

Digestive drama! Using drama and movement to learn about bones, muscles, nutrition and digestion

KS2

Margaret Branscombe

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Introduction

A few years ago, I used drama to teach about the movement of the planets and the solar system. In response to learning about science through drama, a student said, 'The drama gave me more energy in my brain.' This comment confirmed for me the important connection that exists between movement and learning.

The following scheme of work is based on statutory requirements found in the science curriculum for Years 3 and 4. The requirements lend themselves to interactive drama work that will reinforce important concepts about digestion, nutrition and how the human body moves. Below you will find four lesson plans that detail opportunities for class, group, paired and individual movement work. Guidance is also given as to how these activities could be useful for assessment purposes. A large space such as the hall would be the most suitable space for activities, but adaptations could be made for a classroom with desks and chairs pushed to the side.

Lesson 1: Teaching the digestive system through directed drama actions

Learning objectives

By the end of this lesson the students will:

- ▶ Be able to describe the simple functions of the basic parts of the digestive system in humans
- ▶ Be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestines, and explore questions that help them to understand their special functions
- ▶ Be able to use the scientific labels to describe different parts of the digestive system
- ▶ Be able to understand the importance of eating healthily for the digestive system to work well.

Introduction (5 mins)

Invite the class to sit in front of you and show them the breakfast items you have brought in. Ask them to raise their hands if they had breakfast today, then pose the question 'What is happening to that food you ate? Where is it now?' Suggest to them that because the food goes into our bodies it is easy to forget about it but that what happens to this food is very important for our bodies. Explain that in this lesson we will be learning about what happens to the food in our bodies by *becoming* the different parts of what is called our 'digestive system'. Have the students repeat 'digestive system' as it is a phrase they will be hearing a lot. Explain that *pretending* to be different things is an important aspect of doing drama, and in this lesson they will be learning about science but through drama!

Question time! (5 mins)

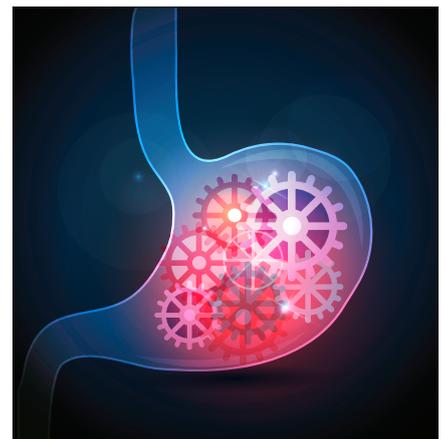
For Y3 and Y4, asking 'relevant questions' is a statutory requirement and is considered to be an important scientific skill. Show the students the focus question written at the top of the paper and ask what other questions they might have about our digestive system and what is happening to the food inside them. Write down each question and tell the students that at the end of the lesson they will gather together to see which questions have been answered by the drama activity.

The mouth: Getting started with simple hand movements and sound (10 mins)

Ask the students to find a space in the hall. Explain that we will be concentrating on the mouth first, as that is where the food initially goes, and that they will be

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In preparing these lessons, I found the following website to be very informative and helpful:
<http://www.cyh.com/SubDefault.aspx?p=255>



Resources

- ▶ A box of cereal (or any healthy breakfast-type food)
- ▶ A clipboard, paper and pen. At the top of the paper, have the question: 'What happens to the food I eat?'

Tip

Have the students repeat the new names they will be hearing throughout the lesson to help them learn the different parts of the digestive system. Some of these names will already be familiar to them (e.g. mouth, throat), but some may be unfamiliar and are more difficult to pronounce (e.g. oesophagus, intestine, rectum).

mimicking the actions of the mouth but with their hands. Tell them that, holding the cereal box, you will pass by each student and they are to use their hands in an open and shut action to show the lips opening and closing. Encourage them to make a sound that denotes enjoyment from eating, e.g. 'Yum, yum', as you pass by with the food.

As you pass by each student, comment on the different noises you can hear and praise those who are using sound as well as action to show the first stages of eating.

- ▶ Teeth – establish that it is the teeth that first begin to break the food down. Have them pretend their hands are their teeth and holding them in front of their bodies, use them in a biting and grinding action.
- ▶ Saliva – explain how our saliva washes over the food, breaking it down further and making it softer and therefore easier to swallow. Use the hands in a 'swishing around' action and again encourage appropriate swishing sounds.
- ▶ Tongue – as this helps push the food down our throat when we swallow, have the students use their hands in one strong pushing motion accompanied by the words 'Get back there' followed by a swallowing sound.
- ▶ Throat – the food slides down into the throat so have the students use their hands to form a chute shape and then perform a downwards sliding action.

Having taught the 'mouth movements' in stages, have the students go through the actions from beginning to end, accompanied by all the sounds. This would also be a good place to stop and check their understanding of the various stages, e.g. What do(es) the teeth/saliva/tongue do?

The food continues on its journey: Group actions (20 mins)

Oesophagus – explain that after being swallowed, the food goes into a tube called the 'oesophagus'. (Have them repeat this.)

Place the students in a long tube shape – partners facing each other, with hands held high – down the length of the hall or the classroom. Choose five or six students to be a lump of cereal – they can place their hands on the shoulders of the person in front of them to show they are one 'lump'. These students move down from one end of the tube to the other and as they pass along the tube, the students who are that part of the oesophagus close in on them to mimic the 'squeezing' action of the oesophagus as the food moves towards the stomach.

Stomach – because the stomach is like a large bag with two openings at either end, have the students make a big class circle but with two clearly defined 'breaks' at opposite ends. Ask the students who were the lump of cereal to go through one of the openings in the 'stomach' and stand in the middle of the circle but still joined together. The strong muscles of the stomach lining churn up the food – show this by choosing some students from the big circle to advance into the middle and gently separate the students who are joined together. These separated students leave through the other opening of the circle.

Small intestine – tell the students that the 'small intestine' is actually a long wriggly tube inside your body that, for an adult body, would be 6 metres in length if stretched out. It breaks down the food further so that the nutrients (sugars, proteins, vitamins) can escape and go into the blood. Have the students form a tube similar to the oesophagus formation but this time more 'wiggly' in formation. As the students who are the churned up bits of cereal follow along its twists and turns, they get smaller and smaller to show that they are being broken down again.

Large intestine – what doesn't get taken out into the blood gets passed into the large intestine. Have the wriggly small intestine tube straighten out again (like the oesophagus) but this time the pairs of students forming the tube stand further away from each other to show that this tube is wider than the small intestine. To show how water is squeezed out of the food in the large intestine to make waste, have the 'cereal lumps' pass along the tube as one lump very close together and the students forming the large intestine tube make squeezing noises as the lump passes them by. Have the 'lump' wait at the end of the tube.

Rectum – and this is where it gets interesting! Explain that when there is enough waste in the large intestine, it sends a message to the brain saying you need to go and get rid of it. Be prepared for lots of giggling but also be very matter of fact about it. Ask the students who are the 'waste lump' to emerge from the end of the large intestine tube to whatever sound you deem appropriate for your class to handle without getting out of control; e.g. if you want to keep it tasteful, the students could clap the end of the digestion journey or if you want to be more explicit, there could be a unified 'plop' sound.

As each new stage of the digestive sequence is introduced, review the journey that the food has taken so far, being sure that the students are remembering and using the correct labels for the main parts in the digestive system.

Plenary (10 mins)

Gather the students around you and show them the questions that they raised at the beginning. Review whether any have been answered through the work they have just done. Finish by returning to the main focus question and ask for volunteers to answer the question by reviewing the digestive system. Praise all the students for their participation and suggest they think about the 'food journey' next time they eat. Remind them that the small intestine's job was to take out the nutrients from the food and send it to other parts of the body. Therefore, the healthier the food you eat, the more the rest of your body, such as your bones and muscles, will benefit.

Lesson 2: Showing the digestive system through *devised* drama actions

Learning objectives

By the end of this lesson the students will:

- ▶ Describe the simple functions of the basic parts of the digestive system in humans
- ▶ Use the scientific labels to describe different parts of the digestive system.

Note how the learning objectives are similar to those in Lesson 1, but there is one major difference in the content of the lesson. In this lesson the students will work in groups to create *their own* movement ideas for showing the stages of the digestive system. As a result, this lesson provides an excellent opportunity to reinforce and assess learning by handing over the responsibility of *showing* the digestive system to the students.

Introduction (10 mins)

As a follow up to the previous lessons, have the students review the process of digestion (encouraging the correct labels for the different parts of the digestive system) and the actions that were done as a class to represent the process. Tell the students that the objective for this lesson is to work in groups and for each group to create *their own* actions and sounds that sequentially represent the digestion process. Explain that each group will be sharing their dramatic presentations.

Devising movements for the digestive system in groups (15 mins)

Visit all the groups as they work on their own movements for the digestive system. Help with any issues, offer advice, encourage and praise the students as they work on their group movement sequences.

Presenting the group work (15 mins)

Ask each group to present their work. When each group has presented, ask them to talk about their creative process and how they resolved any differences of opinion.

Further group movement work (10 mins)

Ask the students which other scientific processes they can think of that could be shown through drama? Ask the groups to brainstorm these processes and then work on some movements that could demonstrate the processes. If they seem to be struggling with this, give them the idea of showing a life-cycle of a flowering plant sequence through movement, or how magnets attract some materials but not others (Y3 statutory requirements).

Plenary (10 mins)

Have the groups share their movement ideas for different scientific processes. Praise them for their hard work and creativity shown in the lesson!

Assessment

As the groups devise their own versions of the digestive system, 'listen in' and make a note of examples when the correct scientific language is being used. Then when students present their group creations, video these and use as evidence for assessing if students have described the functions of the basic parts of the digestive system. Plus, they will usually love watching their creative achievements!

It is up to the teacher to decide whether to assign groups or let the students choose their own groups. Sometimes assigning the students to work with those they wouldn't usually choose for themselves can be a valid learning experience in itself.

Working in groups is seldom without problems, but it is an important skill to be learned and creative work is an excellent way to learn better co-operation tactics.

Lesson 3: A balanced approach

Learning objectives

By the end of this lesson the students will:

- ▶ Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.

Warm-up (5 mins)

Begin with some simple movement work. Have the students find a space in the hall, and ask them to balance on one leg; one leg and one hand; two legs and one hand; two hands and one leg and, finally, two feet and standing up straight.

Follow up discussion (10 mins)

Suggest that the last position is the most comfortable because our weight is evenly distributed. Ask them if they have heard of the phrase a 'balanced diet' and what that might mean. Tell them that our food is made up of different food groups and we need to have food from all of the groups because they *all* do important things for our bodies. Show a cereal box and draw attention to the nutritional information on the packaging. Hold up the nutrition signs, have the students repeat the words: vitamins, minerals, carbohydrates, proteins and fats and read out the sentences on the back. Explain that in this lesson they will pretend to be the different food groups and will make up movements to show how each food group helps our bodies.

Devised movement work (15 mins)

Assign the students into five groups. Give each group one of the nutrition signs and ask a student from each group to read out the sentence on the back of it. Ask each group to think about and practice some simple movements that match the nutritional function. Stress that they will be responsible for teaching these movements to the rest of the class so it is important that they all are sure of their group movement.

Visit each group in turn. Help with any issues, offer advice, encourage and praise the students as they work on their nutritional ideas.

Presentation of movement work (15 mins)

Have each group share their nutritional word and the movements they practised to explain its function. Then have the rest of the class copy the actions before the next group shares. Explain that knowing the actions will be important for the games that will follow.

Movement games for reinforcement (10 mins)

Invite a student to be the 'caller' and decide on a stopping signal, e.g. a bell ringing or a raised hand. Ask the rest of the class to move around the room but to *stop* when they see or hear the signal. When everyone is still, the caller will shout out a nutrition group and everyone will respond with the movement they practised previously. A new 'caller' can then be chosen and the game can resume.

Post the five nutrition signs around the room. Have the students walk around the hall and when a signal is given, they are to go and stand by a sign. (There can be a five second countdown while they decide which sign to stand by.) With their back to the class, the 'caller' will shout out the name of a nutrition group. The students standing by that corresponding sign will need to do the action. More than one nutrition group can be called out and the game could end with all five groups being called.

Sleepy plenary! (5 mins)

Close with a calming activity after the games. Remind them that our bodies need rest as well as action to be healthy. Have them lie down in a space and play some calming music or narrate some calming ideas while they rest, e.g. 'Imagine you are floating high up in the sky. You look down and see ...', etc.

Before they leave the space, remind them to think about a 'balanced diet' next time they eat because they need different food types to help their bodies grow and stay strong.

Resources

- ▶ A box of cereal
- ▶ Large signs with the following nutrition words: vitamins, minerals, carbohydrates, proteins and fats. On the back of each sign have a sentence which describes the nutritional function:
 - ▶ Vitamins – help the body fight infections
 - ▶ Minerals – help us grow and are good for teeth and bones
 - ▶ Carbohydrates – give our bodies energy
 - ▶ Proteins – build strong muscles
 - ▶ Fats – we need a small amount to keep us warm and protect our bodies.

Assessment

As the groups devise their own nutritional movements, photograph, video or make notes that provide evidence of the students' understanding of how we get nutrition from the food we eat. These photographs can then be used for display boards or school/class website postings.

Lesson 4: Supportive bones and mighty muscles!

Learning objective

By the end of this lesson the students will:

- ▶ Identify that humans and some other animals have skeletons and muscles for support, protection and movement.

Introduction (10 mins)

Gather the students around and show the picture of an unlabelled skeleton. Ask if they know the names of any bones and then show the labelled image and introduce them to some of the interesting bone names. Give them the following fun facts (or have them guess first): an adult body has 206 bones, 187 joints and 640 muscles. Explain that in this lesson they will be learning why humans have bones and muscles. Draw attention to the fact that our bones also protect many of our important body parts such as our heart and our brains.

Warm-up: 'Dem Bones' song (5 mins)

Have the students stand in a space and move the corresponding bones as the poem is read or sung aloud.

*Toe bone connected to the foot bone
Foot bone connected to the heel bone
Heel bone connected to the ankle bone
Ankle bone connected to the shin bone
Shin bone connected to the knee bone
Knee bone connected to the thigh bone
Thigh bone connected to the hip bone
Hip bone connected to the back bone
Back bone connected to the shoulder bone
Shoulder bone connected to the neck bone
Neck bone connected to the head bone*

Wibbly wobbly jelly! (5 mins)

Ask them to show you what their bodies would look like without bones. Make comparisons to a lump of jelly that wobbles because it has no support. Have them move around the floor like a lump of jelly and select some students to demonstrate their jelly moves. Now ask them to imagine they have no bones but to try and stand up. Hopefully they will keep falling to the ground! Explain that bones give human and animal bodies support that helps them move in different ways.

Miming muscle action! (10 mins)

Explain that we also need muscles to help us move. Remind them of the fun fact that there are 640 muscles in an adult body. Ask different students to name activities that involve muscles and with each suggestion, have the rest of the students mime that action. Surprise the students by telling them that muscles in our face help us smile and frown and ask for some happy and unhappy faces.

Paired mimes (10 mins)

Have the students work with a partner and 'choreograph' a movement sequence that involves three different miming movements involving our muscles, e.g. swimming, skipping and jumping. Explain that each pair will be asked to share their movement patterns with the rest of the class. Emphasise the importance of working together and that both partners need to be sure about the sequence of movements. Suggest that they do three of each movement to make it look really 'slick'.

Paired muscles (10 mins)

Keep the students in pairs to reinforce the idea of muscles that move bones working together in pairs – one muscle tightens while the other relaxes. Have students sit on the floor, facing each other with legs outstretched and feet touching. One partner pulls the other partner towards them, so they have to bend their knees (and therefore shorten their legs) while the other partner remains with outstretched legs. Ask the students to think of and practise other actions that involve one partner showing a tightening action and the other a relaxing action.

Resources

- ▶ The words to the song 'Dem Bones'
- ▶ A print out of an unlabelled skeleton, see: <http://www.timvandevall.com/wp-content/uploads/human-skeleton-anatomy.png>
- ▶ A print out of a labelled skeleton, see: <http://www.timvandevall.com/wp-content/uploads/human-skeleton-diagram.png>

Cool down (5 mins)

Ask all the students to find their own space in the hall and to lie down and close their eyes. Concentrate on different muscles and have the students tighten and then relax muscles in their legs, hands, faces, etc.

Classroom plenary

Make the point that just like us, animals have bones and muscles for the same reason as we do – to help them move. Show them the following video from the Smithsonian Channel about a cheetah in motion. The video includes x-ray imaging that shows how the cheetah's skeletal framework and muscle design helps them be the fastest animal on land:

<https://www.youtube.com/watch?v=V8vejVgIHg>