Subject: Science
Year 5: Animals inc. humans- Human Timeline
NC/PoS:
Describe the changes as humans develop to old age.

Prior Learning (what pupils already know and can do)
Kapow Unit Year 5 Living Things: Life cycles and reproduction
Also, children should be able to name and label the parts of the human body including the digestion system, skeleton and muscles. Know that animals, including humans, have offspring which grow into adults.
The basic needs of animals, including humans, for survival is a balanced diet, water, air and shelter. Humans need the right amounts of nutrition from the food groups. The life cycle of a human is birth, growth, reproduction and death.

End Goals (what pupils MUST know and remember)
- Know prenatal development has a germinal phase, an embryonic phase, and a foetal phase
- Know animals have different gestation periods
- Know the stages in a human's life, include: infancy, childhood, adolescent, adulthood, and old age
- Know cell decline is part of becoming old
- Know vision and hearing decline as animals get older
- Know animals have different lifespans
- know the changes that take place in children during puberty
- Know a girl's hormonal changes cause the ovaries to release eggs and the monthly menstrual cycle is triggered
- Know a boy's muscles become more developed and facial and body hair begins to grow during puberty

Key Vocabulary:
gestation, umbilical cord, sperm, egg, cell, germinal phase, embryonic phase, foetal phase, infancy, childhood, adolescence, adulthood, old age, dependent, independent, puberty, hormones, hormonal, ovaries, testes, breast, pubic hair, menstrual cycle, period, cell decline, lifespan

Use the Year 5 unit *Animals: Human timeline*
Session 1: Use Kapow Lesson 1: Growing Old
Recap and recall:
- The life cycle of a mammal includes mating, gestation, birth, newborn, infancy, juvenile, adolescent and adult stages.
- Infancy is the stage following newborn, often characterised by rapid growth and dependence on parents for survival.
- Adolescence is when a young organism is in the process of developing into an adult and experiences physical and sometimes behavioural changes.
- Adults are fully developed and mature organisms capable of reproduction.
- Reproduction is the life process where new organisms are produced.
- Sexual reproduction in mammals produces offspring with the characteristics of both parents.

LO: To describe how humans change from babies through to old age.
Working scientifically LO: To use a line graph to identify patterns in height and predict values.
Hand out whiteboards and pens (one each) and ask the children to write down any observable (physical) changes while watching the link: Portrait of Vince Timelapse on VideoLink.
Use *Presentation: Human timeline*. Identify the human stages:

- **Newborn:** age 0.
- **Infant:** between the ages 0 and 1.
- **Toddler:** around 1–3 (when babies start walking).
- **Childhood:** around 3–11 years.
- **Adolescence:** around age 12–18 (when puberty takes place).
- **Adult:** age 18 (based upon law rather than at a reproductive age).
- **Old age:** around age 65 upwards.

Using the line graph on the presentation discuss the following:

- **What does the graph show?** (It is a line graph that shows a child's height over time. It has a single line that represents an **average** child's height.)
- **Describe the pattern in the graph.** (The child's height increases over time.)
- **What could the graph be used for?** (It could be used to predict their height in the future.) Can use *Resource: Analysing a growth curve* or the graph on the board to interpret missing values.

Do not do the agamograph activity during Science lesson (can be done as a linked task if time allows)

Vocabulary: adolescence, adolescent, adult, adulthood, child, childhood, evidence, infant, life cycle, line graph, newborn, old age, rate, relationship

Session 2: Use Kapow Lesson 3: Comparing human gestation

Recap: Name 4 muscles and how they help the body to move

LO: To research prenatal development in a human's life

Use *Presentation: Foetal development* and watch the link: Foetal Development Animation on VideoLink

Children learn prenatal development has a germinal phase, an embryonic phase, and a foetal phase

Watch https://www.youtube.com/watch?v=XEfnq4Q4bfk

- Before birth, a human must develop from a series of cells to a baby inside its mother.
- Germinal Phase – where cells develop and divide.
- Embryonic Phase – major organs and structure to the organism develops.
- Foetal Phase – when it takes on a recognisable human form and grows until it is ready to be born. This is called a foetus.

Vocabulary: umbilical cord, sperm, egg, cell, germinal phase, embryonic phase, foetal phase

Session 3: Use Kapow lesson 2: Comparing human gestation

Recap and recall: Name the phases of prenatal development and name the seven nutrition groups and foods within them

LO: To explore the gestation periods of humans and other animals.

Children learn animals have different gestation periods

https://www.youtube.com/watch?v=GFmgTfgf-P0 animals with longer gestations

Children research gestation period of other animals and use *Resource: Gestation period data*.

Discuss what information needs to be included on the graph:

- A title that shows the two variables being compared.
- Labelled axes with the units the data is measured in.
- Scales that fit the largest values and spread out with even increments.

Plot results and evaluate what the graph shows

Are there any relationships between size and period of gestation?

Vocabulary: gestation

Session 4: Use Kapow Lesson 2: Puberty
Recap and recall: What must an animal do to keep its body healthy? (exercise, drink water, eat balanced diet and sleep) and Cops and Robbers activity 'Growing Old'
LO: To identify changes in males and females as a result of puberty.

- Children learn the changes that take place in children during puberty: a girl's hormonal changes cause the ovaries to release eggs and the monthly menstrual cycle is triggered and a boy's muscles become more developed and facial and body hair begins to grow during puberty

Watch https://www.youtube.com/watch?v=Z7zw3tLA3xU What Happens During Puberty??? | @Operation Ouch | FULL EPISODE – 30 minutes or use Kapow pupil video: Puberty
Puberty is the process of physical changes through which a child's body matures into an adult body capable of reproduction. It is initiated by hormonal signals from the brain to the ovaries in a girl and the testes in a boy
Changes for girls:

- The first physical changes during puberty are breast development and body growth.
- Growth of underarm and pubic hair.
- Increase in weight.
- Hormonal changes cause the ovaries to start releasing the eggs.
- trigger the monthly menstrual cycle

Changes for boys:

- Body growth and growth in the size of their sex organs.
- Their muscles become more developed.
- Acne and facial and body hair starts to grow

The children should be able to explain the changes that occur during puberty- do not need to use the worksheet.
Vocabulary: puberty, hormones, hormonal, ovaries, testes, breast, pubic hair, menstrual cycle, period

Session 5 :
Recap and recall: Changes in boys and girls during puberty
Children learn that cell decline is part of becoming old. Vision and hearing decline as animals get older.
LO: To identify why the body changes in old age
https://www.youtube.com/watch?v=vckbQvaZQkU why do we get old? Up to 3.53
Compare lifespans of other animals: research, collect data and present results
https://www.youtube.com/watch?v=LW5ERd8GUQk lifespan comparison – shows a variety of animals to collect data from.

Vocabulary: cell decline, lifespan

Link to career:
geriatric medicine https://www.youtube.com/watch?v=584Eh0cXa1Y
paediatrician https://www.youtube.com/watch?v=ZKKNQ_lA1HQ

Scientists who have helped develop understanding in this field: In Egyptian hieroglyphs, images for old age are associated with the outward curvature of the spine through osteoporosis