged in transformative learning and it's important to prompt them to reflect on this process to stimulate this further. It's common to ask for a final reflection (which might be included in a broader final portfolio). Wageningen University has a list of excellent questions ([here/local link](#)) you can pose, based on their [Boundary Crossing framework](#).

Debrief with partners

Once the course is over, check-in with your partner organisations to hear about their experience. This helps to maintain the relationship as well as improve the next iteration of your course. It's also a good moment to check whether they would like to participate in the next edition, or brainstorm about possibilities for another course based on their current concerns, and gather further contacts if needed.

Pitfalls, tips & sample syllabi

Pitfalls & tips

Communication is one of the biggest pitfalls. For stakeholders a student project is often not on top of their list, so in busy times they might become unresponsive. Some students then send a few reminders and give up afterwards, rather than calling or talking to the lecturer. That's why it's important to remain in contact with your stakeholders and regularly check-in with your students how it's going. And tell them to call. And make sure students have set meetings with their stakeholders in advance, rather than try to email back and forth five times about a date, every few weeks. In general, the more students are *on location* (whether that is the neighbourhood or a company's office), the better. For instance, you might arrange with a stakeholder that students have a workplace in their offices every Friday, which allows for much easier contact.

Another, related, form of communication breakdown might ensue if a stakeholder changes department or jobs. That's why it's advisable to have two contact persons. If that's not possible and someone else in the team has to take over, it's best to organise a hand-over meeting (on site!) with the new colleague, to make sure the new person knows where the project stands and feels responsible.

Communication issues might also arise within the student team, for instance because of personal disagreements. Again, it's wise to regularly check-in, but also to offer possible one-on-one meetings with you as lecturer, where students can discuss issues in the team. They might not bring this up in a team meeting, so they should feel that you are approachable and that it's important to reach out with any issues.

Another pitfall is to think too lightly about engaging in this type of education. For students this is a new experience. It's important to make them aware they will be seen representatives of the university and thus have a responsibility to act professionally. This means being present, meeting deadlines and communicating clearly. Furthermore, students also need to learn to deal with *uncertainty*, new methodologies and the lack of a clearly defined roadmap or answer. This is challenging, also because they have probably never learned to do this. Hence, the reflection part is important to allow students to make sense of the process. Furthermore, a clear structure from the start, sufficient training and regular check-ins are helpful. Manage expectations clearly (with regard to procedures, timelines, communication, success indicators, etc.) and prepare students for the open nature of the process so they don't feel discouraged before the final product starts taking shape.

Rigidity is another pitfall. This could be on the part of anyone involved. The stakeholder might desire a certain solution while the research showed the problem requires something different. It's therefore important to discuss beforehand that students need to have the freedom to explore and propose their own options, as this is a vital part of their learning process within the course and counts towards their learning outcomes. Another way of dealing with this (inspired by Design Thinking) is to present multiple solution options to the stakeholder: one in their desired direction, a sacrificial one, and the one favoured by the students. This at least opens up the space for discussion. Flexibility is also important for students, in the sense that they should not get too attached to their first ideas and remain open-minded about alternative pathways, so it's important to emphasize that everything is a process of learning and that changing your mind based on new insights is a good thing. Finally, as teacher you need to be flexible, because assignments might change along the way. You may also need to adapt your teaching methods and techniques to better fit the specific group of students, so pay attention to class dynamics and needs. Bear in mind that you might have to make (minor) changes to your structure and expectations due to changing real-world circumstances, so remain flexible and try to have alternatives in mind to accommodate these changes.

Language can also arise as a barrier. While some organisations might say they are open to non-Dutch-speaking students, they might have vital documentation that is only available in Dutch. Or the relevant employees or stakeholders have trouble communicating in English or want the deliverables in Dutch. It's therefore advisable to think carefully about the language requirements of your course. If you are working with international student teams, it's often useful to have at least one Dutch speaking person within the team, although the team needs to find a way that make sure the workload remains evenly distributed (i.e. avoid that situation that the only Dutch team member is making all the final products). On a different level, language might be an issue in the sense that people mean different things with the same concept (like 'sustainability'). That's why it is important to pay specific attention to clarify concepts and establish a common language.

Finally, make sure the cooperation is truly valuable for your partners, rather than just for the students or university. This type of education will become more common in the coming years, and we need to make sure that we don't overburden partners or neighbourhoods. Hit-and-run cooperations are to be avoided. While this is tricky with education as students are typically gone after the course, you can design a recurring 'relay' course, in which future students continue where a previous group has stopped. Or, if possible, arrange for motivated students to continue their work as a thesis or internship. Ideally, we invest in long-term relationships with partners, in which research and education are combined and reinforce each other.

Examples of syllabi

- > Design Thinking-based: [Tackling Inequalities in the 21st century – 10 EC Honours Challenge](#) see e-prospectus page [here](#)
- > Participatory Action Research-based: [Making impact: bridging research and society for inclusive health and wellbeing](#), 5 EC Master Honours Class, see e-prospectus page [here](#)
- > ***Please email us if you want to include your syllabus here***

Colofon, contact & further reading

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With acknowledgements of guides from other universities:

- [Michigan State University](#) (Service Learning, see also this [local link pdf](#))
- [Utrecht University](#) (Community Engaged Learning, see also the [Transdisciplinary Field Guide](#))
- [EWUU](#), (Challenge-Based Learning)
- [Wageningen University & Research](#) (Boundary Crossing)
- [KU Leuven](#) (Service Learning)
- [Twente University](#) (Challenge-Based Learning)
- [Universiteit Gent](#) (Community Service Learning)
- [Erasmus University Rotterdam](#) (Impact-driven education)
- [Vrije Universiteit Amsterdam](#) (Community Service Learning)

If you want to read more and get involved:

- Honours education is an accessible way to experiment with transdisciplinary education. If you want to (re)design a course, please reach out to the Educational Director, [Eline Bergijk](#) at e.c.bergijk@ha.leidenuniv.nl to discuss the possibilities
- LLInC is facilitating a Special Interest Group as part of the Leiden Education Support network that will start in spring 2026. Professional staff, education researchers and teachers will work together on their shared interest of the topic and meet regularly to share best practices. If you want to know more about this SIG or other opportunities, you can now subscribe [here](#)
- There is an [LDE Community of Practice](#) where knowledge on transdisciplinary education is shared. They published a [Position Paper](#) making the case for embedding transdisciplinary education in LDE universities. Email [Marja Verstelle](#) if you want to join this Community of Practice
- Joost Broekens, Thijs Bosker, Esther Gramsbergen and Gijs Elshout created [this guide](#) (in Dutch) to help educational directors think about embedding transdisciplinary education in the curriculum
- The *Praktijkgids Transdisciplinair Werken* (in Dutch) by Het Groene Brein and Community Sociaal Circulair ([here](#) / [local link](#)) offers useful insights into the different roles in transdisciplinary cooperation beyond education
- [Wina Smeek](#) (Lector at InHolland University of Applied Sciences) has developed various tools, such as the [Co-Design Canvas](#) to help structure co-creation processes
- The Institute for Interdisciplinary Studies at the University of Amsterdam has several books about inter- and transdisciplinary education, such as [this one](#)
- Contact [Luris](#) if you want to know more about valorisation of research in transdisciplinary partnerships

Notes

¹ While education and research can obviously overlap, this guide is focused on the education of students, i.e. where students are doing the research, in courses or theses. Transdisciplinary research by staff deserves its own guide. [Luris](#) offers a lot of support in this regard.

² Multidisciplinarity is about having different disciplines work on the same topic, but separate. In an interdisciplinary approach you also integrate these different perspectives, to develop a shared language and understanding, rather than having them as separate components or chapters. In practice the difference is not always easy to make. Transdisciplinarity is about getting students to go out into the 'real world' to work on real challenges. It therefore goes beyond inviting guest speakers or discussing case studies.

³ Other labels related to transdisciplinary education are challenge-based learning ([TU/e](#), [UTwente](#)), impact-driven education ([EUR](#)), [Leren met de Stad](#), community engaged learning (CEL at [UUtrecht](#)) or (community) [service learning](#) (CSL at [UGhent](#), [ULeuven](#), [VU](#) and society-based education ([WUR](#)). Methodologies like Citizen Science ([Leiden](#)), Placemaking ([UvA](#), [Haage Hogeschool](#)), Living Labs ([Haagse Hogeschool](#)), Learning Communities ([TU Delft](#)), Design Thinking or Participatory Action Research also have overlap, and can form part of, transdisciplinary courses.

⁴ Throughout this guide we often use direct links to online sources, but also 'local links' to the same files in a Leiden University Teams environment, to make sure the files stay accessible if a web address changes.

⁵ Prompt: *I'm looking for colleagues at Leiden University to co-teach a transdisciplinary course on [course topic]. Your goal is to please provide suggestions, including links to their profile page. Be sure to take your time to be thorough and check yourself to make sure you provide a comprehensive and inclusive list, including PhD students and Post-docs.*

[Perplexity.ai](#) seems to be working quite well with this at the moment, but this might be different at the time of reading. Regardless of the tool, it's useful to try a few times (because that might yield different results) and to make sure to use 'deeper thinking'/'deep research' or a similar reasoning model (to prevent hallucinations).

⁶ F. Van den Berg, "CBL Assessment @ UT – recommendations and examples for teachers", December 2024, <https://www.utwente.nl/en/learning-teaching/educational-design/challenge-based-learning/documents/cbl-assessment-ut-guidelines-for-teachers-final.pdf> (or [local link](#)).

⁷ From the Utrecht University Field Guide: [Barriers and challenges to effective transdisciplinary education - Transdisciplinary Field Guide - Utrecht University](#)

⁸ Teaching and Learning Center, Wageningen University & Research, 'How to integrate real cases in your course: a quick start guide. Appendix 5: Template information letter'.

⁹ Although International Studies has an effective format with 15 students per group in their course [Practicing International Studies \(PRINS\)](#)

¹⁰ Other forms of transdisciplinary cooperation can go more into the consultancy direction, such as [PRINS](#) (PRacticing INternational Studies), or [LDE Thesis Labs](#), in which students write their masters' thesis about a challenge from a partner.

¹¹ In the [LDE Thesis Labs](#) Master's students work on projects submitted by industry partners, making it more like consultancy work. Hence it can involve a bigger contribution from the partner.

¹² Like they do at the [The Hague Southwest Thesis Lab](#). For real consultancy work, like the [LDE Thesis Labs](#), substantial amounts are paid by partners, but that's a different type of education than we are discussing here.

¹³ Fujii, L. A. (2012). Research Ethics 101: Dilemmas and Responsibilities. *PS: Political Science & Politics*, 45(4), 717–723. doi:10.1017/S1049096512000819

¹⁴ Adapted from: <https://www.goodcharacter.com/service-learning-primer/#reflection>

¹⁵ This is also accessible via <https://www.itpmetrics.com/>. You need to make a free account to login, after which you will have access to various resources, including the ones on team dynamics.

¹⁶ Siska Simon et al, 'Handling assessment when including CBL in your course', appendix 4, June 2021, <https://www.utwente.nl/en/learning-teaching/educational-design/challenge-based-learning/documents/2021-06-16-cbl-assessment-teacher-curricular-final.pdf>,