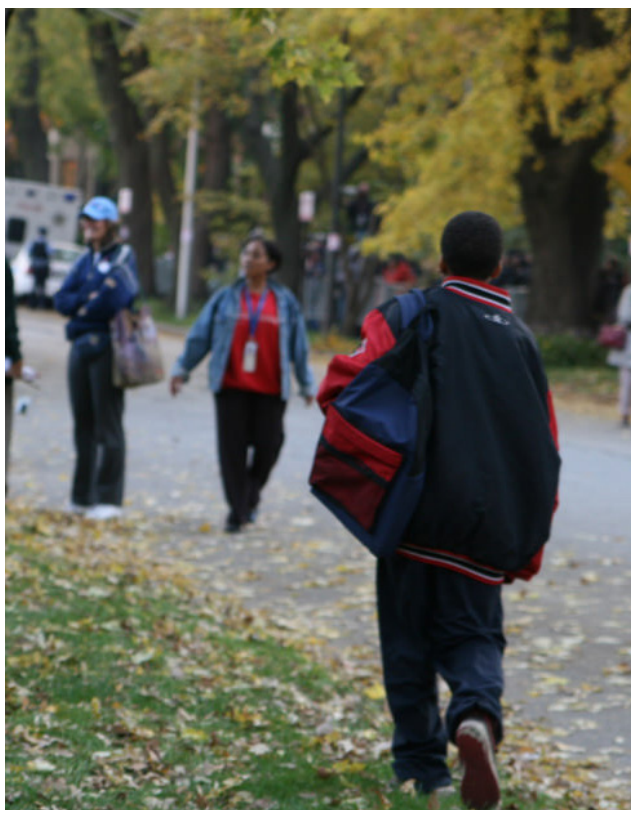
Road Safety in the Secondary Curriculum

Year 8

Lesson Plan – ‘Keeping Safer with Engineering’

Activities and Lesson Plan

Most of this lesson is based on researching and ‘finding out’. Students will become aware of the many design features that comprise the road infrastructure, know their purpose and how they should be used. In addition, there is an opportunity to develop presentation skills and to engage with professionals in the field.



Part 1: What is an ‘engineering feature’? (Whole class activity)

In road safety terms the ‘three ‘E’s’ are generally considered to be Education, Engineering and Enforcement. Discuss what each of these terms mean.

Discuss as a class what you think an ‘engineering feature’ is and what it is designed to do.

Ask the pupils to think of some engineering features in the local area and make a list on the whiteboard (they may not know the proper names for the features at this stage).

Divide the list into 3 main categories

- i) speed control
- ii) helping vulnerable road users (pedestrians and cyclists)
- iii) safer places to cross

Discuss where they might find out more about ‘highways engineering’ – they will need to be identifying the problems we face in the road network, researching the possible engineering solutions to those problems, who decides what to put where, the ‘process’ and the financial costs.

Have they heard of ‘traffic calming’? What do they think this means? Which of the features in the list would they consider to be a feature of a traffic calming scheme?

Part 2: Find Out About…… (In groups)

Below is a list of some of the more ‘modern’ engineering solutions we can find in our road network today.

Give a category to each group of pupils and ask them to research for more information about each ‘feature’ – find a picture of it; find out what it is supposed to achieve; find out the pros and cons of installing it; find out how much (approximately) it costs.

Students could present their findings to the rest of the class, or make a display/frieze around the classroom or along a corridor.

Speed control:

- Speed or safety cameras
- Rumble strips
- Yellow bars
- Gateways
- Kerb build-outs
- Pinch-points
- Chicanes
- Speed humps
- Speed cushions
- Islands
- Mini-roundabouts
- 20mph zones
- Signs displaying accident statistics
- Junction tables
- Road narrowing
- Road surface changes
- Vehicle Activated Signs (VAS)
- Hatch markings
- ‘Dragons Teeth’ markings
- Anti-skid

Road Safety in the Secondary Curriculum

Year 8

Lesson Plan – ‘Keeping Safer with Engineering’

To help pedestrians and cyclists:

- Raised junctions or tables
- Raised zebra crossings
- Traffic islands / pedestrian refuges
- Cycle paths / cycle lanes
- Bollards
- Street lighting
- Safe places to cross
- HGV bans
- Pedestrian guard rail
- Wide grass verges

Safer places to cross:

- Zebra crossings
- Uncontrolled crossings (islands etc)
- Pelican crossings
- Puffin crossings
- Toucan crossings
- Pegasus crossings
- Pedestrian phases at traffic-light controlled junctions
- Footbridges
- Subways / Underpasses

Part 3: Outside our school (Groupwork)

Either on plans, or by going outside, or both, identify the engineering features already in place – take some photos if possible.

Discuss any problems there still seem to be outside the school, particularly at arrival and going home time. Identify any ‘vehicle-pedestrian conflicts’, parking problems, school-bus versus other traffic conflicts, school traffic versus other traffic conflicts, speeding issues – any other ‘hazards’ that could lead to ‘accidents’ (or maybe already have).

With your increased knowledge of engineering solutions, suggest some features that might help the situation, then discuss whether they would be feasible or not (particularly cost-wise).

Try to put some of the features together on a plan – to devise a ‘whole scheme’ for outside your school.

Part 4: Human behaviour

One thing that must be considered when designing schemes is ‘human behaviour’ – engineers have frequently been surprised by the ingenuity and capacity for people to use the features in a way they hadn’t foreseen! Discuss the 4 scenarios provided in the Teacher Guidance Notes.

Can the pupils think of anywhere locally where the road layout has caused more problems rather than provided a solution?

Now, re-look at your class designs more critically – will they ‘do the job’?

Part 5: Presentation (Groupwork)

Make a presentation on ‘Highways Engineering Solutions’. This could be an educational power-point presentation, a technical poster, a pictorial display or even a presentation to make a ‘bid’ for improvements outside the school or a local area that has ‘traffic problems’.

Invite a Highways Engineer from your local council or a Highways Engineering Consultancy to meet with you and discuss your ideas.

If there are good ideas that could be feasible, then you could make your presentations to the appropriate authority the School Council; School Senior Leadership Team or Governing Body; your Local Authority Highways/Traffic Management Department; local Councillors or Community Safety Partnership.

Highways engineering solutions are designed primarily to reduce casualties on our roads and maintain traffic flow, enabling all road-users from large lorries to the more vulnerable to share the road space safely, without causing harm to each other.

By understanding the purpose of the various features and using them correctly, pupils will be much safer in the road environment.

In addition, they will be much more aware of how our road infrastructure functions, which will be of huge value to them when they start learning to drive!

Resources:

- Research facilities, including internet access

Stilwell Road Safety
In Partnership With
PATRICK PARSONS
Built Environment | Engineering | Consultancy