



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



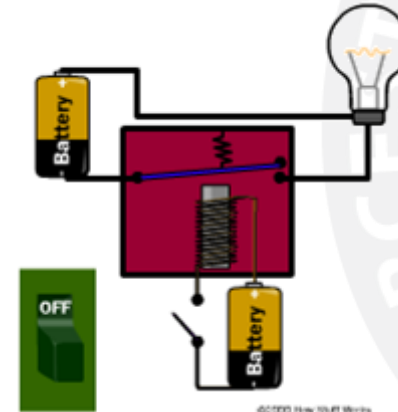
Item 2



Item 3

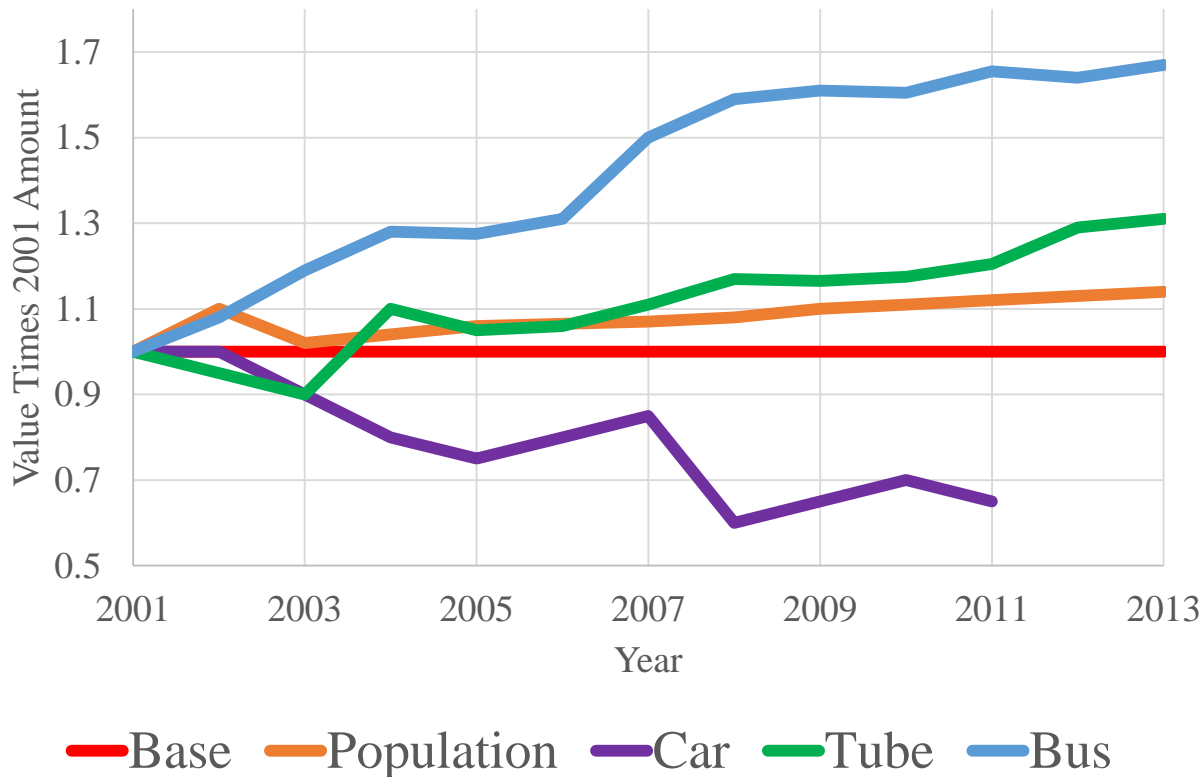


Item 4



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

- 59% felt engineering is interesting
- 18% felt they were not smart enough to understand engineering

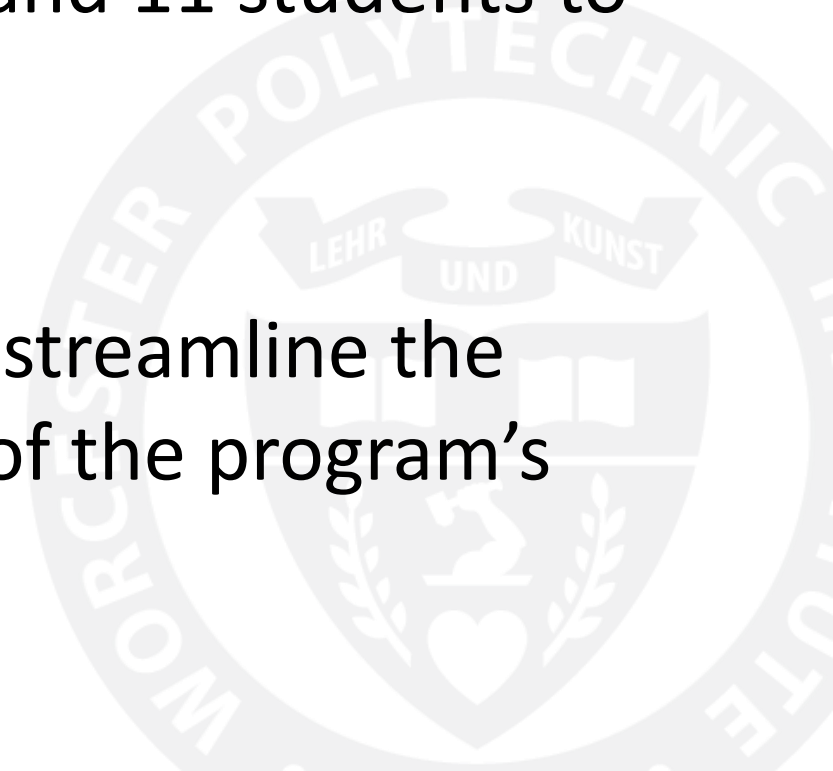
510 Participants

- 52% felt well informed about scientific research and developments
- 51% felt their science education has been useful in everyday life
- 24% felt their experience in school made science unappealing

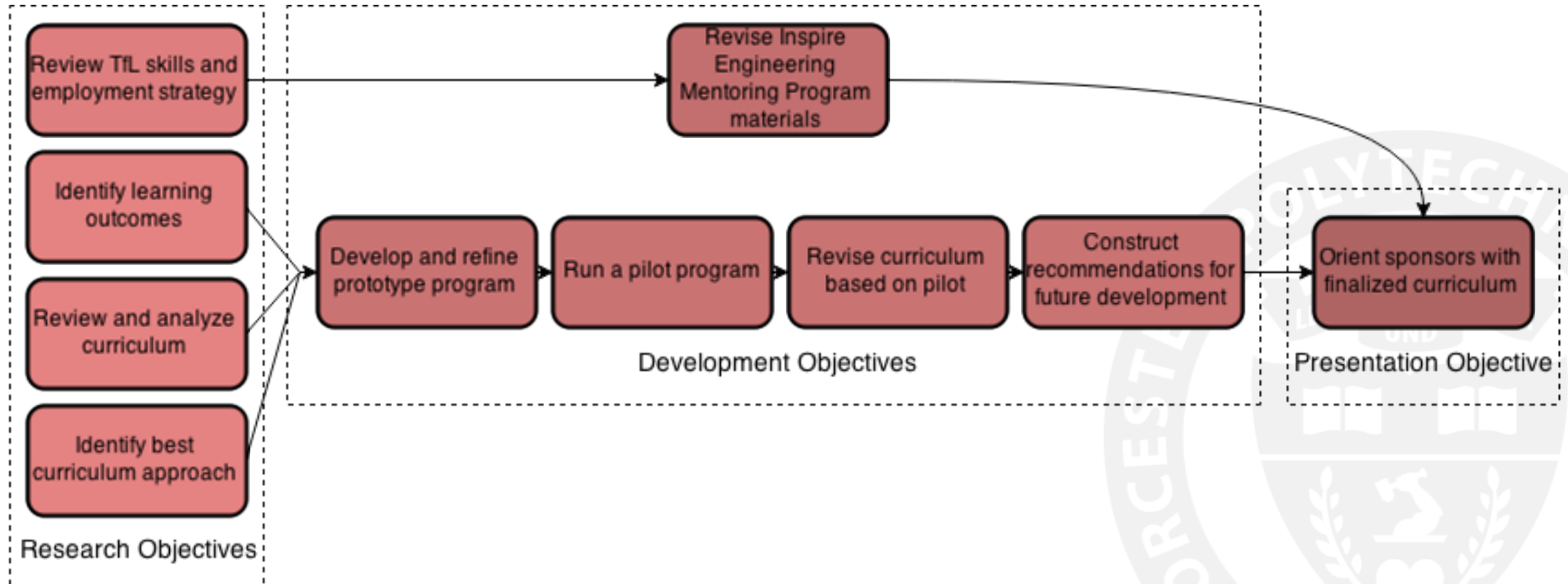
Project Goals

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.



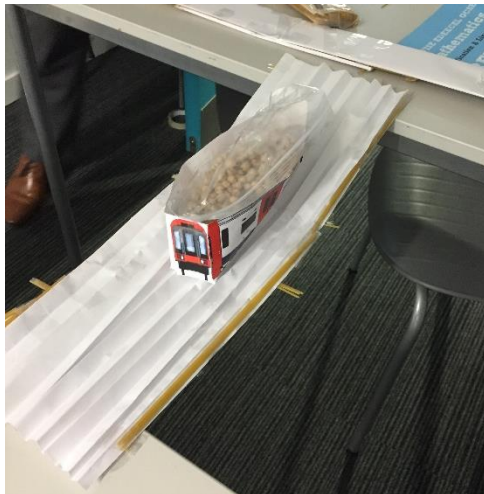
Road Map



Deliverables

Full Speed Ahead Program

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

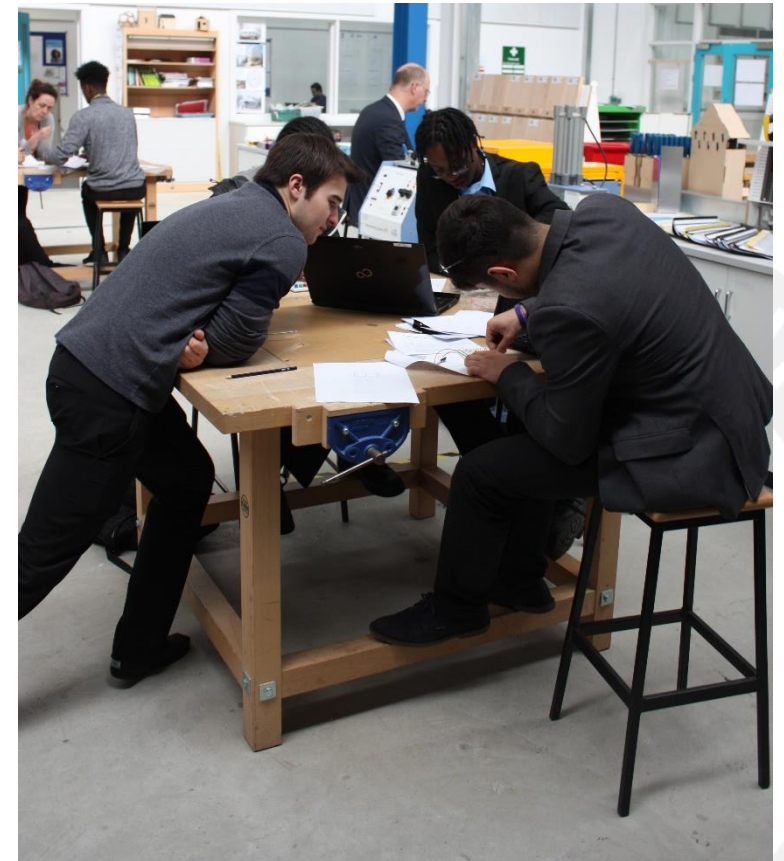


Inspire Engineering Mentoring Program

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

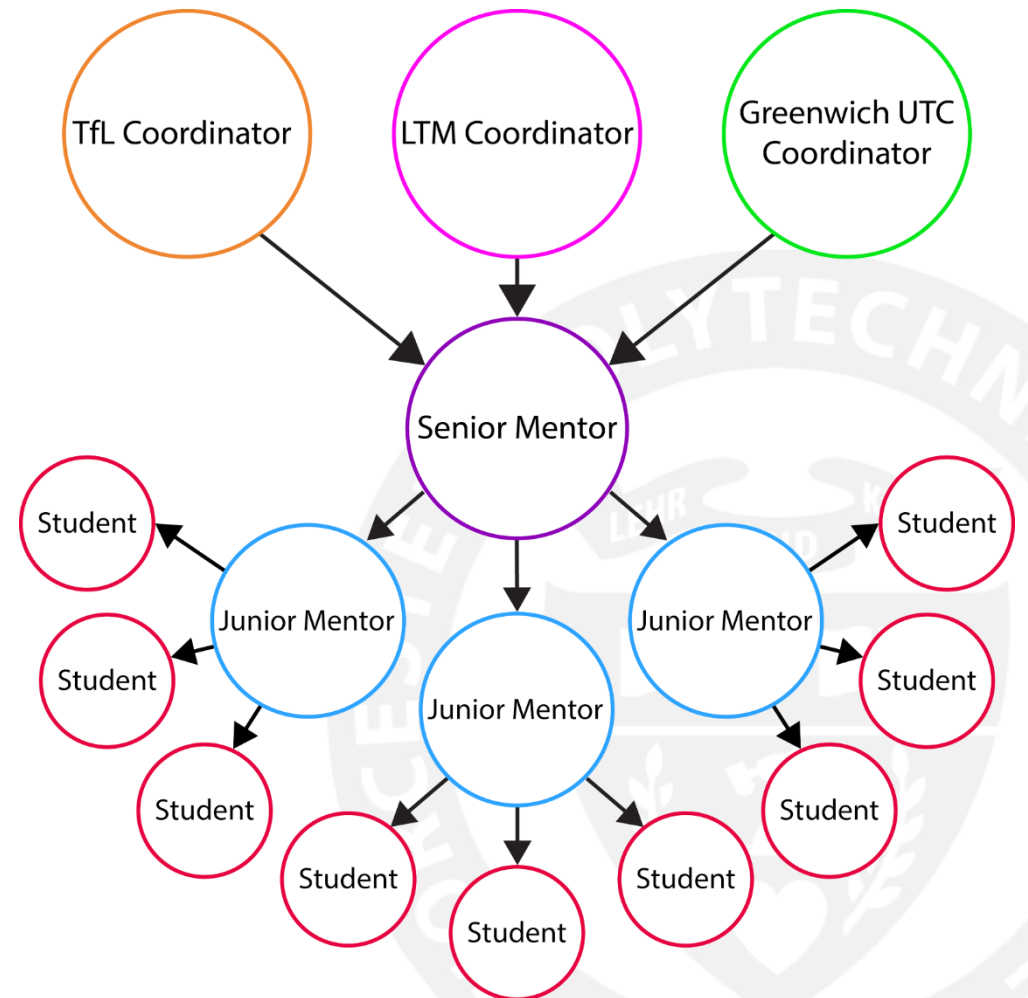
Insights: Full Speed Ahead Program

- 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



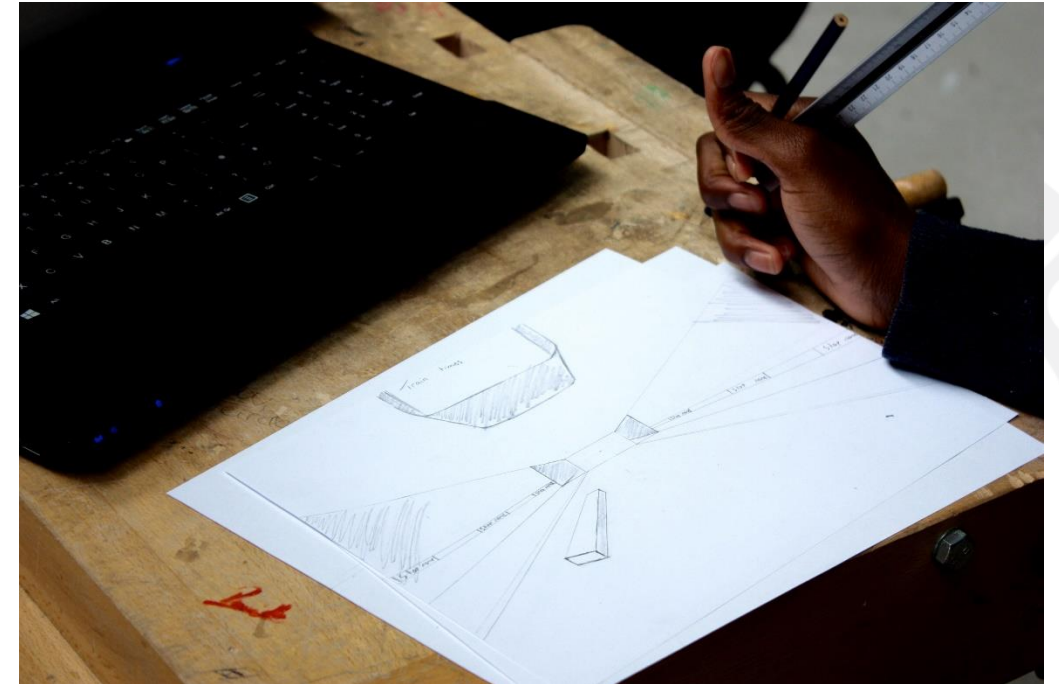
Insights: Inspire Engineering Mentoring Program

- 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

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- Jane Gordon, Royal Greenwich University Technical College Deputy Principal
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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

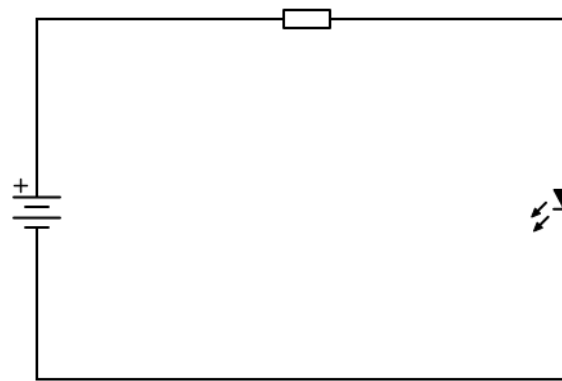
- Did not audit GCSE classes
- Only piloted four of ten sessions
- Few pilot participants

Inspire Engineering Mentoring Program

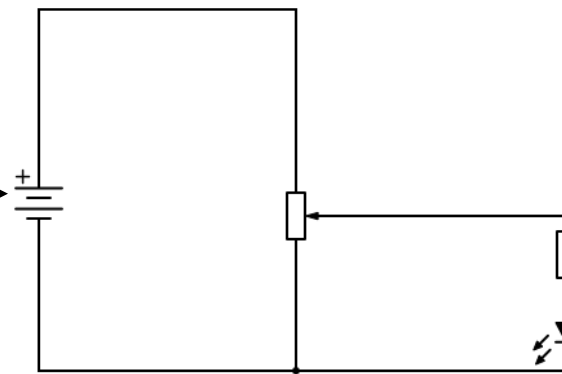
- Could not attend IEMP student meeting
- Could not meet with all Engineering Ambassador mentors



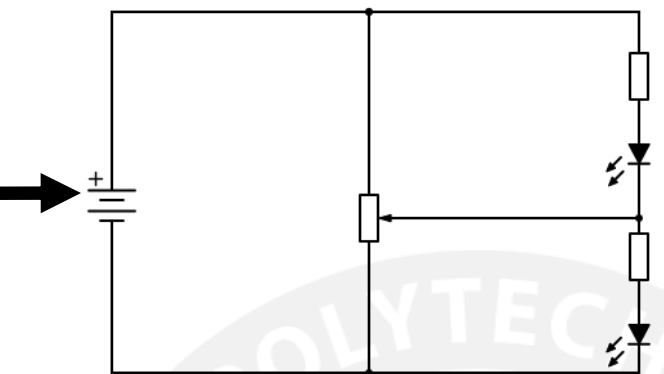
Mixed Signals



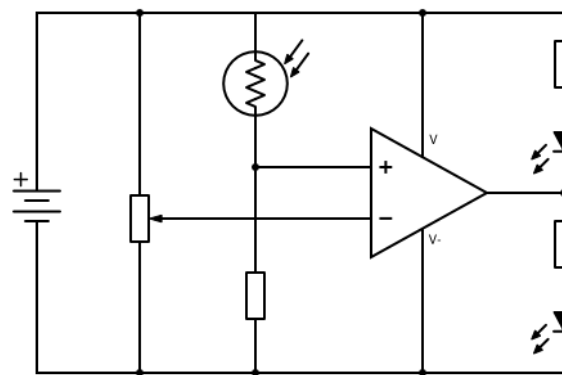
Light



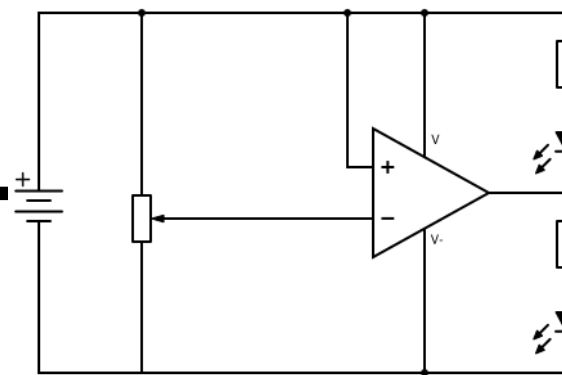
Dimmer



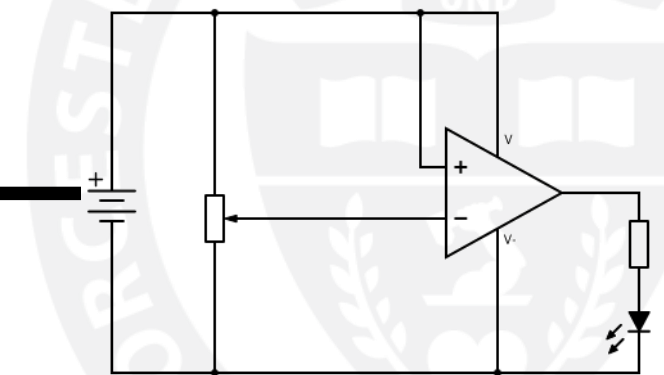
Dimmer Changes Red & Green LEDs



Signal



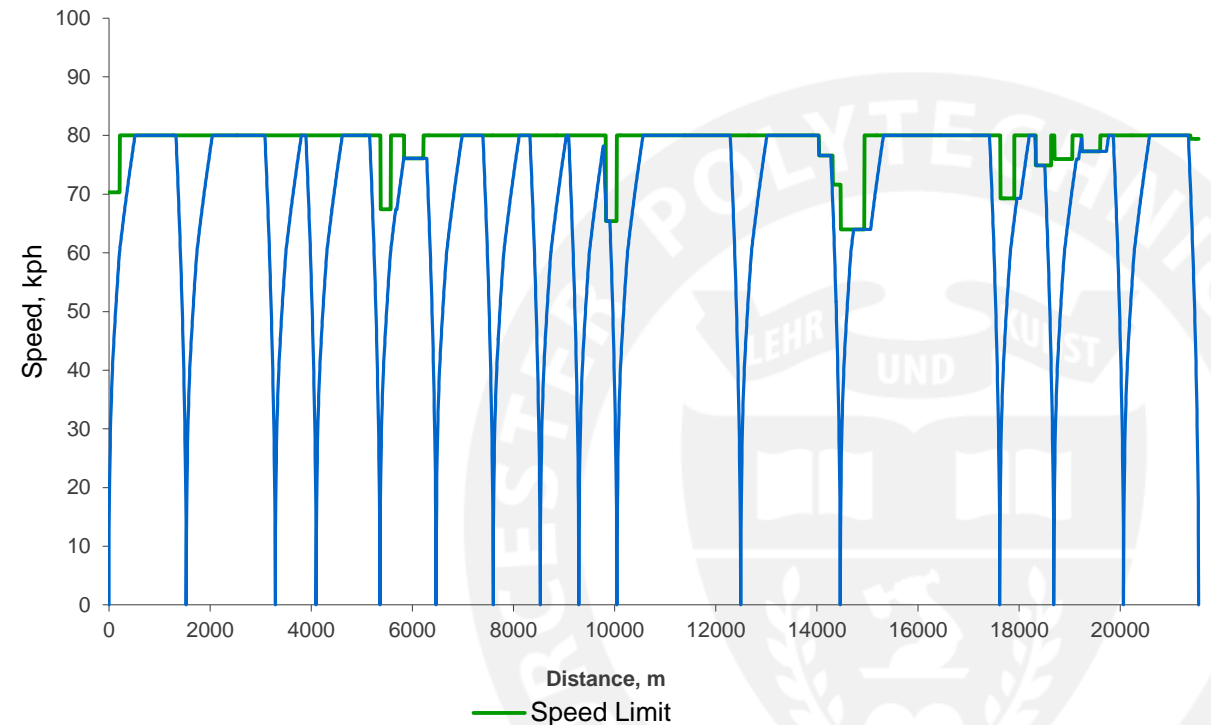
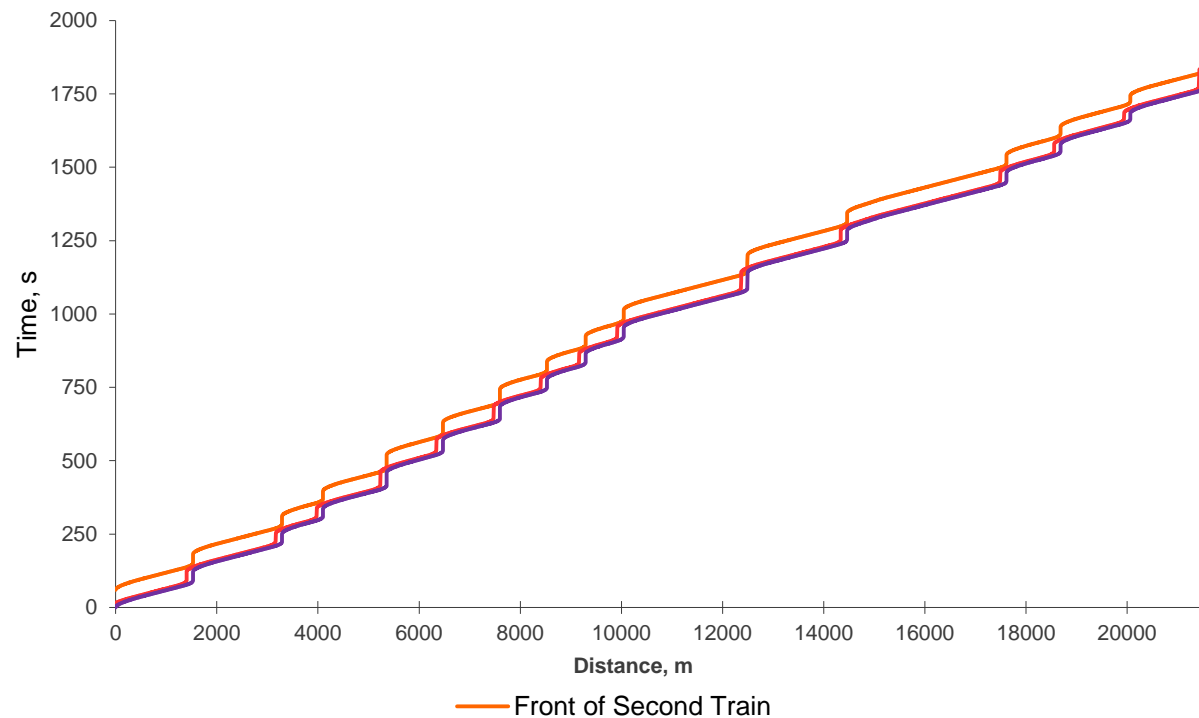
Toggles Red & Green LEDs



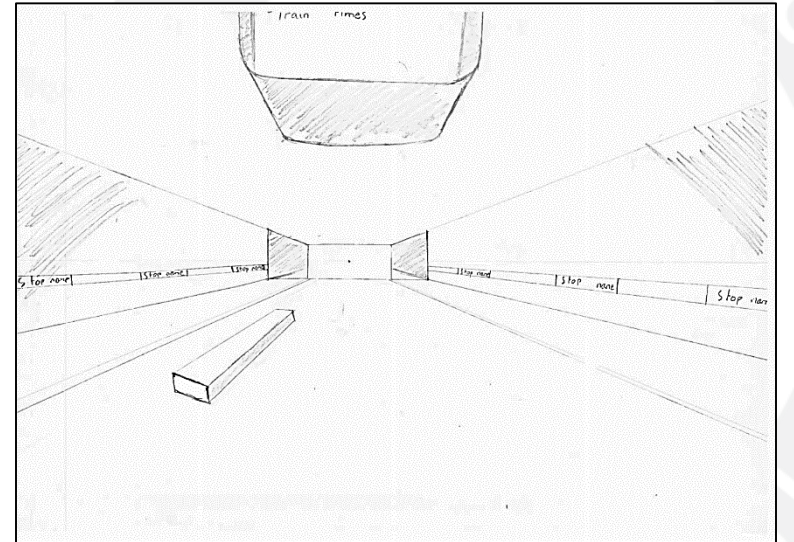
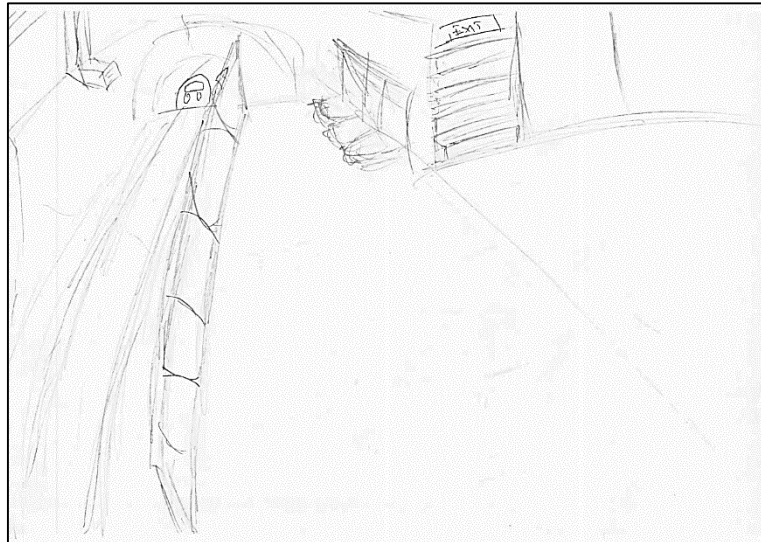
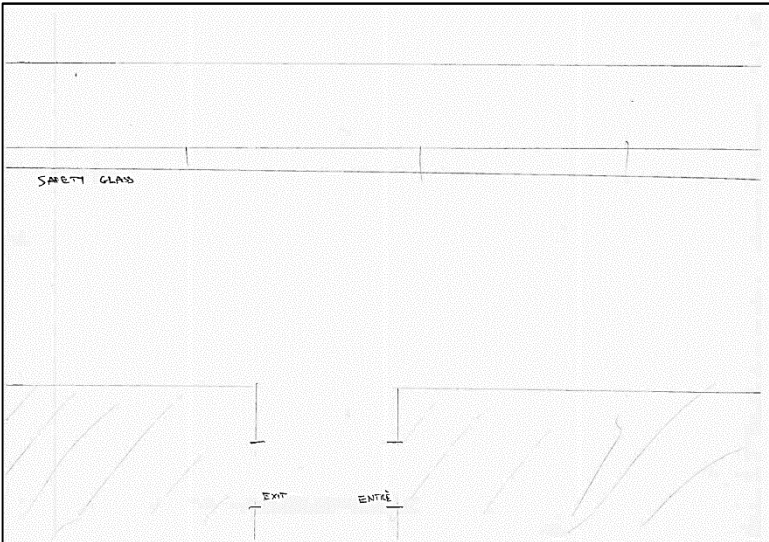
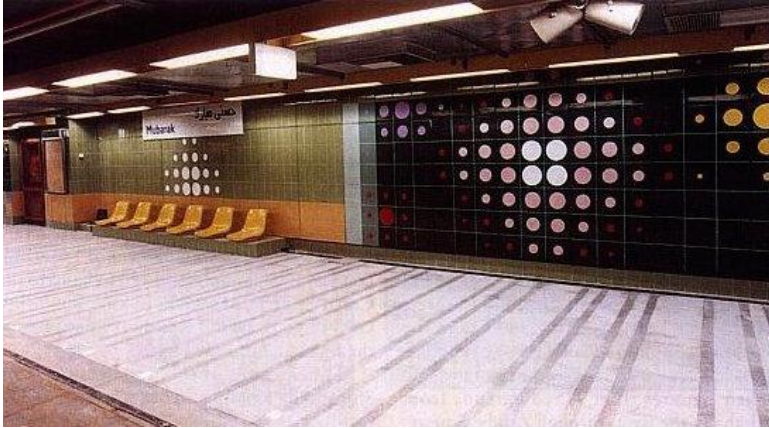
Switch

Rail Lines & Line Graphs

Victoria Line Train Graphs



Station Fixation



Scheduling Conundrum

