The Living Laboratory for Sustainability

What does the Living Laboratory for Sustainability do?

The Living Laboratory for Sustainability provides opportunities for students to help improve environmental sustainability across the University estate, through projects, internships and research. Funded by Santander, the project aims to enhance students' educational and practical experience, contribute to teaching and research, foster collaboration across the University and contribute to the University's efforts on environmental sustainability.

"We're very happy because the students are a lot more excited and they have learned a skill that's actually applicable to the real world. Different companies designing solar installations would use the same software that the students are using at the moment to design installations here"
- Pritesh Hiralal

"The Living Lab is very flexible and accommodating, and works hard to get students what they need in terms of data and to support a project throughout its life. Finding contacts for students to interview is a big help." **– Dr Minna Sunnika Blank**

Case Study

An annual poster competition for second year students run by Dr Claire Barlow gives a choice of topics for students to focus upon. The Living Lab provided one of these topic areas.

Case Study

Estate Management's Building Energy Manager gave a guest lecture to students taking the Sustainable Development course within the Engineering Tripos. This was to provide students with insights about the challenges and considerations in the implementation of energy reduction projects.

How can the Living Lab support teaching and learning?

- Provision of **case studies or challenges** for lectures, group work and practical exercises
- Assistance finding **guest lecturers** from within the University
- Provision of **information, data and support** for students' research
- Suggestions for **future research and dissertation topics** that contribute to the **impact agenda**
- Assistance with setting up **tours** of buildings
- **Funding** to enable new methods of learning

Case Study

Sin Min Lee, fourth year Engineer, investigated the performance gap between as-designed and as-built energy consumption at the Sainsbury Laboratory. This research has since been published. The Living Lab provided data, contacts, building access and support for questionnaire distribution.

Project Ideas

- Assessment of metered data
- Performance gap analysis
- Assessment of operating PV panels
- Assessment of potential PV panels
- Assessment of Green Impact success
- Technologies for car parking infrastructure

Case Study

Dr Yeonsook Heo, Department of Architecture, has taken her students on tours arounda number of different University buildings to exemplify differentapproaches in reality.

Case Study

A new course was brought into the Engineering Tripos, modelling solar photovoltaics using University building roofs, thanks to funding from the Living Lab for software to enable the modelling and the data on buildings' roofs.

"The Living Lab offers real data from a real-world environment, not cleaned-up or artificially simplified. There are an almost unlimited number of projects for students to get involved in"
– Professor Peter Guthrie

"It allows students to see the building and interact with it when they study it ." **– Dr Ruchi Choudhary**

"The Living Lab is a great scheme, a great resource and always comes through with information and support for students. It's much easier to get data from the Living Lab than it would be from any non-university-owned buildings. It would be interesting for any department where students have to do modelling projects."
– Dr Ruchi Choudhary

"A huge opportunity to expose students to things they can see and touch and walk past all the time."
– Kristen McAskill

Types of data and information sources available

- Room occupancy data
- Electricity consumption
- Gas consumption
- Building Management System (BMS) information
- Building plans/drawings
- Operation and maintenance manuals
- Project plans (buildings at design stage)
- Relevant contacts e.g. building users, staff/student networks for questionnaires/surveys/interviews
- Granular data for some buildings e.g. plugloads, lighting
- Air quality data
- Communications data (sustainability focused)

"The projects don't have to be science-based; they can be more architectural or end-user focused, for instance, how people use or react to the building."
– Dr Minna Sunnika Blank

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