

TEACHERS' NOTES

PLEASE FIND TIPS AND HELPFUL HINTS FOR EACH SECTION OF THE SMART BUILDINGS WORKSHEETS BELOW.

Bacteria section

Recap opportunity:

When talking about bacteria and what they're made of, this is a good opportunity to revisit the basic building blocks of all animal and plant cells.

Cell membrane – this is the protective bubble that surrounds the cell and allows nutrients to enter and waste to leave.

Nucleus – essentially the “brain” of the cell, it controls what happens inside and contains DNA, the genetic information that cells need to grow and reproduce.

Cytoplasm – this is a thick jelly-like substance, mainly composed of water, salts and proteins, in which chemical reactions happen.

Mitochondria – often referred to as the powerhouse of the cell, these are the special sections that allow the cell to make the energy it needs to survive.



Suggestion:

Why not expand on this section's **did you know** and open up a discussion with the students to see what other foods they might be familiar with, that contain good bacteria. You might look for more unusual suggestions like kombucha or miso - or even mentions of prebiotics and probiotics.

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? Life processes and correct descriptions:

Process	Description
Nutrition	Taking in and using food.
Growth	All living things grow.
Sensitivity	Detecting changes in the surroundings.
Excretion	Getting rid of waste.
Reproduction	Making more living things of the same type.
Respiration	Getting energy from food.
Movement	All living things move, even plants.



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SIEMENS SMART BUILDINGS

Viruses section

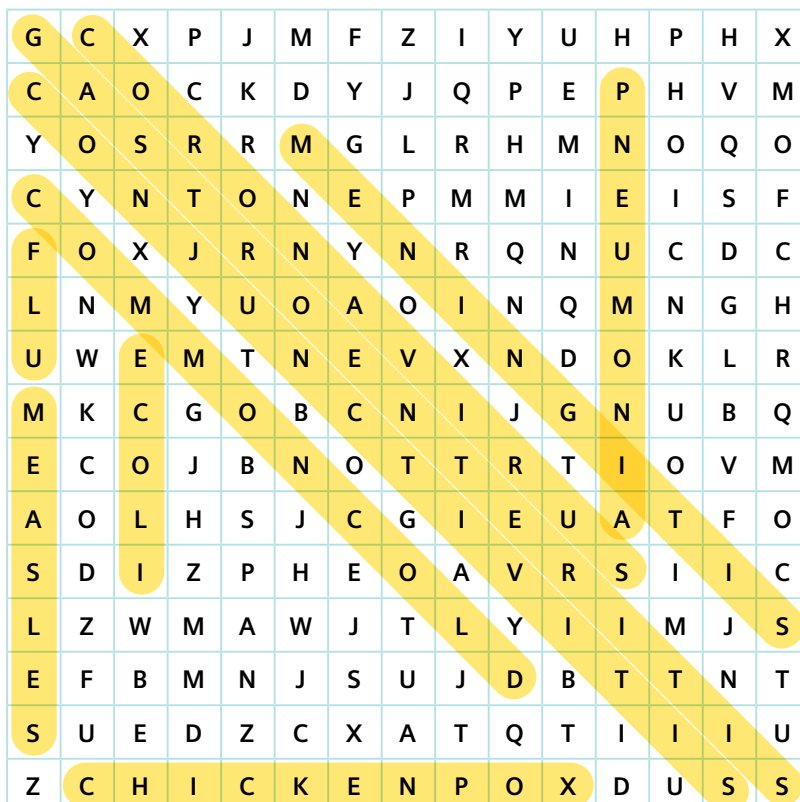
Recap opportunity:

When talking about what viruses are and the importance of cleanliness and personal hygiene, this is a good opportunity to segway into any specific COVID-19 measures in your establishment and positively reinforce good handwashing technique and social distancing, for example.

? Draw your own Coronavirus:

Why not expand on this activity and get the students to name their viruses, based on what they've learnt about the naming of COVID-19. They might draw inspiration from any distinguishing features in their drawings, just like Coronavirus got its name from the spiky crown-like aspect of its viral envelope.

? Virus wordsearch:



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Controlling the spread of bacteria and viruses section

Recap opportunity:

This section is a great conversation opener for new school health and safety procedures like regular handwashing and wearing a mask while moving between classes, if applicable in your establishment.

? Glitter germs:

Assign each student a number and a corresponding instruction for this activity. If students are working in class bubbles, due to new COVID-19 measures, you could number the groups instead.

- 1 Try to get the glitter off with dry paper towels or kitchen towel
- 2 Try to get the glitter off with plain, cold water
- 3 Try to get the glitter off with warm water and soap

Encourage a class discussion around the results - what did they think worked best and why?

! Suggestion:

Why not expand on this section's **did you know** and ask the class whether they know of any special proactive measures that have been taken to safeguard against COVID-19 in their local area. This could be a good opportunity to discuss local lockdowns and tie back to any special school advice pertaining to these.

? Germ stickers at-home activity:

We'd recommend encouraging students to do this activity at home, unless you have plenty of space in the classroom to maintain social distancing. If students have taken some photos, get them to share with the class and discuss their reactions. Are they surprised at how many "germs" they managed to spread in the allotted time?

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? Design a COVID-19 poster

You could start this activity with a class discussion about what makes a good poster and what might be important to consider in the design. Once the students complete their designs, why not get them to present back to the class for discussion.

Here are some helpful prompts that may be useful to feed to students, if they're struggling with ideas on what health and safety guidance their posters should include:

- 1 Wear a face mask
- 2 Wash your hands regularly and for more than 20 seconds each time
- 3 Maintain a 2-metre distance
- 4 Stick to your support bubble
- 5 Socialise outdoors where possible
- 6 Do not meet large groups indoors
- 7 Clean and sanitise surfaces regularly

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SIEMENS SMART BUILDINGS

Public safety and technology section

Recap opportunity:

If the students have already played the Smart Buildings game at this point, get them to compare results and talk about what they've learnt. Encourage conversation about the technologies they've encountered - did they know about any of these before?

Alternatively, you could work through the following first and get the students to play the game as a final exercise to consolidate their learning.



Suggestions:

Why not expand on this section's **did you know** and open up a class discussion about artificial intelligence. Do the students know what it is and can they think of any other examples? You might look for answers like Amazon's Alexa or Apple's Siri - or maybe some children have robot hoovers at home, for example.

You could also link this to the following **did you know** and explain the concept of the Internet of Things (IoT), as this might be something students are unfamiliar with. Explain IoT in its simplest form i.e. it links devices to the internet so they can speak to each other. For example, in the future your car might be able to talk to your house when you're five minutes away, so the lights and heating are switched on for your arrival.

This would be a great setup for the final activity, **design a smart plan for your school**.



Design a smart plan for your school:

If feasible, this is a good group activity for students to work on together. You could even turn this into a more significant activity and rather than drawing a smart plan, students could build a model from different materials like cardboard and paper. You could then organise a show and tell, for the students to present their model smart plans back to the class.