Community engagement in student projects: learning engineering ethics and sustainability

Sarah Bell
Institute for Environmental Design and Engineering
s.bell@ucl.ac.uk

7 November 2019

Community engagement in engineering

- Why?
- Engineering Exchange
- Collaborative Environmental Systems Project
- Learning outcomes?

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The Engineering Exchange (EngEx)

The Engineering Exchange

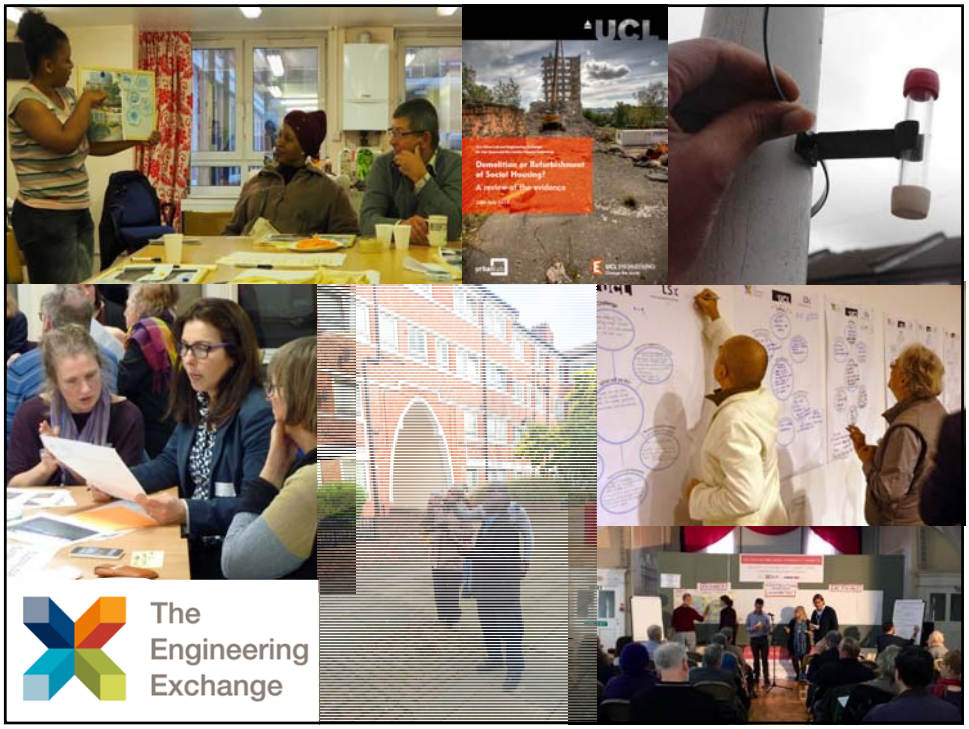
is a network of engineers, built environment specialists and Londoners who are committed to making UCL expertise available to communities, while helping staff and students align their work with local needs.

The Engineering Exchange

- Director
- Communications officer
- 3-4 Co-directors
- Steering committee
- https://www.ucl.ac.uk/engineering-exchange/

The numbers

- Launched 2014
- 22 projects
- 14 UCL departments or institutes
- RAEng, NERC, EPSRC funds
- 800 people on the mailing list
- 2017-18
  - UCL staff 50
  - UCL students 15
  - Members of the public 90
  - Project partner organisations 8



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Skills and Strategies for Community Engagement

- 1+3 Day Course
- Working with communities
  - Case studies
  - Skills
- Setting up your own programme
  - Site visits
  - Planning and strategy

Working with communities training

- CPD
  - graduates, PhD students
- Why?
- Skills
- Case studies
- Relate to own work

Image from Repowering London

Research into teaching

- Students as resource for community-based research
- Design projects
- Group projects
- Individual projects

MSc Environmental Systems Engineering

Collaborative Environmental Systems Project

- Group project for external client
- Skills in project planning delivery
- Complexity of environmental problems

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Collaborative Environmental Systems Project

Camden Council, WWF, Land Securities, London Community Resource Network, Mildmay Community Centre, Arup, Atkins, Brixton Remakery, Pepys Estate Community Garden, World Bank, Severn Trent Water, Haki Water, Loowatt, Thames 21, Energy Saving Trust, Bat Conservation Trust, London Wildlife Trust, Expedition Engineering, Greater London Authority, Harringey Council, Tribewanted…

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Collaborative Environmental Systems Project

- Pepys Estate Community Garden – polytunnel heating
- Carpenters Neighbourhood Forum – infrastructure plan
- Salvation Army – homeless shelter
- Haringey Rivers Forum – water quality of Moselle Brook

Learning engineering ethics

- Engineering agency
- Understand nature of engineering decision making
- Understand role of engineering in society
- Understand impact of engineering on the environment
- Understand role of politics in engineering

Engineering ethics

- Social, ecological and political issues are central to engineering practice
- Not separate from technical practice
- Technical decisions are ethical decisions

Learning outcomes?

- Patchy
- Communication
- Power structures
- Local communities and issues
- Resourcefulness
- Engineering as service

Community engagement as engineering education

- Professional responsibility to sustainability and democracy
- Learning by doing
  - Project based learning
- Evaluation gap
- Opportunities for embedding in curriculum