

ACET Junior Academies'

Scheme of Work for Science

Big Idea – Living Things

Year 2 – Health and Hygiene



About this unit:

PoS – Animals, including humans

This unit overlaps with PSHE in terms of health & wellbeing. It takes the concepts we learnt in the 'living things and habitats' unit, and builds on them in the context of humans. Students will consider the general facts that we learnt about plants and animals, and begin to apply them to themselves. We will go on to look at humans in particular, and the things that students should know about themselves in order to be as healthy as possible. We begin by looking at the things which keep us alive, and go on to learn the difference between 'staying alive' and 'being healthy'.

An interesting point to make with students is what 'healthy' means – it is a combination both of being physically able/fit to move around well AND being free of disease.

Important – make sure you are following the 'eatwell guide' – the most recent guidance from the Government – and not the 'eatwell plate'. Some important changes have been made since the 'plate' was first developed. Ensure that any visual resources you use refer to the guide.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/528201/Eatwell_guide_whats_changed_and_why.pdf

<https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/>

Make sure you take some photos for the class year book. Look out particularly for flowers (including catkins and other new growth) and buds on the trees.

Unit structure

This unit is structured around seven science enquiries:

1. Are you alive?
2. How do we keep ourselves alive?
3. Do we need to be clean to be healthy?
4. Are you FIT and healthy?
5. What should we eat to be healthy?

Links to previous and future National Curriculum units

Y1 – identifying animals – carnivores, herbivores & omnivores

Y1 – Human body and the senses

- Y3 – Nutrition, skeleton and muscles
- Y5 – Growing up
- Y6 – Healthy humans

6. How much is enough?
7. Can you design a balanced meal?

Enquiry 1: Are you alive?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – naming parts of the body Y1 – carnivores, herbivores, omnivores	EA –Problem solving Asking questions Making predictions	Can your children: <ul style="list-style-type: none"> - Identify that a human's basic needs are for air, water and food - Describe how humans get air, food and water into their bodies <i>GD – show an awareness of how much/often we take in air, food & water.</i>	Horizontal: Vertical: Y3 – Nutrition, skeleton and muscles
	Key concepts: Humans need air, food and water to keep us alive. We get air by breathing through our nose and mouth, food by eating it, and water by drinking it.		
Key terms		Common misconceptions	
Human, air, food, water, need, alive,		<i>Students should know that humans need 'air'. Some students will know about oxygen, but this can be difficult to discuss when they don't have the correct concepts about particles and chemicals. Oxygen does not 'turn into carbon dioxide', and it's important that any mention of this is corrected.</i>	
Suggested activities		Resources	Useful links
Make a profile of a human (give them an outline/draw round a student). Recap features from Y1 – identifying parts of the body. How do we know that humans are alive? Uses air, food & water, it can move, it can grow (adults don't grow bigger', but they have grown during their lifetime. Also, growth means repair – like growing new skin when you have had a cut), it makes babies, it can sense, it produces waste. Staying alive! Babies cannot look after themselves – what do we need to do to help them stay alive? Students can discuss/record their answers in a variety of ways.			

The BASICS are air, food & water. If these are provided, the baby *should* stay alive... but will it be happy? How do we make sure babies are happy?

GD – consider which we can do longest without – air, food or water? Can they justify their answers? There is no need for their justification to be marked as correct/incorrect, but that they know they should have reasons for their opinions.

Enquiry 2: How do we keep ourselves alive?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
EY – Awareness of the need for healthy diet and exercise Y1 – naming parts of the body	EA – Problem solving Asking questions Making predictions	Can your children: - Identify that a human's basic needs are for air, water and food - Describe some other factors that humans need to keep them happy and healthy	Horizontal: PSHE Vertical: Y3 – Nutrition, skeleton and muscles
	Key concepts:		
	Humans need air, food and water to keep them alive. Those three things are not enough to keep us happy and healthy.		
Key terms		Common misconceptions	
Human, air, food, water, need, alive, healthy, happy, warm, shelter, safe, clean		<i>Students often believe that 'Africa' is one big country, and that everyone in it lives in mud huts and is starving. Try and avoid this misconception – there are some very wealthy, healthy areas and countries, despite some areas suffering famine and poverty.</i>	
Suggested activities		Resources	Useful links
Show the students pictures of dirty water, unpleasant food, and polluted air. Can humans stay alive in these conditions? Discussion – probably, but they won't be very healthy, and may not live very long. Look at humans living in different conditions/areas – very cold areas, very hot areas, urban, rural, wealthy, poverty*. Do they all have the same things? What do they actually need to stay alive? Reinforce air, food & water. Discuss the difference between 'being alive' and 'being healthy'. To be healthy, we need MORE than air, food & water. Students could label pictures of some of the living conditions above – what are the issues facing the people who live there? They are alive – but what might be preventing them from being healthy? What is different between the lives of people in the pictures, and their own lives?			

This unit is primarily about physical health and hygiene, but good mental health should also be discussed – e.g. living in close proximity in refugee camps will have an impact on mental health – see PSHE guidance		
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Enquiry 3: Do we need to be clean to be healthy?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – human body & senses	EA – Comparative/fair testing Asking questions Making predictions Recording data Key concepts: Germs can stick to your hands, and washing with soap and water is a good way of getting rid of them. Germs are tiny living things that we can't see. Many of them are good, but some are bad.	Can your children: - State that washing their hands prevents the spread of germs - Germs are tiny living things that we can't see	Horizontal: PSHE Vertical: Y3 – Nutrition, skeleton and muscles
Key terms		Common misconceptions	
Germs, living, microscopic, tiny, dangerous, illness, healthy		<i>'Germs' is a term that refers to micro-organisms. These can be bacteria, viruses or fungi. Students can use the terms 'germ' or micro-organism, but should NOT use 'bacteria' instead of either of these. If they know about bacteria and want to discuss them, they should be reminded that they are only one type of germ.</i>	
Suggested activities		Resources	Useful links
<p>What do the students know about 'germs' – collect ideas. Germs are tiny living things – too small to see – that live on our skin, inside our bodies, in the air and on our food. Most are good – but there are some baddies!</p> <p>Test 1 - Before this lesson - *Get 2 slices of bread. Seal one in a plastic bag with as little contact as possible. Get a few students to rub their hands over a second slice – seal in a bag. Leave in a warm place for a few days, and compare what grows on them. <i>Don't open the bag once the bread has been sealed inside, as you may release large numbers of microorganisms into the air.</i></p> <p>Glitter activity – get one or two children to rub their hands in glitter (this is to represent germs). Ask the class to go around and introduce themselves to</p>		3 slices of bread, 2 plastic bags, prepared 2-3 days in advance*. Glitter – not 'glue glitter', but something that will stick to students' hands Access to soap and handwashing facilities with both hot and cold water Soap Paper towels	

each other – they have to shake hands with every other person in the class and say their names. See how far the glitter has spread!

How are germs like glitter? *They can stick to your hands.*

How are germs NOT like glitter? *They are **alive**, so can grow – so if you only have a couple of pieces of glitter on your hands now, by lunchtime/next time you eat, there will be LOTS of them.*

Test 2 - Ensure that every child has some glitter on their hands (not too much). If you have to add glitter, say that this would have happened given enough time/contact.

Now get them to wash their hands

1 – with cold water only

2 – with a dry paper towel

3 – with warm soapy water. Compare the three types of washing

These are two **comparative tests**.

Students should focus on **asking questions and making predictions** as scientific skills.

'What are we trying to find out by doing this test?'

'Before we carry out the test – what do you THINK is going to happen? Then we'll do the test to find out whether we're right or not.'

*Greater depth/exploration – did they actually measure anything? Could they **measure** how much of the bread was covered in mould? (DON'T OPEN THE BAG – they should do this through the bag). No need to actually measure an area – they can compare it to other items, e.g. it was bigger than the palm of my hand/more than half of the bread etc.*

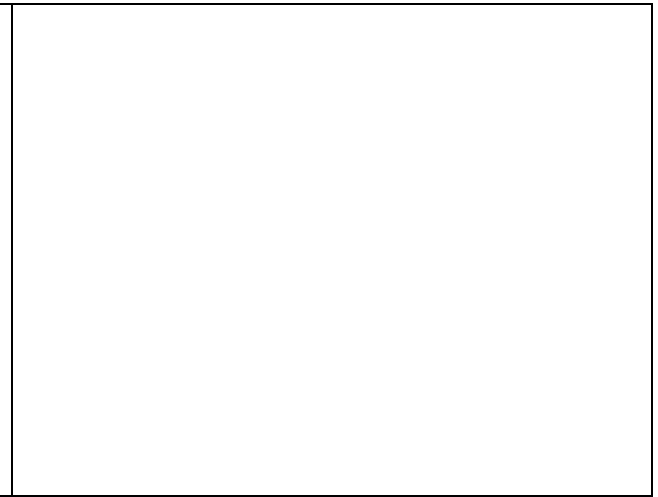
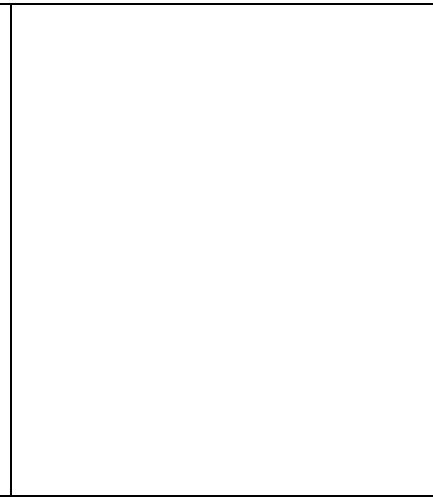
They could count how many particles of glitter are removed by each type of handwashing, or time how long it takes to remove a known amount.

Enquiry 4: Are you FIT and healthy?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – human body & senses	<p>EA – Pattern seeking</p> <p>Asking questions Making predictions Observing and measuring</p> <p>Recording data</p> <p>Key concepts:</p> <p>Keeping active keeps you healthy. Being active means you can run without being too out of breath, your arms and legs are strong, you can jump and balance. We should do things every day that make us active, because this will keep us healthy.</p>	<p>Can your children:</p> <ul style="list-style-type: none"> - State that being active means you are strong, don't get out of breath too quickly, and can jump and balance - Describe some activities which will keep you healthy <p><i>GD – discuss how much activity you need to do</i></p>	<p>Horizontal: PE PSHE</p> <p>Vertical: Y3 – Nutrition, skeleton and muscles</p>
Key terms		Common misconceptions	
Active, healthy, out of breath, jump, run, balance, strong		<i>Students often think that being fit is the same as being healthy. Encourage them to remember that it also involves cleanliness and a lack of disease.</i>	
Suggested activities		Resources	Useful links
<p>Make a 'diary' of all the things you do in a day (this can be done as a whole class/group activity). Students will probably need support to 'chunk' their day. How many times are you active? Is this important?</p> <p>Being active keeps us healthy. Being active means you can run without being too out of breath, your arms and legs are strong, you can jump and balance.</p> <p>Practising all these things makes you better at them! 1 – design some tests to see how good you are at these things. <i>This is an opportunity for measuring, and working scientifically.</i> Shuttle runs – how far will you run? How many times? How out of breath are you? – count breaths per minute? Squats or press-ups – how many can you do? Or how many can you do in a certain amount of time (more scientific)</p>		<p>Equipment and space for the students to do some activities – shuttle runs, balancing, jumping</p> <p>Stopwatches or timers</p>	<p>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/832868/uk-chief-medical-officers-physical-activity-guidelines.pdf - background information and some good explanations for why guidelines are needed</p> <p>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/832861/2-physical-activity-for-children-and-young-people-5-to-18-years.pdf - excellent infographic summarising information for young people</p>

How many times can you jump? They should decide how far/high, and set time limits – lots of opportunity for estimating, and then measuring.

2 – design an **exercise plan** for someone your age. What do you suggest they do, to get better at all these things? Go back to the 'diary' at the beginning of the lesson – can you fit things into here, rather than schedule an hour of 'exercise'? e.g. run on the way to school, practise balancing at play time.

Students should discuss how to best record the data they gather. They do not need to have perfect tables by the end of the lesson – they should be having discussions as they gather the data about the best way of doing so. By the end of the lesson, they should be able to tell you a way in which they kept their data organised – or how they would do better next time.



Enquiry 5: What should we eat to be healthy?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – human body and senses Y1 – properties of materials and features of animals	EA – Identifying, grouping and classifying Asking questions Interpreting & communicating data	Can your children: - Group similar foods together - Name the food groups	Horizontal: Vertical: Y3 – Nutrition, skeleton & muscles
	Key concepts:		
	Scientists put foods into different groups, depending on what they do in our bodies. The groups are fruit & vegetables, carbohydrates, dairy, protein.		
Key terms		Common misconceptions	
Properties, features, groups, fruit, vegetables, potatoes, bread, rice, pasta, starchy carbohydrates, beans, pulses, fish, eggs, meat, proteins, dairy and alternatives, oils, spreads		<i>Some foods are 'bad'. It's better to teach students what group their food is in, and then to discuss appropriate quantities of each group. Butter contains essential substances for growing children – but too much is bad. Salt is essential for our muscles to work – but we only need tiny quantities.</i>	
Suggested activities		Resources	Useful links
<p>From previous lessons, we know that scientists like to put things into groups. The same is true for food!</p> <p>Use this lesson to help the students identify different TYPES of food – fruit & veg, carbohydrates, dairy, protein – the eatwell guide, with different proportions, is considered more in the following lessons.</p> <p>Students can discuss different groups, and names of groups, but they should be taught that scientists use the groups above – and those are the ones they should learn. Vitamins, minerals, fibre etc belong to a different way of grouping (based on molecular structure, which KS2 students are not expected to grasp) which they will learn about in KS3.</p> <p>Key misconception – 'all you need to know to be healthy is 5-a-day'. Students often don't know what the 5 refers to – can't ID fruit & veg. It's important to teach them that it's about balance – eating 5 a day doesn't mean you can just eat whatever else you want.</p> <p>Consider the beginning of the unit – we looked at the things we need to stay alive – air, food and water.</p> <p>What different types of food are there?</p>		A range of different foods – real examples, pictures.	https://campaignresources.phe.gov.uk/schools/resources/Food-Detectives-KS1-Toolkit

No food is 'bad', but some are better for us than others.

Lots of ideas/resources on the link. Bear in mind the need to keep the foods relevant to the students, so that they can group the foods that THEY eat, rather than theoretical ones they are unfamiliar with.

Enquiry 6: How much is enough?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – human body and senses	EA – Research	Can your children: <ul style="list-style-type: none"> - Explain that you need to eat more of some foods than others - Tell you where to find information about serving sizes 	Horizontal: Maths – estimating and weighing Vertical: Y3 – Nutrition, skeleton and muscles
	Asking questions		
	Interpreting and communicating data Key concepts: We need to eat different amounts of different foods. Food labels tell give us an idea about how much of something an adult should eat.		
Key terms		Common misconceptions	
Properties, features, groups, fruit, vegetables, potatoes, bread, rice, pasta, starchy carbohydrates, beans, pulses, fish, eggs, meat, proteins, dairy and alternatives, oils, spreads		<i>Good foods and bad foods – it is the quantity of foods we eat that makes them good or bad for us.</i>	
Suggested activities		Resources	Useful links
<p>Consider stories where the character is greedy. How to tell if you're getting enough of something?</p> <p>Have a range of foods available, with their packets – look at portion sizes. Students to estimate and measure. How much is a reasonable portion of something? Look at the back of packets for 'serving size'. This is an excellent opportunity for them to estimate volume and mass. Is the 'serving size' the same for everyone?</p> <p>Look at the eatwell guide for how much of each food they should be getting.</p> <p>Large sharing bag of crisps. Serving size is 30g. Get the students to estimate how many crisps are in 30g. Then give them the opportunity to measure 30g.</p> <p>What about blueberries? Apples? How much is '1 serving' of 1 a day?</p> <p><i>Greater depth</i> - If you eat 30g of biscuits, how much fruit/veg should you be having? Students should realise that you can't just eat more veg to</p>		<p>A range of foods that the students are likely to eat – crisps, biscuits, apples, blueberries, raisins – with their packets, which should state what a 'serving size' is.</p> <p>Scales Containers - preferably small bowls or plates that students would have food served on</p> <p>Food labels - images can be found online – ensure that they are UK labels</p>	<p>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/528201/Eatwell_guide_whats_changed_and_why.pdf - REALLY useful reading – why the eatwell 'plate' has been changed for the eatwell guide – it highlights where there are misconceptions</p> <p>https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/</p>

compensate for too much chocolate! Start with a reasonable amount of fruit & veg (e.g. 5 a day), then keep the chocolate/fat lower than that. *This concept more for greater depth – most students should be identifying food groups, understanding that they should have more of some and less of others, and practising measuring/estimating.*



Enquiry 7: Can you design a balanced meal?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – human body and senses	EA – Problem solving	Can your children: <ul style="list-style-type: none"> - Explain that you need to eat more of some foods than others - Allocate the correct foods to the sections of a plate as laid out in the 'eatwell guide' 	Horizontal: PSHE Vertical: Y3 – Nutrition, skeleton and muscles
	Interpreting and communicating data		
	Key concepts: We need to eat different amounts of different foods.		
Key terms		Common misconceptions	
Properties, features, groups, fruit, vegetables, potatoes, bread, rice, pasta, starchy carbohydrates, beans, pulses, fish, eggs, meat, proteins, dairy and alternatives, oils, spreads			
Suggested activities		Resources	Useful links
Design a meal/picnic for your class. What would you include? Consider the eat well plate, and make sure you include a balance of everything! Tell the students that they are communicating the data that they discovered in the previous lesson. You could use paper plates, and draw divisions on them to help you see how much of everything you need. <i>Greater depth – How realistic is it to have it divided like this? Compare volume with mass – one handful of lettuce contains a much less substance than a handful of blueberries.</i>		Paper plates Food for a picnic?	https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/