Mobile Green Study Units: Practical Aesthetic Design & Lifecycle Assessment

About the Challenge Collaborator

Plant a Seed is a unique interdisciplinary educational project for sustainability at the Technical University of Munich (TUM) with a mission to raise awareness about food production and consumption, link people with nature by encouraging and strengthening their connection and visualize sustainability on the university campus.

Introduction

The Heat Island effect and biodiversity loss are some of the first consequences of Climate Change hitting cities, pushing them into action. Increasingly, citizens are turning to urban gardening as a way to mitigate the effects; but, what if space needs to remain multi-functional? With urban crowding, it is often not possible to dedicate a plot of land to a garden. In the same vein, crowding on campus is making it ever more difficult to find a suitable place to sit and concentrate, and on campuses with outdated infrastructure, places with charging capabilities are even more difficult to find.

Problem Definition

How do we combat the effects of climate change and urbanization on campus while keeping spaces multi-functional and comfortable enough for students to study in?

What is the waste challenge?

After two years since their inception at TUM, the urban gardening project Plant a Seed has been invited by President Thomas Hofmann to develop and implement a pilot project on the Mechanical Engineering courtyard on the Garching campus. To maximize the functionality of our urban spaces while not giving into a “concrete jungle” environment, we have proposed to design and build mobile raised beds; additionally, to provide more space for students to gather and study together, this design should incorporate mobile study units with the power to charge an average laptop computer. In order to leave no waste behind, a lifecycle assessment of the materials for both the raised beds and the study units will be performed.

- What are the most practical and visually appealing designs for mobile green study units?
- How do we ensure they are stable while providing solar power and shade? Can we assure they do not pose a safety hazard?
- How do we make them weather-resistant and what do we do with them in the winter?
- What materials are most climate-neutral and best suited for stability while ensuring longevity?

Desired Impact of Challenge

An implementation-ready visually-appealing design for outdoor mobile study units and raised beds, including a lifecycle assessment of the most favored materials.

Skills needed/recommended

Basic CAD-Modeling skills and experience with electrical units (especially solar panels) helpful but not necessary.

Relevant considerations for the challenge / theme

The key difficulty lies in the design of the study units (are they stable and safe to use?), and creating a cooperative design between them and the raised beds.

Relevant links

https://plantaseed.umwelt.asta.tum.de
Further information about existing files and designs can be found on Moodle.