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## Challenge based learning case study: A transdisciplinary collaboration involving Higher education, Culture and business sectors

This presentation will describe a challenge-based learning exercise aimed to build transdisciplinary capacity within students to address societal 'un-sustainability'. Some recent literature argues that traditional university courses based upon long established disciplinary pathways are too narrow and too rigid to train the kind of population needed to effectively address the complex and intertwined challenges of sustainability. Therefore, new learning approaches are needed. In 2015, the UN released a position paper Rethinking Education. Towards a global common good? which emphasised the need to educate about and for the sustainability goals, including the importance of students learning transdisciplinary skills.

A literature review conducted by the author in 2021 identified four key approaches that help students foster transdisciplinary skills including: knowledge integration (diverse knowledge sets from multiple disciplinary backgrounds), applied cases (cross sectoral partnerships 'in real life'), problem based learning (systems analysis and application of diverse knowledge) and Interpersonal skills /agency (working with, and influencing others to bring about change).

In 2022, an opportunity arose to apply these approaches with fourth and fifth year engineering students to explore digital solutions for sustainability in collaboration with the Stockholm based cultural institution Färgfabriken and the shopping mall operator Citycon. Problem based 'challenges' were created by the learning team that required students to envision 'malls of the future' that incorporated social and environmental sustainability. Students needed to collaborate across sectors (academia, business, culture) to demonstrate knowledge integration and interpersonal skills 'in real life'.

The generalisable skill sets required to address the challenge enabled learning exercises provided students the agency to effect change in real life. The unconventionally broad collaboration allowed students to meet several educational goals and develop skills to enable them to address multiple sustainability policy goals – i.e., to learn to create real world impact towards sustainability.