The Geography of Japan

Lesson 7: Japanese Buildings

Learning Objectives:

- Identify building materials and design aspects suitable for earthquake prone areas.
- Explain some aspects of earthquake proof design.
- Evaluate the effectiveness of an earthquake proof building design.

Curriculum Links:

This unit covers aspects of KS3 National Curriculum in England for Geography relating to:

- Location knowledge
- Place knowledge
- Human and physical geography
- Geographical skills and fieldwork

See the Scheme of Work or National Curriculum for further details: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/239087/SECONDARY_national_curriculum_-_Geography.pdf *Department for Education* (2013).

Keywords:

Katana, iron, shrine, building, construction, earthquake-proof, materials, cross-bracing, base isolation, shock absorbers, critique.

Resources:

Presentation: Japanese Buildings

Worksheet: Building Design

Additional Resources:

Video: *In Japan, Repairing Buildings without a Single Nail* https://www.youtube.com/watch?v=O-u4T13guko&t=40s (external resource, *Great Big Story*, '3:31)

Photo Gallery: *How Japan's Skyscrapers are built to survive earthquakes* https://www.bbc.com/future/gallery/20190114-how-japans-skyscrapers-are-built-to-survive-earthquakes (external resource, *BBC*)

Warm up & Starter

- Display the first slide of the presentation showing a katana sword. As a warm up, ask students to come up with suggestions about what the connection between the picture and Japanese building design could be. They are then shown information about iron being in short supply and nails rusting in high humidity, so carpenters found ways to avoid using it in construction.

- Move on to the starter activity showing pictures of Ogamiyama Shrine (standing for over 1200 years), and a modern building which has collapsed due to an earthquake. Ask students to consider what happened.
- If there is time, show the short video of a miyadaiku carpenter talking about his work.

Estimated Time: 15 minutes

Task 1

- Show students the information about characteristics of a range of building materials and designs on the presentation. Also show the slides on modern earthquake-proofing techniques. There is a photo gallery in additional resources with further examples of building techniques used in Japan.
- Students select the materials and designs they think would be best for an earthquake proof building design and add them to a mind map on the task 1 section of the Earthquake-Proof Building worksheet. For an extra challenge, students can include notes on the advantages of the things they have selected.

Estimated Time: 15 minutes

Task 2

- Students now create their own designs for earthquake proof buildings under the task 2 section of their worksheets, using the ideas from task 1. The challenge task is to explain their choices and develop the labels into annotations.
- If you prefer, this could be made into a practical activity; students could use playdoh or marshmallows and pasta to create models of their buildings instead of drawing their designs.

Estimated Time: 15 minutes

Task 3

- Now there is an opportunity for peer assessment. Students should swap their work with a partner and give one piece of positive verbal feedback as well as one written suggestion for improvement on their partner's worksheet.

Estimated Time: 5 minutes

Plenary

- In this activity students will review/recall key terms from the unit. The slide shows a range of individual letters and pairs of letters. Students must come up with as many key terms from this unit as they can. Allow them to look back over their work if needed.

Estimated Time: 10 minutes