



# Invisibility (Light refraction) Lesson plan

**Aim**

Young people will learn about light refraction through a fun, messy experiment. They will explore the roles scientists and engineers have who work on real life use of light refraction.

**Mapping**

CES 'I Can' Statements	CMS Themes
<ul style="list-style-type: none"> <li>★ I can discuss the relevance of skills to the wider world and make connections between skills and the world of work</li> <li>★ I can demonstrate and apply the skills I have learnt across the curriculum in relation to the world of work</li> </ul>	<ul style="list-style-type: none"> <li>★ Horizons</li> </ul>

**Learning Outcomes**

Young people will:

- ★ Learn about the physics behind light and the process of light refraction
- ★ Investigate how light travels through different mediums and think about the material applications of light refraction

Activity on next page...



## Instructions

- ★ Watch the Invisibility [video guide](#) (1)
- ★ Open/print off the Invisibility worksheet
- ★ You will need the following items to do the experiment:
  - Vegetable oil
  - Collection of Pyrex (heatproof) glassware – can be found in kitchen cupboards or ordered online
  - Rubber gloves
  - Wipeable tablecloth or covering
  - Kitchen roll or something to clean up any spillages!
- ★ An adult should overview the experiment

## Follow-up

There are lots of related job profiles on My World of Work that the young person could find out more about:

[Physicist](#) (2), [Aerospace engineer](#) (3), [Materials engineer](#) (4), [Materials technician](#) (5), [Chemical engineer](#) (6), [Product designer](#) (7), [Design engineer](#) (8), [Garment technologist](#) (9), [Optometrist](#) (10), [Dispensing optician](#) (11), [Mechanical engineer](#) (12), [TV or film camera operator](#) (13)

They can find about related apprenticeships on [Apprenticeships.scot](#). (14)

Foundation apprenticeships - [Engineering](#) (15), [Scientific technologies](#) (16), [Creative and Digital Media](#) (17), [Software Development](#) (18)

Modern Apprenticeships - [Engineering](#) (19), [Fashion and Textiles Heritage](#) (20)

Graduate apprenticeships - [IT: Software Development](#) (21), [Engineering: Design and Manufacture](#) (22), [Engineering: Instrumentation, Measurement and Control](#) (23), [Data Science](#) (24)

## Website references

1. Invisibility activity guide video <https://bit.ly/3fwsAnN>
2. Physicist <https://bit.ly/2zW7Nue>
3. Aerospace engineer <https://bit.ly/2AGEOuS>
4. Materials engineer <https://bit.ly/2ynGCZ8>
5. Materials technician <https://bit.ly/3dV9R4C>
6. Chemical engineer <https://bit.ly/2zd0m1O>
7. Product designer <https://bit.ly/2ZujdjX>
8. Design engineer <https://bit.ly/36gCR3Z>
9. Garment technologist <https://bit.ly/2WQxGF5>
10. Optometrist <https://bit.ly/3bQ9RkP>
11. Dispensing optician <https://bit.ly/2XjDtlh>
12. Mechanical engineer <https://bit.ly/2ToJmwH>
13. TV or film operator <https://bit.ly/3cV8uTm>
14. Apprenticeships.scot [www.apprenticeships.scot/](http://www.apprenticeships.scot/)
15. Engineering Foundation Apprenticeship <https://bit.ly/2AJ1zhL>
16. Scientific technologies Foundation Apprenticeship <https://bit.ly/3bUcbHO>
17. Creative and digital media Foundation Apprenticeship <https://bit.ly/3ea8jUf>
18. Software development Foundation Apprenticeship <https://bit.ly/36iTwE5>
19. Engineering Modern Apprenticeship <https://bit.ly/2z9VryW>
20. Fashion and textiles heritage Modern Apprenticeship <https://bit.ly/2zkEUbp>
21. IT: Software development Graduate Apprenticeship <https://bit.ly/3ei41KX>
22. Engineering: Design and manufacture Graduate Apprenticeship <https://bit.ly/2ToxBq3>
23. Engineering: Instrumentation, measurement and control Graduate Apprenticeship <https://bit.ly/3bSgMde>
24. Data science Graduate Apprenticeship <https://bit.ly/2LOj4j0>