Sustainable innovations by design thinking

An experiential learning course implemented by students

How to promote sustainable practices and practical learning at universities? The course Design Thinking Challenges *at the University of Graz, initiated by students, incorporated student-centered pedagogies like experimental learning and critical reflection. The goal was to empower students to address sustainability issues, foster collaborative learning, and develop problem-solving skills. The article offers a personal perspective on the experience of implementing the course, and shares achievements, challenges, and recommendations.*

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Addressing sustainability challenges in higher education

The complex and diverse sustainability issues our society faces, such as the climate crisis, biodiversity loss, and social inequalities, demand comprehensive and transdisciplinary strategies. Higher education institutions like universities and business schools are critical in addressing these challenges. They can leverage their expertise and resources to drive progress and offer degree programs and courses that equip students with the necessary knowledge and skills to solve future challenges. New approaches like experiential learning in inter- and transdisciplinary settings are

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vital to creating a flourishing and regenerating world. Transforming higher education can significantly contribute to societal, environmental, and social renovation (Phillips and Phillips 2021).

As a student, I found (business) courses overly focused on profit maximization and shareholder values, lacking integration of social and environmental issues. Additionally, the courses were limited to information dissemination and lacked engaging team exercises, leading to a disappointing experience. To address this, I advocated for more student-friendly elements, urging for the inclusion of sustainability courses and a more inter- or transdisciplinary curriculum. I found supportive individuals who valued my input, leading to the organization of a course with three other motivated students. We aimed to create a course that addresses sustainability issues with diverse participants from various backgrounds and disciplines. The course focused on real-world problems with external stakeholders like NGOs and companies. It also emphasized team building and incorporated guidance from professional coaches in applying design thinking for problem solving.

Design Thinking Challenges at the University of Graz

We developed and implemented *Design Thinking Challenges* at the university, starting on-site in 2019 and later adapting to a 100% online format in 2020. This course fostered collaboration among students from diverse academic backgrounds, encouraging sustainable and innovative ideas. It utilized design thinking's problem-solving and human-centered approach, emphasizing empathy, collaboration, experimentation, and iteration. The (corporate) partners actively engaged with the student teams and showed openness to learning and developing desirable, feasible, viable, and sustainable solutions (figure 1).

We established a transdisciplinary learning environment where students explored unconventional ideas beyond established thought patterns. Interdisciplinary teams, comprising 30 students from 21 fields, collaborated closely with stakeholders and design thinking coaches to generate innovative solutions in just a few days. For example, one team designed a sustainable campus at the University of Graz. Special attention was paid to the sustainable design of a new building, the use and self-

generation of renewable energy, and the inclusion of students and staff with special needs. The students were then invited to present their ideas to the architects of a new university building.

The course emphasized sustainability and the 17 *Sustainable Development Goals (SDGs),* fostering critical thinking about existing systems and the impact of entrepreneurial decisions. Reflection exercises helped students analyze and evaluate their learning experiences and encouraged deeper thinking and critical assessment of their and others' perspectives.

Success factors and obstacles

Critical success factors were the support from higher-level university management and the involvement of partners with experience in running such challenges. The organizing team's shared vision to contribute to transforming higher education was also crucial. We constantly questioned the desired change, preferred learning conditions, and effective teamwork that could lead to a student-centered course. The outcome of this approach resulted in the development of a course that prioritized students' needs and preferences, which was further validated by the positive feedback we received.

We also encountered some hurdles, including uncertainties during planning and implementation, addressing requests from various stakeholders, and navigating unfamiliar elements. Some course elements lacked established best practices or procedures, as they had not been previously explored within the university context. This included navigating unique legal considerations when collaborating with external stakeholders and ensuring the provision of lunch delivery for students during the pandemic. Also, initial lower-than-expected interest from internal and external sources was disheartening. Spreading awareness about the course required persistent efforts, persuading other departments to promote it by emphasizing its benefits for both departments and students.

Recommendations

Based on my experience of running the courses, I want to share five recommendations:

- *Start with a vision:* Why do you want to change the status quo? A vision helps to stay motivated and might increase your resilience. Introducing a new course and pedagogical approach might face resistance from traditionalists who prefer conventional teaching methods.
- *Define objectives:* Define the goals of the course and understand what you aim to achieve, such as fostering creativity, problem-solving skills, or addressing specific sustainability issues.
- *Create a supportive environment:* Cultivate a supportive and inclusive environment that encourages risk-taking and experimentation.
- *Consider time constraints:* Integrating practical activities and student-centered learning requires careful planning and coordination (especially with external stakeholders), which can be time-consuming for instructors and students.
- *Manage expectations:* It is essential to align the expectations of the university, external partners, and students and ensure that the course's goals and benefits are understood. This requires clear communication and management of potential misunderstandings.

Conclusion

In summary, I hope this experience serves as a model of best practice and as a reminder of the utmost significance of amplifying student voices and empowering them to take ownership of their education. Students often have an extraordinary drive to initiate change, but unfortunately, this invaluable source of ideas and motivation mostly remains untapped. Hence, I strongly advocate for higher education institutions to consistently involve and empower students in shaping their educational pathways and actively engage them in collaborative content creation alongside lecturers. By doing so, I firmly believe we can cultivate a more purposeful, sustainable, and impactful higher education system.

FIGURE 1:
Sustainable innovation by design thinking. Design thinking fosters solutions that are desirable for their users as well as feasible, viable, and sustainable in their implementation (Rusch forthcoming).

References

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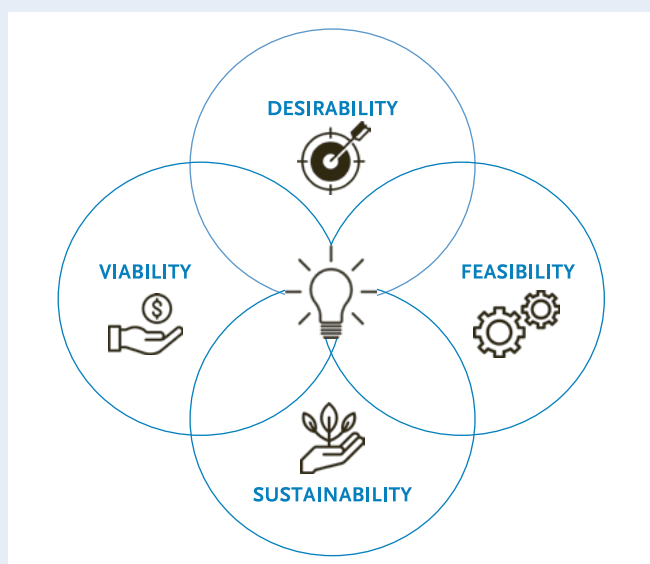
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