

CREATING LEARNING AND TEACHING SPACES FOR SUSTAINABILITY CHANGE AGENTS

THE TRANSFORMATIVE INNOVATION LAB HANDBOOK: INTRODUCTION AND OVERVIEW



Science and education are central domains and drivers of sustainable development. In the context of transformation research and transformative research, increasing numbers of actors in this field contribute to shaping a sustainable future. The Transformative Innovation Lab (TIL) is a teaching and learning format that helps unlock this potential. In the TIL, students learn how to research real-world problems in real-world labs co-created with practitioners. The TIL operates at the intersection between an experimental, sus-

tainability-oriented mode of innovation and transformative learning for sustainable development. Integrated into existing education modules, it creates learning environments that promote both systemic analysis of transformation processes and the development of key competencies for their strategic design. With in-depth coverage of both the theoretical and practical dimensions, the handbook describes the implementation of this transformative and transdisciplinary learning and teaching format.



LEARNING AND TEACHING SPACES FOR SUSTAINABILITY CHANGE AGENTS

A TIL makes it possible to create a trusted learning environment in which students can discover transformative research and their own (researcher) personality while further developing their own personal skills. It fosters reflectivity and application-oriented capabilities. In this way, it links into *transformative learning* theory, which encompasses critical reflection of individual as well as societal and structural perspectives of sustainable development. This helps participating students achieve a change in awareness. They develop an understanding of the complexity, uncertainties, trade-offs and risks associated with the sustainability challenges faced at both global and local level. Co-designing societal development processes requires the acquisition of *key competencies* such as systemic and future-focused thinking, communicative, normative and self-reflective competencies, and project management skills.

For students to experience and assume the role of change agents, they also need *real-world learning spaces* that enable reflection and experiential learning. The TIL is therefore based on transdisciplinary and transformative sustainability research and specifically the real-world labs approach.

Transdisciplinary research addresses societally relevant problems and, by means of shared learning processes, integrates knowledge from scientists in different disciplines and from non-scientific actors. Alongside knowledge integration, *transformative research processes* initiate or facilitate real-world changes. As well as system and target knowledge, they therefore also generate hands-on, contextualised transformation knowledge. *Real-world labs* are a fruitful approach that combines transdisciplinarity and transformativity. In transdisciplinary collaboration, researchers and local practitioners develop research questions in a phased process comprising co-design, co-production and co-evaluation. Potential solutions are tried out experimentally and researched through experiential learning. The knowledge gained is made available both for the academic discourse and for practical application. Mentored, ongoing (self-)re-

flexion and evaluation allow the research processes to be constantly questioned and adapted to changing conditions. Incorporating exploratory and normative approaches from *futures studies* additionally contributes towards a long-term and systemic perspective.

IMPLEMENTING A TRANSFORMATIVE INNOVATION LAB

A TIL – which may also include a Master's thesis – is ideally timetabled over two semesters. Combining virtual and in-person formats and also synchronous and asynchronous phases, it draws upon a wide variety of sources including theory and method-based inputs, excursions, games, guided reflection sessions and field reports. A special role is played by group elements such as multiple-day workshops that build trust. Other central features include continuous interchange and ongoing student support, both by tutors and on a mutual basis in peer learning. The latter is additionally encouraged by interdisciplinary groups, for example in collaboration between students from different study programmes.

The combination of theory, practice and reflection is central to the TIL and cuts across its constituent phases, which are described in detail in the handbook (see chart):

- Preparation of the TIL and selection of the student participants
- Understanding the research context and acquiring basic theoretical and methodological knowledge on sustainability and transformative research
- Finding a transformative research topic and students starting their own transdisciplinary research projects in the context of the TIL
- Agreeing on the research question, the project and possible roles together with practitioners
- Jointly planning and conducting the real-world experiment
- Reflecting on the process and evaluating the outcomes
- Transposing the findings into students' own academic work such as in the form of a Master's thesis

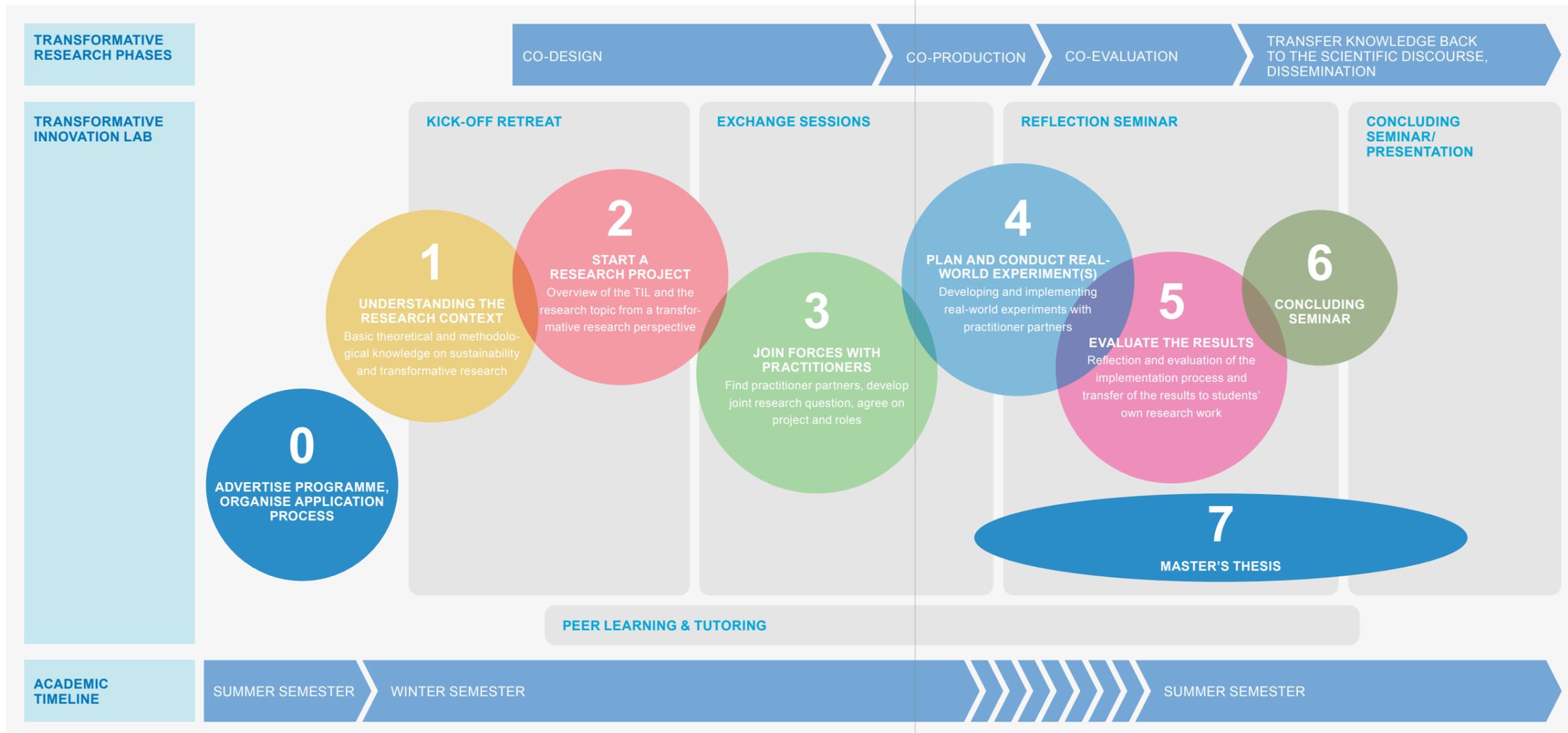


Figure 7: Integrated schematic of an ideal-typical TIL. The individual phases of the TIL are shown in the coloured circles at the centre. In the grey-coloured background, the event formats are shown as they are deployed over the course of the project. With regard to methodology, the transformative research phases are outlined in the upper bar, while the lower bar shows the chronological sequence, broken down by parts of the academic year. Further details can be found in the handbook.

THE HANDBOOK

The handbook shows how a TIL helps students to become change agents and how they can initiate change processes with a transdisciplinary and transformative research and innovation project of their own. Accordingly, the handbook contains:

- A theoretical classification and contextualisation of sustainability, education, real-world labs and transformative research.
- A detailed inside view of our projects and comprehensive description of all phases with their content, learning objectives, recommendations for academic implementation and ideas for suitable formats.

- A step-by-step description of the implementation processes in a TIL complete with numerous tips and tricks, including suggestions for integration into curricula, notes on planning and preparing a TIL, and lessons from past TILs on topics such as peer learning, using a simulation game or incorporating issues like role awareness, ethics in transformative research and personal development.

The exercises, reference lists and other materials contained in the modules can also be viewed at:

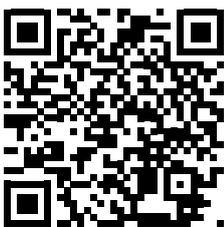
www.transformative-innovation-lab.de/en/handbuch
(see QR code below)

PROJECT CONTEXT

The handbook was developed as part of the EEVA project (*Development, testing and dissemination of new qualification offers for 'change agents' for transformative learning using the real-world laboratory approach*). It describes the ideal-typical structure of a TIL based on experience with EEVA. In two pilot runs, a TIL was integrated into the Futures Studies Master's programme at Freie Universität Berlin and the Sustainability Science Master's programme

at Leuphana University Lüneburg, with ten students in each case. The project was conducted under the leadership of the Wuppertal Institute in close collaboration with Freie Universität Berlin and Leuphana University of Lüneburg and ran from October 2017 to December 2020. It was funded by the German Federal Environmental Foundation (DBU).

Further information is available at:
www.transformative-innovation-lab.de/en.



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www.transformative-innovation-lab.de/en

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