Ageing As We Grow
Suggested Year: 8, 9 or 10

This unit introduces pupils to the physical changes that happen to our bodies as we grow and age. It describes these changes as a normal part of ageing and also emphasises that the choices we make will influence how we age. Pupils discuss the role of diet, exercise, drugs and medicine. This unit also introduces pupils to the fact that we are living longer than previous generations and that this presents society with new challenges.

This unit can link with the Home Economics department (healthy eating), the Learning for Life and Work department (drug use) and the Geography department (Population and life expectancy). It links well with the Key Stage 4 Biology topics of genetics and drugs.

Statutory topic covered in this unit
» Organisms and Health

Unit links to the Big Picture

| Learning for Life and Work | Personal Development |
|                          | Local and Global Citizenship |
| Key Elements             | Personal health |
|                          | Personal understanding |
|                          | Citizenship |
|                          | Cultural understanding |
|                          | Media awareness |
| Cross-Curricular Skills  | Using Mathematics |
|                          | Using ICT |
|                          | Communication |
| Thinking Skills and Personal Capabilities | Managing Information |
| Learning Experiences     | Thinking, Problem Solving, Decision Making |
|                          | Investigating and problem solving |
|                          | Linked to other curriculum areas |
Ageing As We Grow

Assessment for Learning
» Clear learning intentions shared with pupils
» Celebrate success against agreed success criteria
» Peer and self-evaluation of learning

Attitudes and Dispositions
» Personal responsibility

Classroom Activities

Activity 1: Investigating Physical Changes As We Grow and Age
Activity 2: Explaining the Reasons for Physical Changes
Activity 3: Investigating Attitudes to Ageing
Activity 4: How Long Will We Live?
Activity 5: Considering and Reflecting on Your Role in Supporting Older People
Activity 1: Investigating Physical Changes As We Grow and Age

Learning Intentions

Pupils are learning to:

» organise visual information to describe change; and
» identify the typical changes that happen to everyone due to physical ageing.

Suggested Activities

Ask the pupils to bring in four or five photographs of themselves that show how they have changed from birth to the present.

Or

They could use photographs of a family member or a celebrity.

Ask the pupils to order the photographs and list the physical changes that have occurred from one photo to the next. If the photographs are scanned or electronic, pupils could use ICT to organise them. They could put them into a PowerPoint slideshow to illustrate the changes.
If the pupils have used photographs of themselves, it would be useful to have photographs of a person over a longer time span so they can compare the changes. Photographs of grandparents or older celebrities are useful. Pupils could search online for photographs of celebrities such as Shirley Temple, Elizabeth Taylor and Judy Garland. They were in the public eye from a young age and photographs of them at various stages of their life are available online.

Pupils can now add the physical changes that happen as we move through adulthood to their list.

**Prompt Questions**

How does body structure change? Consider the following:

» skin;
» teeth;
» bones;
» eyes;
» hair; and
» muscle.

Ask the pupils:

» How does brain function change?
» Which of these changes do we have some control over?
Activity 2:
Explaining the Reasons for Physical Changes

Learning Intentions
Pupils are learning to:
» explain scientifically the reasons for the changes identified in the previous activity;
» describe environmental factors such as diet, sun exposure and drugs;
» describe genetic factors; and
» summarise their findings.

Suggested Activities
Discussion Questions
Ask the pupils:
» Is growing older necessarily a bad thing?
» What are the advantages?
» What skills or capacities might improve with age?
» How can the disadvantages be reduced?

Introduce some of the scientific theories about ageing, such as:
» cells are programmed to divide a certain amount of times and they lose their ability to divide;
» DNA damage due to, for example, UV light; and
» cell damage due to free radicals or oxygen radicals.

Show the pupils the BBC Horizon programme ‘What is ageing?’, which gives possible explanations for why we age. After watching it, ask the pupils to write down one interesting fact from the programme onto a Post-it note. You can then arrange these on the noticeboard.
It is clear that we all age. Age and death are inevitable for all living organisms. But can we improve the quality of our life as we age? Or can we make our journey through old age worse?

Environmental Influences on Ageing

In groups, pupils investigate one environmental influence on ageing. They must find out what this environmental factor will do to our bodies and if it is positive or negative. Pupils could investigate factors such as:

- UV exposure;
- smoking;
- alcohol – regular, moderate or binge drinking;
- diet – high or low in fat or protein;
- exercise – none, a little, moderate or excessive;
- caffeine – yes or no; and
- other drugs – marijuana, cocaine or heroin.

Pupils could present the information as:

- a poster;
- a PowerPoint slideshow; or
- an oral presentation to the class.

Genetic Influences on Ageing

Present some basic information about DNA and genes. The nuclei of all cells in the body contain DNA, which contains the instructions for how our bodies are put together and work. We get half of the instructions from our father and half from our mother. Small sections of DNA control specific traits. These small sections are called genes.

The following websites include information and resources that you might find useful for this lesson.

- Genetics – What are Genes?, available at www.sciencekidsathome.com, gives a basic introduction to DNA and genetics.
- Introduction to genetics, available at www.eschooltoday.com, includes more detailed sections about genetics, inheritance and variation.

You can decide if you want to introduce simple Mendelian crosses. Monohybrid crosses involving eye colour are easy enough for Year 10 pupils and provide an excellent link and base for Key Stage 4 learning on this topic.
Once pupils understand that some traits are inherited from our parents, ask them if the following features of ageing can be inherited:

» longevity;
» skin elasticity or wrinkles; and
» general health.

Summary Exercise
Ask the pupils: What advice would you give to a 20 year old about their lifestyle as they grow older? This could take the form of a class discussion or a written report or newspaper article.

If carrying out a class discussion, a stick debate (outlined in the Active Learning and Teaching Methods booklet) is a useful way of managing the discussion. This involves giving each pupil three lollipop sticks. When they want to make a point in the discussion, they must hand one stick back. This method encourages pupils to listen and consider their response before speaking and using a stick. Once they have handed back all three sticks, they cannot make another point.
Activity 3: Investigating Attitudes to Ageing

Learning Intentions
Pupils are learning to:
» examine people’s fears and worries about getting older;
» examine the use of anti-ageing products; and
» examine the accuracy and reliability of information.

Suggested Activities
Carry out a brainstorming exercise to complete a spider diagram showing some fears and worries that people might have about growing older. Pupils should interview three family members or friends of different ages to find out each person’s fears. Interviewing a cousin, aunt or uncle and a grandparent will offer a range of ages and perhaps a range of answers.

Pupils now collate their answers and compare them to the initial spider diagram. Ask the pupils:
» Are there fears common to all age groups?
» Are there differences between the age groups?
» Are these fears being exploited by society, the media and/or the cosmetics industry?

Anti-Ageing Products
Choose a product that claims to slow down or reduce the effects of ageing. Ask the pupils:
» What kind of images are used in the advertising?
» What is/are the active ingredient/s?
» Read the small print to find out how the product works. How reliable is the information?
» Does it have a scientific basis?
» If based on research findings, which organisation carried out the research?
» Who funded the research?
The following articles might be useful for this lesson.

- **L’Oréal Settles FTC Charges Alleging Deceptive Advertising for Anti-Ageing Cosmetics** available at [www.ftc.gov](http://www.ftc.gov)
- **Anti-ageing cream advert banned for misleading claims** available at [www.dailymail.co.uk](http://www.dailymail.co.uk)
- **Anti-wrinkle cream ad was misleading, rules advertising watchdog** available at [www.independent.co.uk](http://www.independent.co.uk)
- **Anti-ageing: Creams** available at [www.asa.org.uk](http://www.asa.org.uk)

What are pupils’ conclusions about anti-ageing products now they have looked more closely at them?
Activity 4:
How Long Will We Live?

Learning Intentions

Pupils are learning to:
» link the information they have learned with life expectancy; and
» review statistical data about differences in life expectancy across the world.

Suggested Activities

Use the World Health Organization’s life expectancy at birth (years), 2000–2015 interactive map, available at gamapserver.who.int/gho/interactive_charts/mbd/life_expectancy/atlas.html, to compare the life expectancy across countries.

Ask the pupils: What factors might affect these figures? They should consider:
» healthcare and medicine;
» nutrition;
» war;
» climate or climate change;
» agriculture; and
» wealth.
Activity 5: Considering and Reflecting on Your Role in Supporting Older People

Learning Intentions
Pupils are learning to identify their role in supporting older people.

Suggested Activities
Now that pupils have investigated the causes of ageing, the factors that influence the quality of life as we age and the fears that people have about ageing, ask them to think about what each person can do to:

» improve their quality of life as they age; and
» improve the quality of life of an older family member, neighbour or stranger.

Ask the pupils to work in groups to design and develop an advice leaflet aimed at their own age group. It should include advice on diet, exercise, alcohol and drugs and emphasise the long-term positive effects of making the right choice now.

Carry out a class discussion about what simple steps each person can take to support an older person. Ask the pupils:

» What fears were identified earlier?
» Can we do one thing to ease that fear?


You could arrange a visit to a local retirement home or nursing home with the Learning for Life and Work or Home Economics department. Many homes have volunteering schemes and young people are always encouraged and welcomed.