



# WPI

# Teaching Resources for the London Transport Museum

Sponsor: David Houston

Team: London Transport Museum

Members: Lauren Baker, Casey Broslawski, Cameron Crook and Shannon Healey

# Activity: Mystery Objects

Item 1



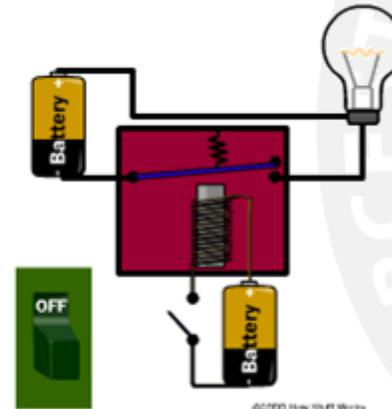
Item 2



Item 3

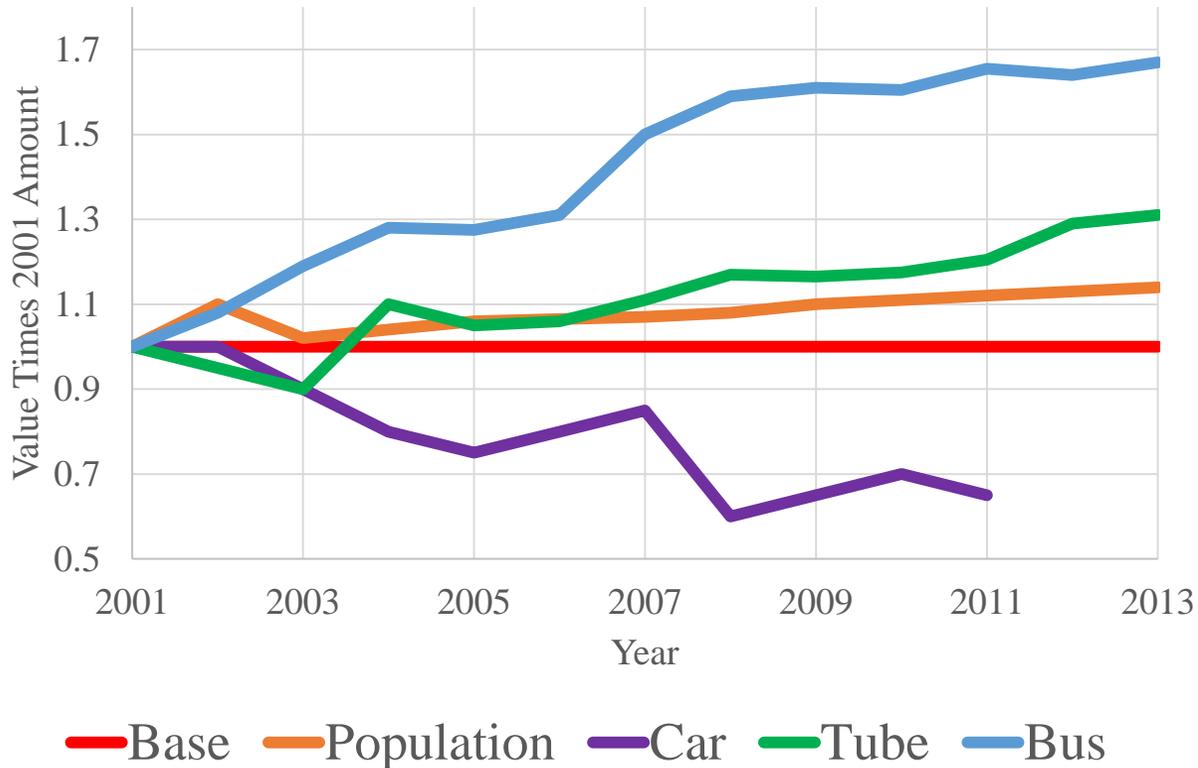


Item 4



# Decline of Engineering in the UK

The Growth of London's Population and Public Transportation Usage



## Youth Views of Engineering

### Excerpt of 2014 Public Attitudes to Science Survey

315 Participants

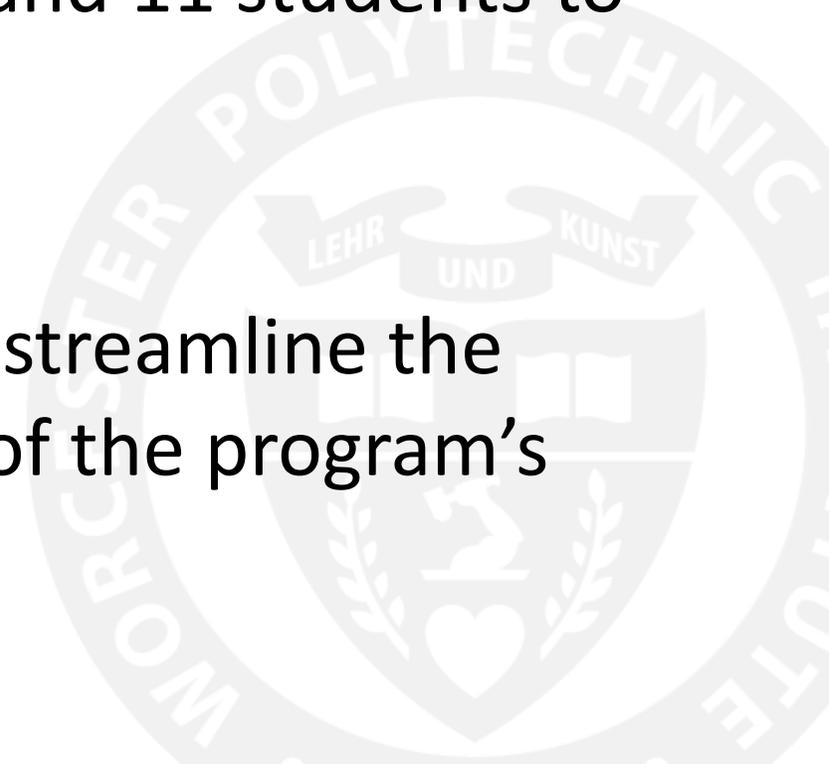
510 Participants

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• 59% felt engineering is interesting</li> <li>• 18% felt they were not smart enough to understand engineering</li> </ul> | <ul style="list-style-type: none"> <li>• 52% felt well informed about scientific research and developments</li> <li>• 51% felt their science education has been useful in everyday life</li> <li>• 24% felt their experience in school made science unappealing</li> </ul> |
|--|--|

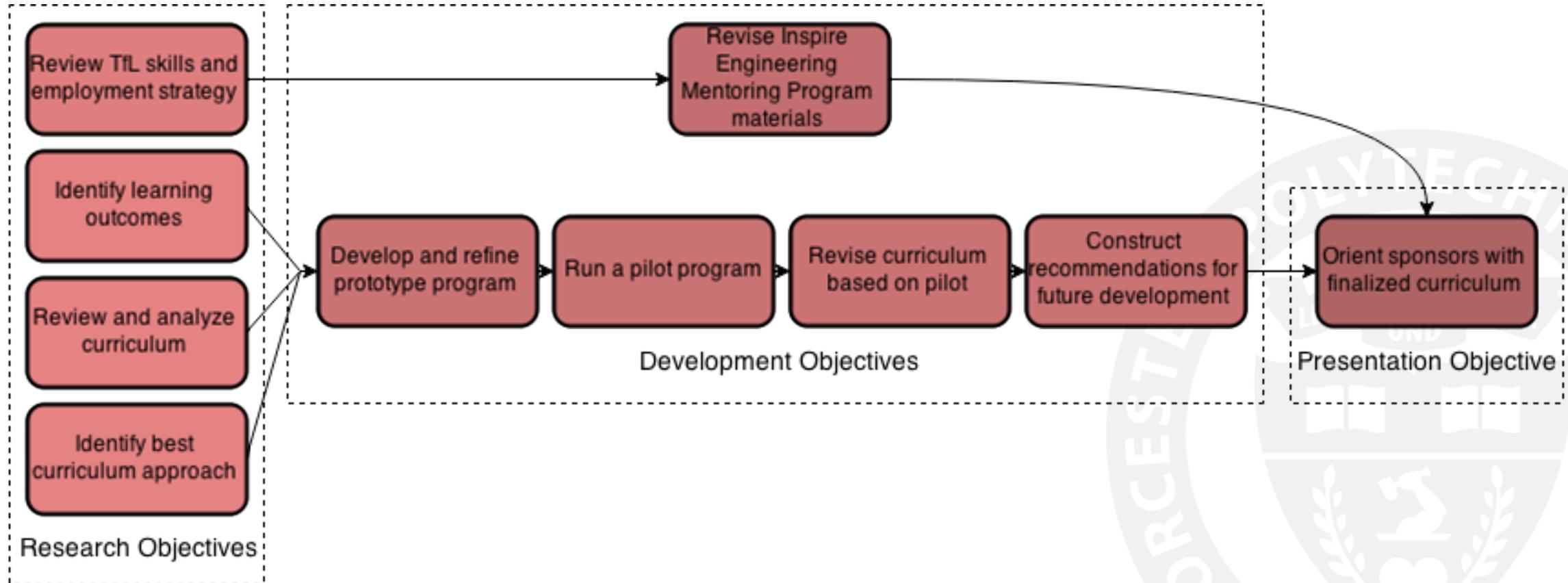
# Project Goals

**Full Speed Ahead Program:** To develop an engineering project-based curriculum to inspire year 10 and 11 students to pursue a career in STEM.

**Inspire Engineering Mentoring Program:** To streamline the program's materials based on the feedback of the program's participants.



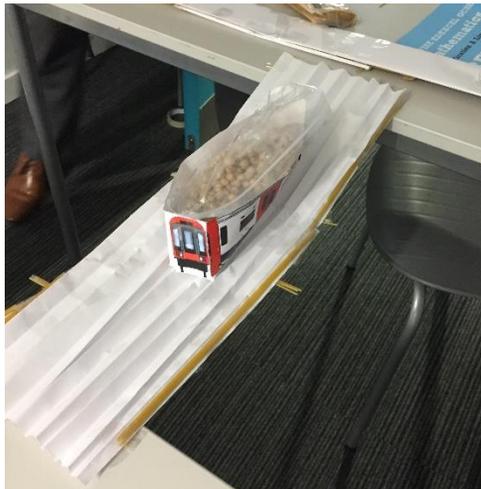
# Road Map



# Deliverables

## Full Speed Ahead Program

- 10 Sessions
- Flexible design
- GCSE Project-based curriculum
- Teacher & Resources Handbooks

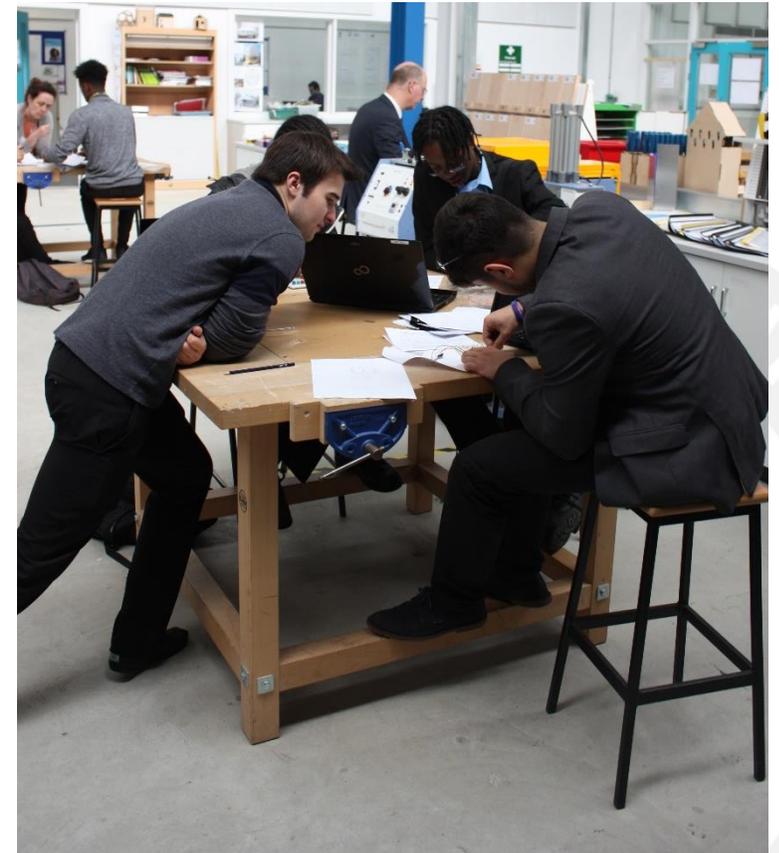


## Inspire Engineering Mentoring Program

- Reviewed content in existing handbooks
- Streamlined program
- Added optional activities
- Made program more flexible

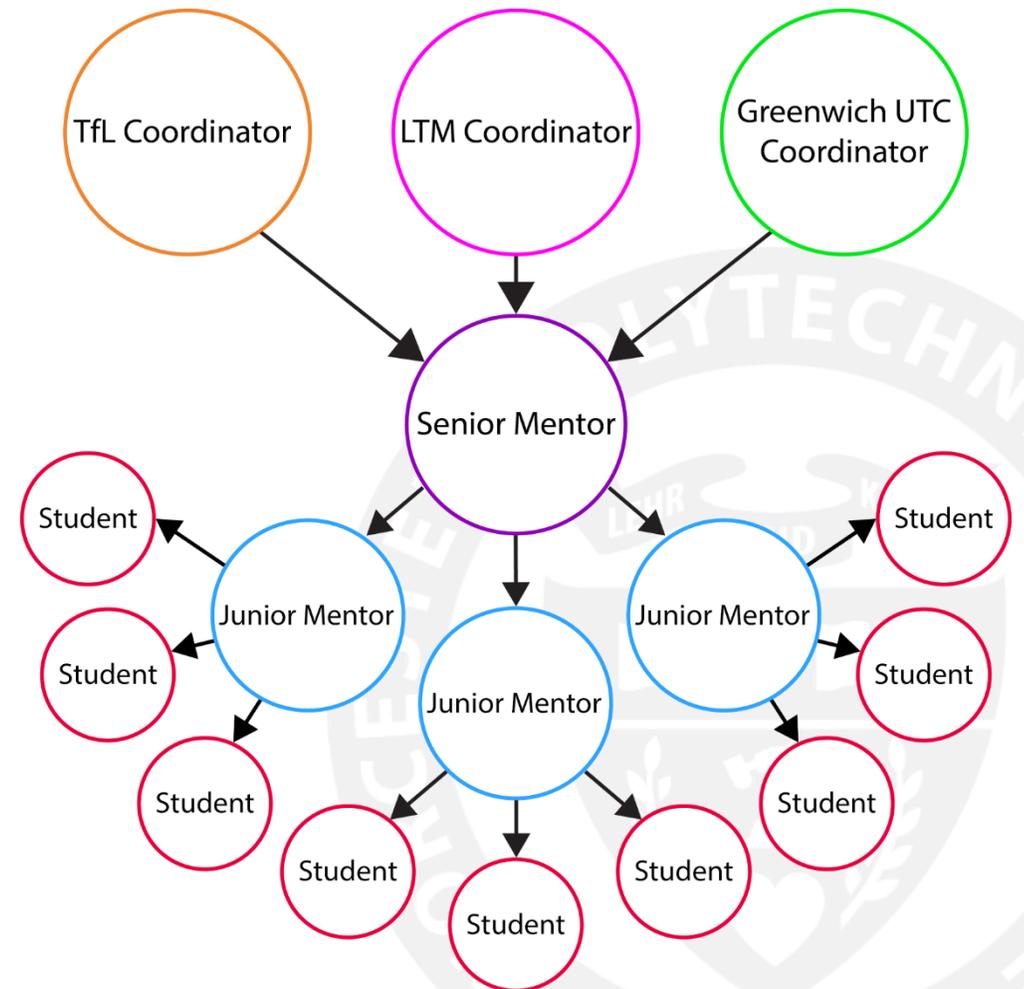
# Insights: Full Speed Ahead Program

- Learning Outcomes
  - Inspire students to pursue a career in engineering
  - Enable students to see breadth and depth of engineering
  - Guide student to see benefits of “soft skills”
  - Empower student’s confidence in their engineering ability
- Connect Program to Multiple GCSE Subjects
- Students felt accomplished after completing difficult activities
- Each activity needed to cater to all levels of students’ abilities



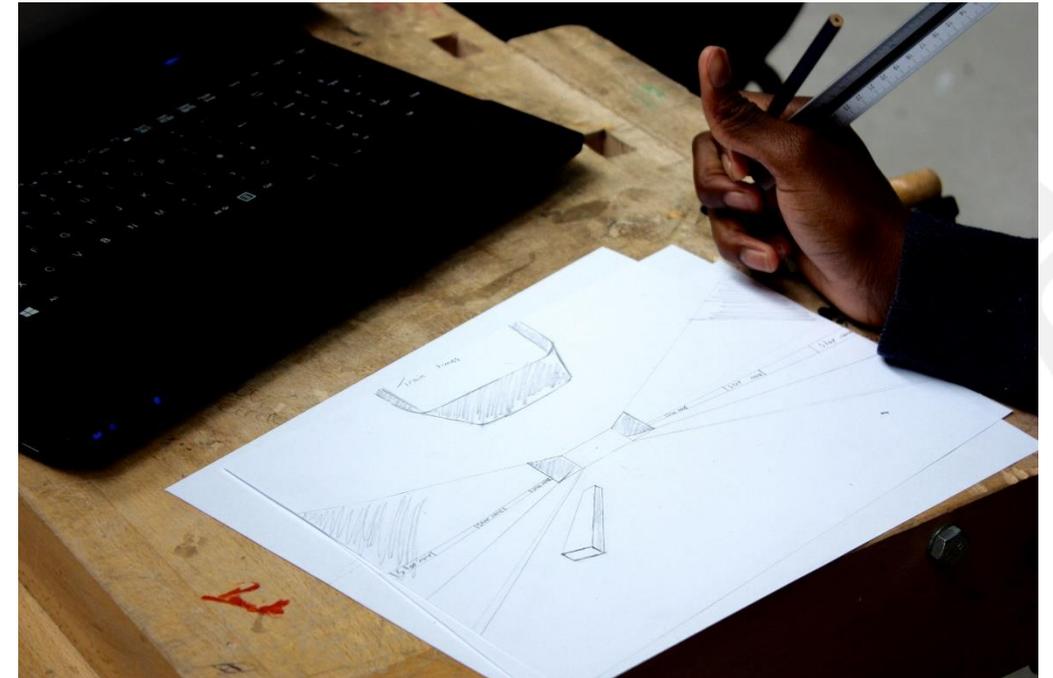
# Insights: Inspire Engineering Mentoring Program

- Mentee Handbook Too Long
- Curriculum Should Be Flexible with Minimal Information
- Mentors Failed to Relate with Mentees' Learning Paths
- Younger Mentors Better Relate to Students



# Full Speed Ahead Program: Recommendations

- Run full pilot at state school
- Make material interactive
- LTM provide teacher orientation
- Certify as GCSE curriculum
- Revise photos and handling objects



# Acknowledgements

- David Houston, London Transport Museum Young People's Skills Programme Learning Officer
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- Jane Gordon, Royal Greenwich University Technical College Deputy Principal
- David Sandell, Royal Greenwich University Technical College Science Teacher
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- James Dawson, Engineering Ambassador, Transport for London
- Rachel Jackson, Engineering Ambassador, Transport for London
- Rachel Harvey, Science Museum Explainer
- Eric Wright, Engineering Ambassador and Transport for London
- Martin Webber, OCR STEM Sector Specialist
- Luran Hillier, Programme Coordinator Young Crossrails

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Questions?



# Obstacles & Limitations

## Full Speed Ahead Program

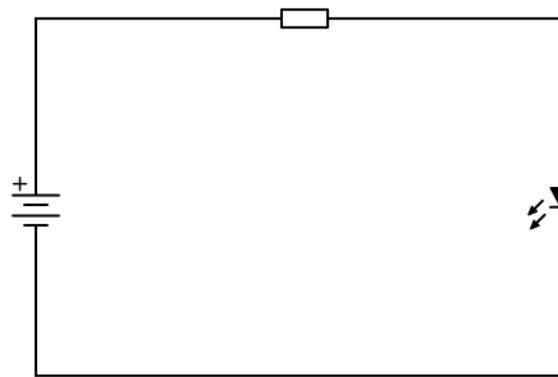
- Did not audit GCSE classes
- Only piloted four of ten sessions
- Few pilot participants

## Inspire Engineering Mentoring Program

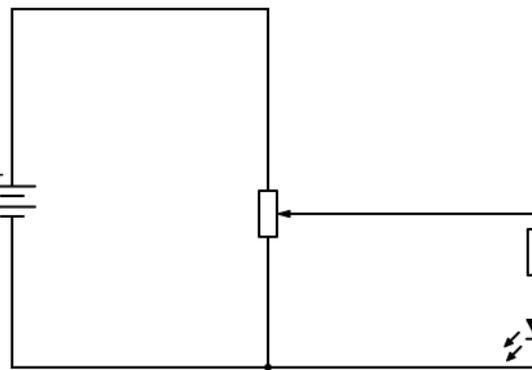
- Could not attend IEMP student meeting
- Could not meet with all Engineering Ambassador mentors



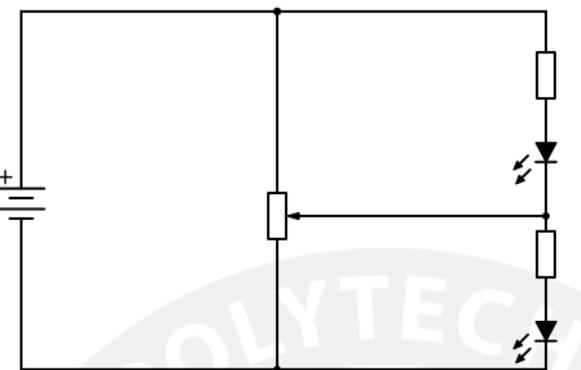
# Mixed Signals



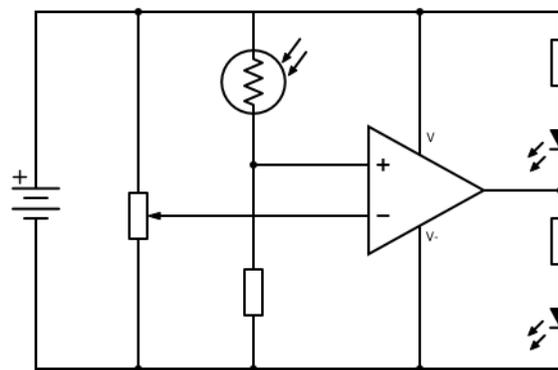
Light



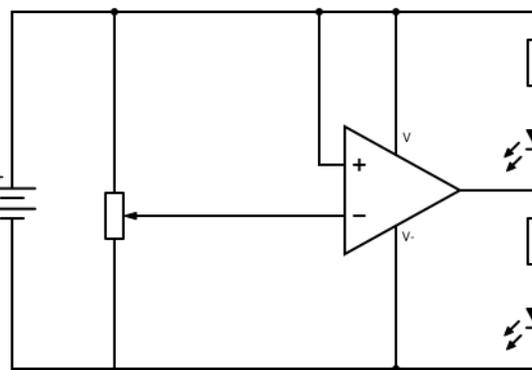
Dimmer



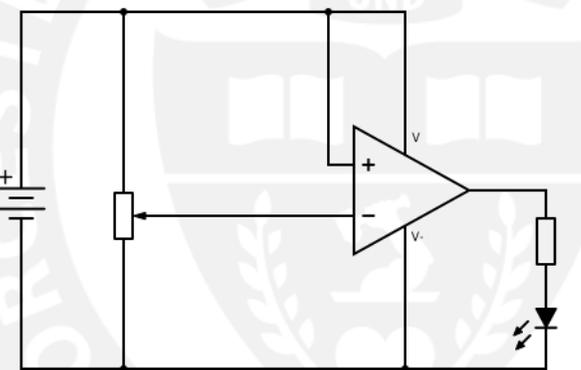
Dimmer Changes Red & Green LEDs



Signal



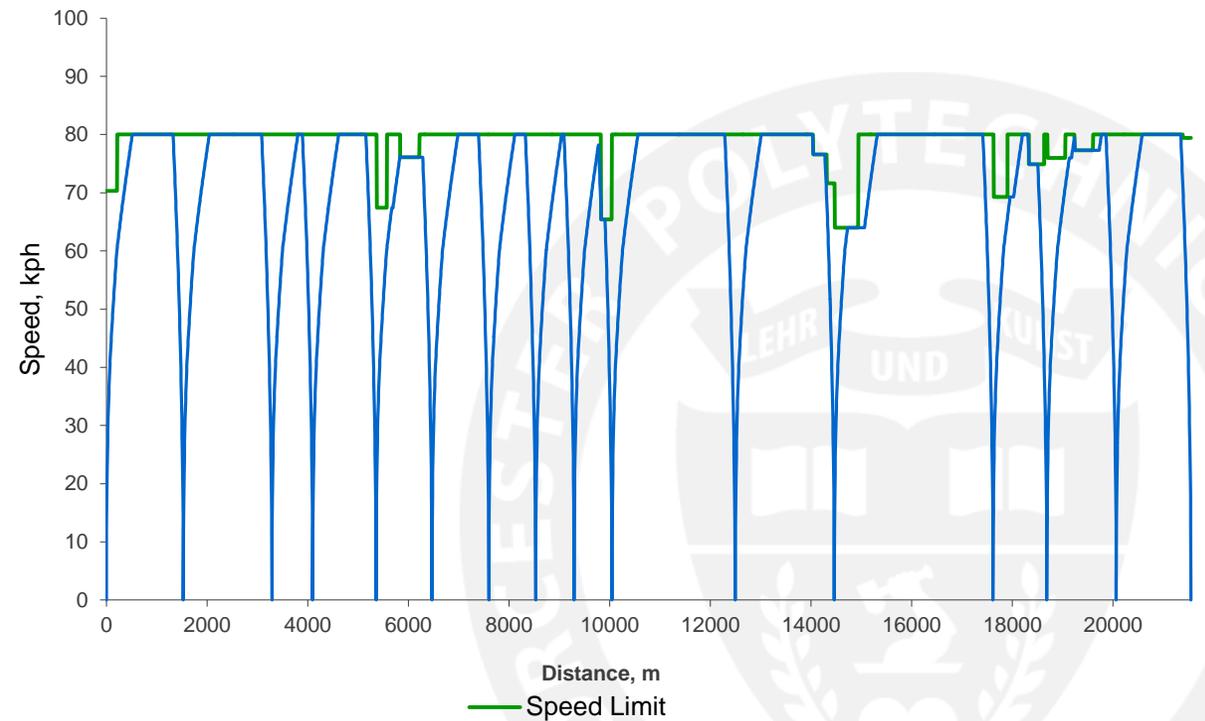
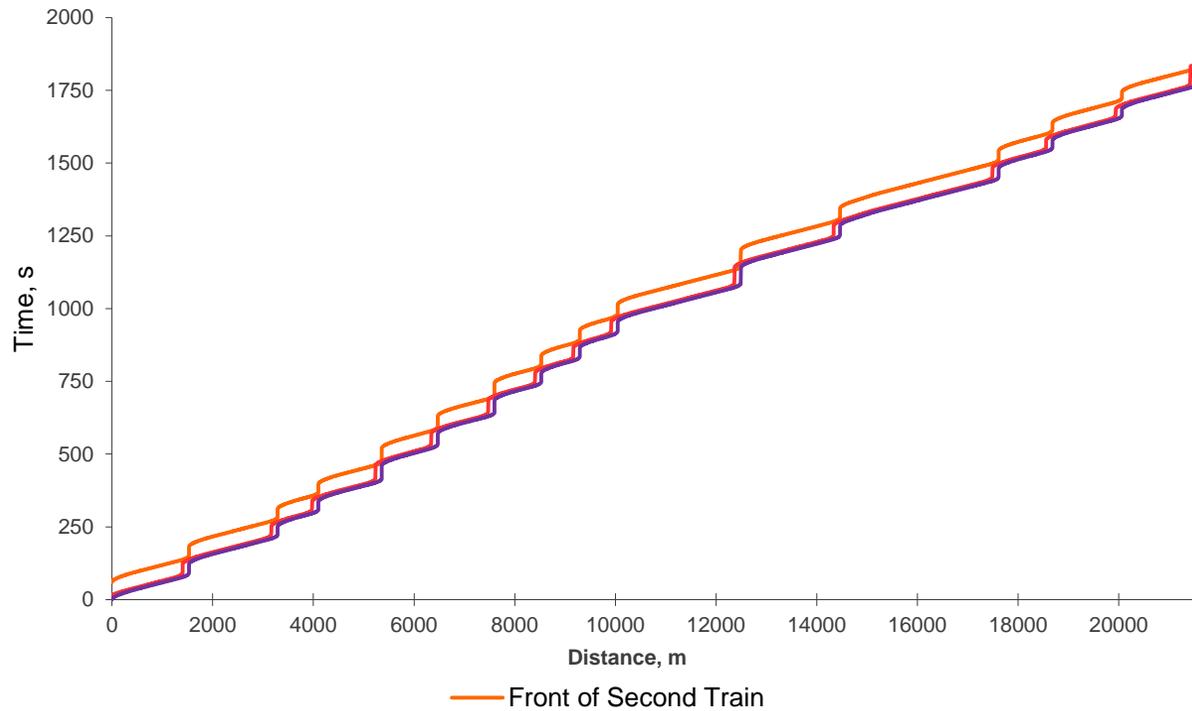
Toggles Red & Green LEDs



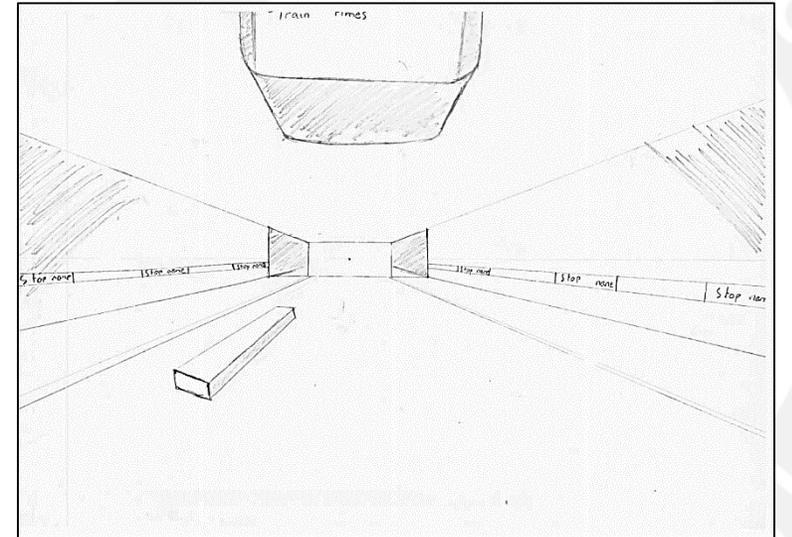
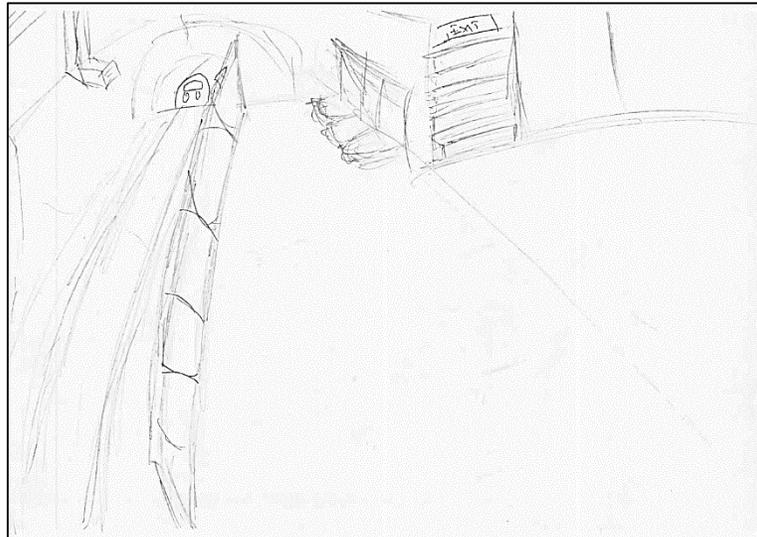
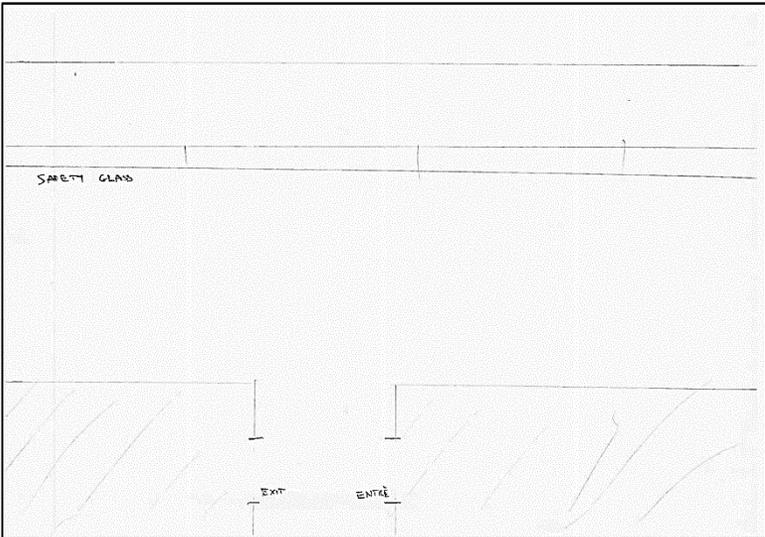
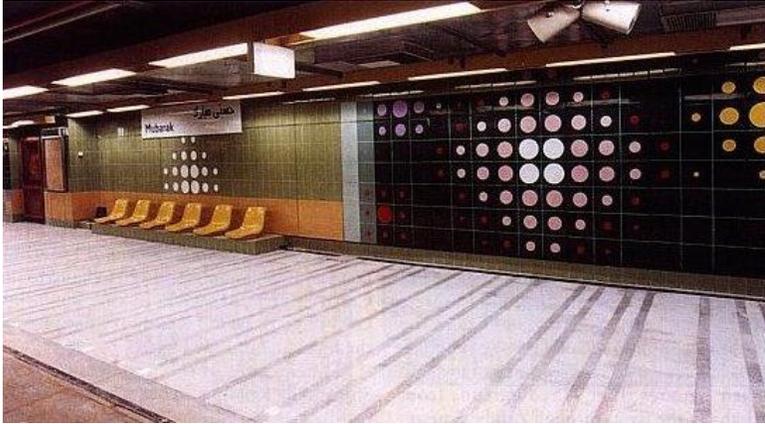
Switch

# Rail Lines & Line Graphs

## Victoria Line Train Graphs



# Station Fixation



# Scheduling Conundrum

