

STUDENT-DRIVEN ENGINEERING EDUCATION: DESIGN YOUR OWN LIVING LAB CASE

J.A. Andernach, A.J. van Oosten & R.M. Rooij

Teaching & Learning Services & Faculty of Architecture and the Built Environment,
Delft University of Technology, The Netherlands

Amsterdam Institute of Advances Metropolitan Solutions (AMS Institute),
Amsterdam, the Netherlands

OVERVIEW OF WORKSHOP

Living Labs are “user-centered, open innovation ecosystems based on a systematic user co-creation approach in public–private–people partnerships, integrating research and innovation processes in real life communities and settings” (European Network of Living Labs, 2013). Since 2018, Living Labs have been implemented in the AMS Institute for Advanced Metropolitan Solutions, both in the AMS Academy and the MSc Programme Metropolitan Analysis, Design and Engineering (MSc MADE), a joint degree of Delft University of Technology and Wageningen University. AMS Institute is located in Amsterdam.

In the MSc MADE Living Lab course, students work on a real-life transdisciplinary challenge in an authentic context with multiple stakeholders. Together, they develop, create and test an innovative solution through co-creation for the challenge at hand. The Living Lab approach appeared to be a very motivating, valuable and effective learning experience, for students, lecturers as well as stakeholders involved.

The workshop’s aim is to give participants the experience of designing a Living Lab case in engineering education and its teaching and learning environment. The Living Lab case will be based on the teaching practice(s) of the participating engineering educators.

We will start with an introduction to Living Labs in engineering education in general and more specifically the pedagogical building blocks of Living Labs. After the introduction, participants will design and pitch a Living Lab case in small teams. We will focus on the following living lab building blocks:

1. Challenge (open ended, transdisciplinary, innovative, focus on sustainability, real-life)
2. Stakeholders (co-creation, public & private partners, knowledge institutes, users)
3. Context (authentic Living Lab location, learning environment, working spaces)
4. Student journey (learning experiences, experiment, design, collaborate)
5. Societal Impact (replicability, transferability, sustainability)

KEYWORDS

Living Labs, authentic learning, student-driven, co-creation, transdisciplinary, autonomy, standards: 1, 7, 8.

DURATION

The workshop will last 120 minutes.

ACTIVITIES

In a small team, participants will design a Living Lab case in the engineering education domain of one of the team members. They will be provided with a Living Lab canvas which allows them to coherently define and communicate the building blocks of a Living Lab case for students. During their design work, teams will get feedback from the workshop leaders. After designing their Living Lab case, one member of each team will be asked to pitch the results of their team. After each pitch, in a plenary setting, we will discuss how participants can translate the outcomes of the workshop to their own situation.

Workshop Programme

14.00 Welcome and plenary introduction by the workshop leaders focusing on the question: 'What do you already know about a Living Lab learning and teaching environment?'

14.10 Brief presentation by workshop leaders addressing three issues: 'What is a Living Lab?', 'What are the building blocks of Living Labs?', 'What are some points of attention designing Living Labs based on our experience of the MSc MADE Living Lab practice?'

14.30 Working on the assignment: Participants select somebody's teaching practice as starting point and (co-)design a Living Lab case (for that teaching practice) based on a given canvas.

15.30 Participants pitch their Living Lab in two minutes. Plenary round of feedback.

15.55 Together we collect the most important take-aways from the session, after which the workshop leaders will close the workshop.

TARGET AUDIENCE

This workshop is relevant for students, teachers, curriculum developers, learning developers and program directors or other support and management staff. And for anyone else interested in motivating learning experiences. No specific prior knowledge or experience is required.

OUTCOMES

After the workshop, participants will be able to:

- explain good practices of already executed Living Labs
- describe the building blocks of student living labs
- define fundamental elements of a student living lab for their own engineering education discipline
- use the living lab canvas for coherently defining and communicating their student living lab

Next to the learning outcomes described above, the concrete outcomes of this workshop are the living lab canvases, designed by the teams. They can serve as inspirational examples for those participants who would wish to design their own living lab cases and course.

SPECIAL REQUIREMENTS

We would like to have a room with non-fixed tables and chairs to allow for participants to work in small groups.

REFERENCES

Bohm, N.L., Klaassen, R.G., Brok, P.J. den, Bueren, E.M. van. (2020). Choosing Challenges in Challenge-Based Courses. *Proceedings of the 48th SEFI Annual Conference* (pp. 98 – 109). Enschede, the Netherlands: University of Twente.

European Network of Living Labs. (2013). *Activity Report. Time to Look Back at the ENoLL Activities throughout the year 2013*.

Steen, K., Bueren, E. van. (2017). *Urban Living Labs. A Living Lab Way of Working*. Amsterdam, The Netherlands: Amsterdam Institute for Advances Metropolitan Solutions.

BIOGRAPHICAL INFORMATION

Toine Andernach: is one of the co-creators and former coordinators of the MSc MADE Living Lab Course. He is an experienced educational consultant at Delft University of Technology who has been involved in curriculum and course development and project-based learning for years.

Anita van Oosten: is the MSc MADE education coordinator. Anita has a background in pedagogical and educational sciences and is a primary school teacher. At TU Delft she is an educational advisor in the education advise team of the Faculty of Architecture and the Built Environment.

Remon Rooij: is one of the curriculum designers of the MSc MADE program. He is an Associate Professor at Delft University of Technology, the 4TU Centre for Engineering Education co-leader in Delft, and the department of Urbanism education leader. Remon has ample experience in course and curriculum design, renewal, and evaluation.

Corresponding author

Toine Andernach
Delft University of Technology
Teaching and Learning Services
Landbergstraat 15
2628 CE Delft
The Netherlands
J.A.Andernach@tudelft.nl



This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).