

On Living Learning Lab - Basic understanding

1.1 What is a Living Learning Lab

1.2 Aims of the Living Learning Lab

“Imagine a giant sandbox, a place in which there is the freedom to explore—creatively and collaboratively—the technological, economic and behavioral aspects of sustainability, with a view to applying in the wider world what is developed in the sandbox.”

John Robinson, Nobel Laureate and SIH patron

1.1 What is then a Living Learning Lab?

PRINCIPLE

On this note from one of our patrons and collaborating partners, we wish to turn the house into a Living Lab for Sustainability. This means an on-going interplay and continuous feedback between the building, facility management, the users and the broader society and the environment,. To go further into this, the Living Learning Lab entails that we as students and users of the house can experiment, evaluate and develop best practices, based on the information provided . Further, the house will become a showcase for sustainable solutions, and the organisation will play a central role in turning best practice into operational feasible solutions, as well as communicating them to the surrounding society.

SCOPE

In this regard, the Living Learning Lab is not limited to a set amount of squaremeters, as one could imagine a lab would be. It is related to the continuous process of improving the energy resources and the underpinned by a physical structure of the Living Learning Lab. With this over-arching framework, the Student and Innovation House will be a globally unique research facility aimed at narrowing the “performance gap” between what is technologically and behaviourally feasible and what actually happens on the ground.

As a living learning lab, the House will provide ground-breaking research to better understand and reduce that gap, at multiple scales from the building to the region. Integration will be provided by an initial focus on the technological, behavioural, and policy dimensions of sustainable buildings, using the building as a test-bed for this analysis and a model for implementation by others.

This poses requirements on a building related level, as well as it relies on how technology, behaviour, big data, and dialogue are integrated as a part of the same cycle of performance improvement.

BACKGROUND

While considerable work has gone into the technical dimensions of sustainability at the building and infrastructure scale, much less attention has been paid to the behavioural components and to the development of revenue models, business plans and commercialization strategies needed to make such innovations successful.

CBS’ Student & Innovation House could play an important role in this area. For example, CBS researchers could develop research on the design and effectiveness of behavioural programming linked to the sustainability features of the new Student & Innovation House. Building an infrastructure, and elaborating and testing the market potential and possible commercialization strategies for such features in other projects.

To this end, the Student & Innovation House building will:

- Produce a world-renowned building project, that
- Operate at the frontier of sustainability,
- Be net positive in both human-well-being and environmental outcomes,
- Contributes directly to the health, productivity and subjective wellbeing of everyone in the buildings, and that
- Directly supports and is reflected in the social innovation and community engagement activities that go on in the building and the campus community, including
- An ongoing monitoring and social science research program, that offers the opportunity to implement, test, improve and teach sustainability,
- A specific focus on the analysis of behaviour change,
- The encouragement of innovation for societal benefit,
- A strong focus on breaking down silos between students, faculty and society,
- Partnerships with firms and organizations interested in sustainable building and neighbourhoods, that offer the capacity to build a regional scale living lab that focuses on the role of the business sector in the sustainability transition.
- Leading the way for integrating students' drive and commitment in more informal learning ways, such as extracurricular projects, informal collaboration with researchers along with the possibility of internships and for-credit engagement with both on-campus and off-campus partners.
- Preparing the house for the unexpected. Make room for continuous innovation and improvement of maintenance and distribution.

1.2 Aims of the Living Learning Lab

The Living learning Lab will thus contribute to research innovation by producing breakthroughs in research on building design, simulation and visualization for community engagement research, and policy analysis. The entire building Student and Innovation House will be designed to perform at the frontier of sustainable building systems - radically reducing emissions, materials consumption, energy use and water use - so as to permit the systematic analysis of energy, water, daylighting, natural ventilation, temperature and waste. The living part of living learning lab thus refers to a building that will continuously inform itself about its carbon footprint, consumption and other metrics. Thus the SIH will be conceived and designed collaboratively with users as a “process” rather than a “product”. Our vision is that key building components can be tested and replaced over the lifetime of the building. The building will contain hundreds of points of monitoring, which will allow us to determine the smaller set of monitoring points required in future sustainable buildings, and capability for designing and testing building simulation and performance software. The building performance research team will undertake ongoing life-cycle and behavioural analysis of environmentally innovative and advanced building technologies and systems, in concert with building industry partners and building users. This research program will be situated at a designated Impact Space, and will result in a rich array of technological and operational advances in the building industry, significantly improving its environmental and social performance and providing considerable commercialization and export opportunities.

The Student & Innovation House can therefore treat the building retrofit as an opportunity to implement, test, research, and teach sustainability at a building scale, feeding directly into and supporting the overall CBS campus. This work will contribute directly to the significant transitions required to reach a sustainable future. The unique focus of the Student & Innovation House approach to a living lab would be its emphasis on the behavioural and business dimensions of the sustainability components.

References for further reading

Continuous monitoring is essential in order to meet intended design and sustainability goals, at the operation and maintenance stage. Post-occupancy evaluations and performance assessments have the potential to not only improve the performance of building and neighbourhood projects, but to offer a foundation for additional teaching and learning, and for public and private research opportunities. There is a particular need to integrate the results of qualitative post-occupancy evaluations and quantitative performance measurements. (Chu, Cayuela and Robinson: 2015)

Anne-Mareike Chu, Alberto Cayuela and John Robinson, Visions and Strategies for Sustainable Buildings and Neighbourhoods, Center for Interactive Research on Sustainability. University of British Columbia, 2015.