

EMERGING AND CONTINUOUS CO-DESIGN OF A PROFESSIONAL LEARNING MODULE

The Context Matters: The SciTeach Center

The work presented here is based at the SciTeach Center, a resource center at the University of Luxembourg that promotes science education at primary school level by offering professional learning modules (PLM), books and teaching materials to loan, as well as pedagogical guides. The SciTeach Center team includes researchers and in-service teachers who work together co-designing PLMs. This continuous collaboration allows the PLMs to be simultaneously grounded in research and being responsive to actual teachers' needs and school contexts.

One of such PLMs is Bridges and Towers, a popular module that has been offered since 2019. Within this 6-hour module the participants engage in hands-on activities around bridges and towers that promote inquiry-based approach and engineering design.

The Context Matters: How Module Unfolds

In 2024, the Bridges and Towers module was offered two times: in public international school and at the SciTeach Center. Each time the context was different. In the case of the international school: i) there was a limited selection of materials transported from the SciTeach Center; ii) the module responded to teachers' needs

within this school; iii) the participants and coteachers represented diverse backgrounds, and given the diversity within the school, bridges were used as a metaphor for coming together.

In another case: i) the module took place at the SciTeach Center with its large library of resources; ii) the participants represented different schools and, thus, had different needs, iii) coteachers and participants were Luxembourgers, iv) a coteacher with background in citizenship education challenged gender stereotypes common for the Rapunzel story (that was used to discuss towers).

The Context Matters: Being Responsive

The contexts of these two cases are clearly different. However, it is one thing to acknowledge the context, and another to be open and responsive towards it. To do this, teachers and researchers at the SciTeach Center work together to design educational structures (such as PLMs) that we also coteach. This shared teaching helps us remain reflexive and aligned, and it keeps the modules open to contextual adjustments.

Overall, we argue that an open and emerging structure for a PLM ensures adaptive and responsive context that supports coteachers' and participants' agency. This brings a module closer to participants' realities while leaving an opening for them to shape the structures in ways that meet their needs and potentially impacts their practice.



EMERGING AND CONTINUOUS CO-DESIGN OF A PROFESSIONAL LEARNING MODULE (PLM)

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The SciTeach Center

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Bridges and Towers PLM

The *Bridges and Towers* module has been a popular offering from the SciTeach Center since 2019. The module includes 2 sessions of 3 hours each; one on bridges and one on towers. The module has been offered to primary teachers with consistent learning objectives related to promoting engineering design and inquiry-based approaches.

Co-design process at the SciTeach Center

The SciTeach Center team consists of university researchers and in-service primary school teachers who work together in co-designing various PLMs. In our work, co-design is based on *cogenerative dialogue* and *coteaching* (Chappell et al., 2019; Tobin and Roth, 2006; Roth and Tobin, 2002; Siry et al., 2010).

Cogenerative dialogue is characterised by open and respectful exchange for collective and reflective generation of new understandings across diverse perspectives.

Coteaching, meaning teaching “at the elbow of another”, supports sharing of teachers’ knowledge and expertise while providing space to reflect on and analyse classroom events together.



Brainstorming the PLM

Cogenerative dialogue and *coteaching* come together as an open and emergent educational structure that can be designed and adapted to the PLM coteachers’ and participants’ needs, wishes, and expertise.

An open and emerging structure for a professional learning module ensures adaptive and responsive content that supports coteachers’ and participants’ agency. This brings the module as close as possible to participants’ realities while leaving an opening for participants to shape the structures in ways that meet their needs.

CASE ONE: International School PLM

- Instruction at a public international school, which means a limited selection of materials transported from the SciTeach Center.
- Module that responds to the teachers’ needs within the school.
- A considerable diversity within the school, including the module’s participants. Additionally, the coteachers represent diverse international background.
- Given this diversity, bridges are used as a metaphor for coming together in the module’s activities and classroom inspirations.



CASE TWO: SciTeach Center-Based PLM

- Instruction in the SciTeach Center, with the participants arriving from their schools.
- The SciTeach Center’s extensive library of resources, books and materials enabled different activities that are not bounded by limited materials.
- All participants as well as both coteachers are native Luxembourgers. The language of instruction: Luxembourgish.
- One of the coteachers with a background in citizenship education channels gender stereotypes common for the Rapunzel story, influencing the module.



The open-ended structure supports coteachers’ and participants’ agency in ways that shift the PLM in response to context. This shift is afforded through *cogenerative co-development* and *coteaching*, which recognise the agency of coteachers and participants, while being contextually-responsive.



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