

Introduction

This activity consists of a bank of resource sheets designed to be very flexible for use with pupils at appropriate places in your curriculum. Part of the resources can be used to deliver Citizenship lessons in the science classroom or during dedicated Citizenship lessons. The resources build upon a theme of variation in the context of race, skin colour, inherited diseases and human evolution. The Citizenship resources promote respect for different ethnic identities and develop pupils' ability to reflect on issues and participate in discussion. The bank of resource sheets are intended to complement other activities you use with your pupils when considering these topics, e.g. video, research (website addresses relevant to this resource are given on the CDROM) and role-plays, rather than to be used as a series of worksheets.

Running the activity

Variation within a species introduces the context of race. Pupils are presented with data from two groups of people and asked to suggest what the difference may be. The common answer is gender. In answering the questions pupils conclude that variation between individuals is sometimes greater than between different groups of people, before race is identified as a possible difference between the groups. The data from a sprint race has been selected as a context in which pupils may have an innate interest. From a scientific basis there are no races within the human species.

What's a species Pupils discuss in groups the concept of race from biological and social viewpoints. Biological sub-division of humans into different races is invalid. Each group summarises their opinions and can feedback orally or through a presentation. In Citizenship lessons this can be extended into presentation work illustrating the variety of ethnic identities in the UK.

Continuous variation This activity can follow on from the previous work in science or Citizenship lessons, or be used individually at KS3 when sources of variation are considered. Pupils work in groups to discuss inheritance of skin colour. They are interested in predicting the skin colour their own children may have. After the discussion you may wish to tell them that these children have a black mother and white father. The discussion is followed by a standard activity to identify features that are inherited, influenced by environment, or affected by both. A write-on version of this W/S is provided if required.

Skin colour This activity identifies important nutritional information for black pupils. It can follow on from previous work in science or Citizenship lessons, or provide an interesting context for considering vitamins as part of a balanced diet.

Human evolution This background information can be used in Citizenship lessons or at KS4 as a resource for teaching evolution in a human context. It provides a very basic introduction to human evolution that is followed up in the next activity.

Meet your ancestors Arrange pupils in pairs to interpret fossil evidence for human evolution. A blank copy of the information table is provided if you wish pupils to have a record of this information. For the final activity pupils are asked to draw a branching tree diagram indicating lines of human evolution and species extinction. This is a challenging extension activity that benefits from further research, making it a useful homework exercise for more able pupils.

Inherited diseases This activity follows on from previous work to introduce KS4 pupils to genetic diseases and selection. They develop an understanding about variation and selection in an interesting, human context without the need to introduce specific terminology or details of genetic inheritance. Further work can then be done on the genetic mechanism for inheritance and selection in other organisms. It is preferable for pupils to have access to the Internet or texts to research the symptoms of sickle-cell anaemia. A paragraph of background information is provided if required.

Learning outcomes

Overall the resources allow:

Younger pupils to:

- interpret data from secondary sources
- suggest reasons why differences exist between individuals
- understand the need for a balanced diet, including vitamins, and foods that are sources of these
- identify some inherited characteristics and some influenced by environment
- relate genetic characteristics to genetic information passed from both parents
- understand that mutations are a source of genetic variation

Older pupils to:

- understand that some diseases are inherited
- understand that the fossil record is evidence for evolution
- how variation and selection may lead to evolution or extinction

Prior learning

An appreciation of the importance of adequate and varied diets for health. How animals are classified into major groups.

Where the activity fits in

These resources may be used at appropriate places in your curriculum. The following suggestions are based on QCA schemes of work. Advice on the teaching of controversial issues can be found in appendix 2 of the citizenship guidance at www.qca.org.uk

Citizenship

1b *The diversity of national, regional, religious and ethnic identities in the UK and the need for mutual respect and understanding*

Science

7D Variation and inheritance

Variation within a species

8A Food and digestion

Skin colour

9A Inheritance and selection

What's a species

Continuous variation

Skin colour

KS4 Single and Double award

Human evolution

Meet your ancestors

Inherited diseases

Skills

Data interpretation, communication, ICT research.