

From Engineering Problems to Sustainable Ventures

Engineering entrepreneurship across Punjab

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The gap between invention and impact

My Laidlaw research on second-life solar mini-grids raised a wider question: how do engineering ideas move beyond prototypes and reach people who could benefit? During my Leadership in Action, I delivered university lectures across Punjab on turning local engineering problems into practical, sustainable ventures. Sessions paired real engineering research with locally relevant case studies, customer discovery and action oriented entrepreneurship tools.



01 4 UNIVERSITY LECTURES

Delivered across Punjab.

02 CASE STUDY APPROACHES

Second-life solar and sustainable hardware, local city specific wedding planning operations venture

03 BEFORE / AFTER POLLING

Mentimeter surveys at PEC + GNDEC: 106 initial and 65 follow up responses to three readiness questions.

What students could actually build

FROM RESEARCH TO REAL-WORLD HARDWARE

Drawing on my Laidlaw work on repurposed solar technology and a supervisor's mini-grid case study, I explored how sustainable hardware projects can move from prototypes towards real-world deployment, adoption and commercial viability.

A similar problem-first framework can serve solar maintenance, transport operations and other local industries.

FROM LOCAL PROBLEM TO FIRST CUSTOMER

A wedding-planning operations case study walked students through one business hypothesis: talk to customers, find the costly recurring problem, design a minimum viable test, and consider a small paid pilot. The idea was an illustrative hypothesis, not verified demand.

What changed after the lectures?

BEFORE 5.42 / 10

AFTER 6.24 / 10

PEC + GNDEC Mentimeter surveys | Before: n=106 | After: n=65

Response-weighted averages (0 to 10); respondents differed across rounds. Self-reported readiness, not ventures founded.

TEST AN IDEA 6.12 → 6.76 (+0.64)
FIND CUSTOMERS 4.72 → 5.56 (+0.84)
TAKE THE FIRST STEP 5.42 → 6.41 (+0.99)

Students left with questions they could answer

- 01 What recurring local problem is worth solving?
- 03 What is the smallest useful pilot?

- 02 Who could I interview this week?
- 04 How can I measure both impact and commercial viability?

S / Specific	M / Measurable	A / Achievable	R / Relevant	T / Time-bound
Delivered university lectures linking engineering, entrepreneurship and sustainability.	Gather pre- and post-lecture ratings of idea-testing, customer discovery and readiness.	Use university access, interactive polling and tailored case studies	Connect Punjab's industrial challenges to scalable sustainable engineering	Lectures and outcomes recorded within the LiA period, 2026.

An engineering solution does not scale itself.

Leadership meant adapting technical concepts to local realities, listening to students and showing that the first step can be a conversation rather than a prototype. This strengthened my character, curiosity and commitment to making technical opportunities accessible.

With thanks to PEC Chandigarh, Central University of Punjab, Guru Nanak Dev Engineering College, the Laidlaw Scholars Programme and Imperial College London.