



Rote learning is 'wrote-off'

Learning activities and resources for teaching about mountains in primary school geography!

The current *Primary Geography Curriculum* states that “mere rote memorisation of the names of physical features, towns and counties contributes little to the learning process”-i.e. it is more important for pupils to learn about how mountains form and how they impact our lives and the natural world. Despite this, many teachers spend a large amount of class time and assessment on the ‘learning-off’ of the names and locations of various mountains, filling in locations on blank maps for assessments and so on. Furthermore, recent research has found that most Irish pupils do not enjoy learning about natural features in this way.

The following learning activities and resources were designed and created by the Primary Geography Education Team at the Institute of Education at Dublin City University (DCU). All resources advocated for in this article are available for teachers to use with their class (follow the links at the end of the article or email us). When planning a unit of geography on mountains, teachers should consider how they can develop pupils’ understanding and sense of space and sense of place e.g. what these features are like, how mountains form, what we use mountains for, where they are located, how they impact where people live, what wildlife lives there.

Introducing the mountains of Ireland

Begin the topic by focusing on the locations of mountains in Ireland and understanding how they impact where we live and how we travel. This will help to build pupils’ mapping skills in a real-world and purposeful context. Facilitate the pupils in looking at aerial photographs and satellite images of Ireland during the day and night, use terrain and political maps illustrating the 32 counties (see Figure 1). When comparing these maps/satellite photos, pupils should note patterns of settlement (the most rural/urban areas) and speculate as to why that might be (such as why the dark areas are more rural). Perhaps it is difficult to build towns and cities in the mountains. Is farming limited

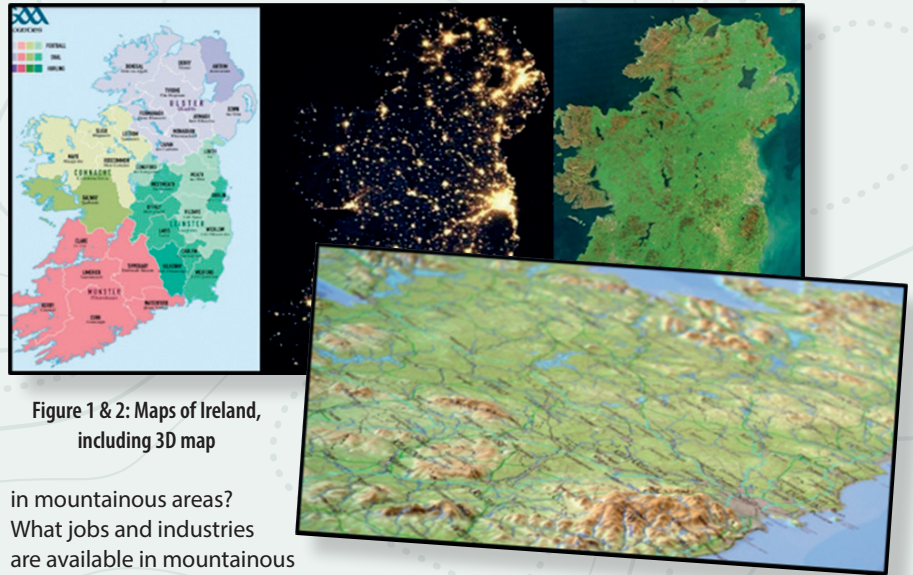


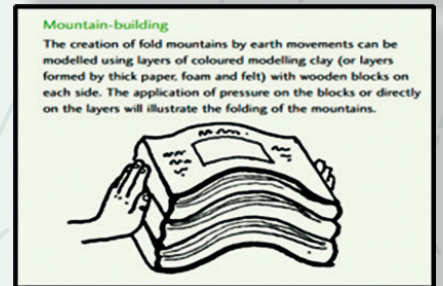
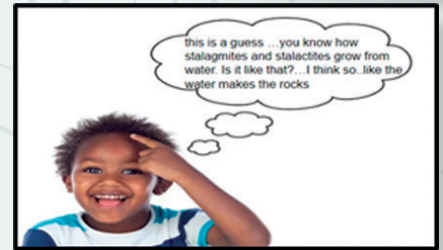
Figure 1 & 2: Maps of Ireland, including 3D map

in mountainous areas? What jobs and industries are available in mountainous areas? Are mountains important? Why? The focus of these activities should remain on developing map-reading skills to develop pupils’ sense of space, rather than rote memorisation.

Figure 1: Comparing Maps and Satellite Images of Ireland
3D maps of Ireland (see Figure 2) are also very effective in clearly demonstrating to pupils where the most and least mountainous parts of Ireland are and provide opportunities for tactile learning.

Using children's questions and ideas

Teachers should share images of various mountains with the pupils (see the end of the article) to facilitate discussions on pupils’ investigable and open-ended enquiry questions. What lives/grows on mountains? (i.e. wildlife habitats). Why is there snow on some mountains? (i.e. climate). What do people use mountains for? (i.e. forestry, mining/quarrying, tourism/recreation, hiking, biking, etc.). Teachers should also encourage pupils to share their ideas and experiences of mountains to help identify common misconceptions amongst pupils (e.g. mountains grow from stones). Teachers could explain the concept of tectonic plates moving beneath the earth’s crust and demonstrate these using books (as advised by the NCCA) or towels (see Figure 3).



Figures 3 and 4: Starting with pupil's concepts and demonstrating mountain formation

Virtual fieldwork and identifying key features of mountains

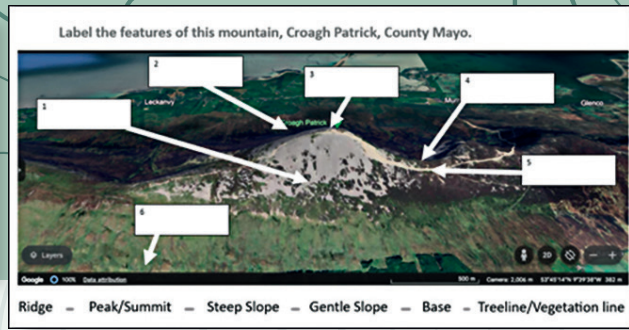
In pairs or individually, pupils could develop their sense of place and investigate a mountain range with *Google Earth* using Orbit and Streetview functions (see Figures 5 and 6).

Pupils should identify the different features of mountains such as the peak, base, ridge, vegetation line, and valley on *Google Earth* by dropping placemarks or on a printout worksheet (see Figure 6).

Contour maps of mountains are good



Figures 5 and 6: Using Streetview and Orbit functions on *Google Earth* (Figure 6: Identifying features of mountains)



for indicating height and gradient/steepness levels (the smaller the gaps between contour lines, the steeper the slope). This map of Croagh Patrick depicts the easiest hiking route in red (Figure 7).

Next, pupils can learn about contour lines on maps and how they demonstrate the height and steepness of slopes by using a ruler to measure and mark 1cm intervals in height from the base to the peak of their mountains. The pupils should then use their rulers to gently 'saw' their modelling clay model into 1cm slices (from the base to the peak). The outline of each of these slices can then be traced on the worksheet, beginning with the base 1cm height. This will create a contour map for their mountain! See Figures 8 and 9 for demonstration.

card sort activities or captions to be read, discussed, categorised and matched to a corresponding image. There is a sample enquiry pack for the Alps in the resource links.

Presenting findings/learning

Pupils could present what they have learned about mountains through posters, 3D models, oral presentations, digital tools such as *StoryJumper*, vlogs or report writing in literacy.

Additional Ideas to Consider

- **Mountain rescue:** Pupils could learn about the work of mountain rescue in Ireland by using videos from YouTube (bit.ly/MountainRescueIreland) or even making connections with members of Mountain Rescue Ireland in-person or via video link.
- **Mountain industries:** Pupils could investigate an industry based in the mountains (such as forestry) and interview a forestry worker.
- **Ain't No mountain high enough:** Pupils could use maths to calculate the equivalent number of times they would need to ascend the stairs in their school to equate to climbing a local mountain. For example, Sliabh na Cailleach is the highest point in Meath at 276m. Pupils measured the height of the stairs from ground level to first floor at 3m which means that each pupil would have to ascend the stairs 92 times to climb the equivalent height! Better still, the class could visit and climb one of their local mountains!

Links to resources

- Link to Printable Resources:
- Link to 3D Maps: <https://terraform.ie/>

Contact Us: Please feel free to use and share the link and resources. We would love to get your feedback. Please send it to us and feel free to contact us at:

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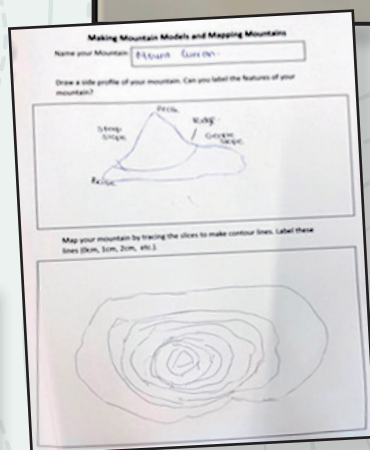


Figure 7: Contour map of Croagh Patrick

Pupils should use their understanding of contour lines to identify that this hiking route is selected as it is the easiest way of climbing the mountain with the gentlest slopes.

Making mountains and understanding contour maps

Pupils can use modelling clay to make their mountains. These modelling clay model mountains should include peaks, gentle and steep slopes, and be made to a height of at least 6cm – as a mountain is defined as above 600m! Pupils should then draw a side profile of their mountain and label the key features (see Figure 7).



Figures 9 and 10: Making and mapping models of mountains



Figure 8: Sketching Side Profile of Mountain Model

enquiry packs

In groups, pupils could investigate mountain ranges such as the Alps in Europe or the Himalayas. Teachers can create simple enquiry packs for groups to use for their investigations. These packs would include various pictures, maps,

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