



## Composite List of Geological Materials to Teach all the Activities and Approaches in ESEU's Workshops at KS3 & KS4

### Introduction

Many of the activities in the ESEU workshops are simulations of geological processes and do not require actual rock specimens at all. However, there is still a need for genuine specimens, for students to be able to relate their investigations to the real world.

Some of the rocks named below may not sound familiar, but they are mostly recommended for their properties, not so that students should learn their names.

Many of the rock types listed also appear in the QCA Schemes of Work for Key Stage 3.

This list is divided into five sections:

1. minimum requirements – that all schools should have as examples;
2. class sets – several specimens of each, for teaching specific aspects;
3. expendable specimens – for investigational activities, during which specimens are degraded;
4. desirable specimens – to illustrate specific points;
5. some suppliers of specimens of suitable size and quality.

If class sets are obtained, then the “minimum” specimens can often be abstracted from them for different activities.

Detailed requirements are given at the end of each set of worksheets for each ESEU Workshop (see [www.earthscienceeducation.com](http://www.earthscienceeducation.com))

### 1. Minimum requirements

- **Igneous rocks:** granite, microgranite, rhyolite, gabbro, dolerite, basalt [preferably with gas holes (vesicles)].
- **Sedimentary rocks:** fossiliferous limestone, mudstone or shale, conglomerate, sandstones - a highly porous sandstone; any sandstone cemented by silica; any sandstone cemented by iron oxides; any sandstone cemented by calcium carbonate.
- **Metamorphic rocks:** slate, schist, gneiss, marble, quartzite.

### 2. Class sets

- **For the Dynamic Rock Cycle Workshop –**  
about 7 or 8 class sets of the following: granite; gabbro; basalt with vesicles; limestone; mudstone or shale; conglomerate; sandstone; slate; schist; gneiss; marble; quartzite.
- **For the Spot that Rock Workshop -**  
about 7 or 8 class sets of the following: granite; gabbro; basalt; limestone; mudstone or shale; conglomerate; highly porous sandstone; slate; schist; gneiss; marble; quartzite.

(In most schools, these will be the same specimens as for the Dynamic Rock Cycle, but if the opportunity arises, it is useful to have different varieties, e.g. a pink granite in one set and a white one in the other).

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### 3. Expendable specimens

sandstone, chalk, granite, slate, 20mm or so across

granite chips about 7mm across

limestone chips 7mm or so across

bag of playpit sand, or washed builders' sand (e.g. 10 kg)

several different coloured sands, e.g. red, white (only 50g or so of each)

clean gravel e.g. 1 kg

### Desirable specimens

- A demonstration specimen of roofing slate showing relict bedding (colour bands running through it).
- **For the Plate Tectonics Workshop –**  
A demonstration sample of an andesite (destructive plate margin lava) and a peridotite (rock of the upper mantle).
- **For the Earth Science out of Doors workshop:** Churchyards or town centres - a small reference collection of polished ornamental rocks, obtained (free) from a friendly monumental mason or demolition firm. Beware of trade names and try to get a geologist to give them the geological names (e.g. gabbro is called “black granite” in the trade).
- **Minerals**  
Rocks are mixtures of minerals, and it is possible to teach the Earth Science component of the National Curriculum without mineral samples. However, it is much more meaningful if some minerals can be displayed, and tested by students.

Rock-forming minerals include:

Quartz, feldspars, micas, calcite, Fe/Mg rich minerals such as augite.

Minerals of economic importance include:

Haematite, magnetite, galena, halite (rock salt), gypsum.

- **Fossils**  
Fossils are given a low profile in the National Curriculum, although they do fascinate students and are essential for establishing relative geological dates.  
They are also of importance in teaching about evolution at Key Stage 4.  
Suppliers sell mixed sets of real fossils, or of replicas.

### 5. Some suppliers

We have compiled this list in good faith, from suppliers known to us. No liability can be accepted for any claims arising from the use of this list. The members of the ESEU have no personal financial interest in any of the suppliers named.

- Earth Science Teachers' Association – John Reynolds, 18 Gardiner Drive, Longton, STOKE-ON-TRENT, ST3 2RQ. Tel: 01782 327068. Email Address: [jr.reynolds@virgin.net](mailto:jr.reynolds@virgin.net). Website: [www.esta-uk.org](http://www.esta-uk.org)
- BP Educational Services - BP Educational Service, PO Box 635, HARROW, HA1 2GU. Tel: 0870 333 0428. Email: [bpes@bp.com](mailto:bpes@bp.com). Website: [www.bpes.com](http://www.bpes.com)
- Geo Supplies Ltd, 49 Station Road, Chapeltown, SHEFFIELD, S35 2XE. Tel: 0114 2455746. Email: [sales@geosupplies.co.uk](mailto:sales@geosupplies.co.uk)
- Northern Geological Suppliers, 56 Gas Street, BOLTON, BL1 4TG. Tel: 01204 388754
- Richard Tayler Minerals, Byways, 20 Burstead Close, COBHAM, Surrey, KT11 2NL. Tel: 01932 862340. Email: [richard.tayler@minerals.freeserve.co.uk](mailto:richard.tayler@minerals.freeserve.co.uk)