East Renfrewshire Council: Education Department
Practitioner Moderation Template

Prior to the moderation exercise, please complete the following information and submit it to your facilitator with assessment evidence from one learner that you judge to have successfully attained the Es' and Os'.

School Code	
Practitioner Code	
Curriculum Area(s)	Science BGE
Level	Third
Stage(s)	S2
Specific subject (if applicable)	Biological Systems – Micro-organisms

Experiences and Outcomes:

SCN3-13c **I have explored how the body defends itself against disease** and can describe how vaccines can provide protection

HWB 3-16a – **I am learning** to assess and manage risk, **to protect myself and others,** and to reduce the potential for harm when possible.

Learning Intentions:

- To investigate different ways in which pathogens can enter the body
- To describe the non-specific defence mechanism of phagocytosis
- To explain different ways in which I can protect myself and others from infection by a pathogen

Success Criteria:

- I can label a diagram of a person to indicate the different ways in which a pathogen can enter the body
- I am able to describe the process of phagocytosis and can organise diagrams showing the stages into the correct order
- I can label a diagram showing how I can protect myself and others from infections

Briefly outline the context and range of quality learning experiences that have been provided making reference to the chosen design principles.

Context

Pupils are currently working through the Micro-organisms unit of work in S2. They learn information on the 3 main types of micro-organism and how their growth in industry can be controlled to benefit humans.

Pupils investigate the link between the growth of micro-organisms and the development of disease. Many examples of disease are discussed and how they can be prevented. The protective features of the body are highlighted including the primary and secondary immunological response.

Breadth

This unit covers many aspects of the advantages and disadvantages that micro-organisms may have on society. Pupils explore disease caused by micro-organisms as well learning effective methods in the prevention of disease. Pupils are encouraged to use more advanced language when describing the protective features of the body such as the role of antibodies and their immunological properties. Pupils develop confidence and competence in the skills for life by working in a group and presenting findings to the class. Connections are also made to the Health and Well-being E's and O's.

Depth and Progression

This unit of work covers both third and fourth level outcomes. This allows pupils to develop a secure knowledge at third level and the foundations for achieving fourth level have been introduced. This will enable pupils to follow a National 4/5 course in the future. The primary and secondary immunological response is a difficult concept for pupils to understand therefore differentiated material is produced to support pupils of all abilities.

Personalisation and choice

Pupils will work together in groups to select a specific disease that they would like to research and report their findings to the class. Pupils are given the option of either producing a PowerPoint or a poster to the class. They are also able to choose the disease that they want to research providing further personalisation and choice.

Challenge and Enjoyment

As pupils complete a range of activities within this unit such as practical investigations and research, this therefore provides enjoyment as they are learning about micro-organisms through various activities. Feedback from pupils indicates that they have enjoyed learning about specific diseases that are currently topical and how prevention could save many lives worldwide.

Pupils are asked to apply their higher order skills by finding, selecting and sorting information from a variety of sources throughout this unit.

Record the range of assessment evidence that was gathered to meet the success criteria (Say, Write, Make, and Do) considering breadth, challenge and application.

Say

- Pupils answer questions in class through formative assessment
- Pupils share ideas with the rest of the class regarding risks of working with microorganisms and ways in which they can protect themselves

Write

- Pupils complete written notes detailing the theory for each E and O.
- Pupils must complete classwork and homework questions relating to the Learning Intentions produced from E's and O's
- Pupils given a summative assessment at the end of the unit of work

Make

- Pupils follow correct instructions to arrange the stages of phagocytosis into the correct order

Do

- In pairs, pupils organise the steps of phagocytosis into the correct order
- Pupils watch video clips showing the process of phagocytosis and mechanisms of action of antibodies

Briefly outline the oral/written feedback given to the pupil on progress and next steps, referring to the learning intention and success criteria.

Teacher

- Written feedback given on each piece of classwork and homework collected as evidence of assessment
- Progress and next steps linked to learning intention and success criteria throughout
- Oral feedback given during practical work and after presentation
- Range of formative assessment employed throughout unit by use of starter/summary questions, show me boards, whole class discussion providing teacher judgment on overall pupil knowledge and understanding
- Summative assessment at the end of unit

Peer- assessment

Pupils get the opportunity to mark class work and homework activities. They will complete a peer assessment form when presentations are completed.

Self-assessment

Pupils asked to reflect on feedback from other pupils comments.

Pupil Voice:
What have you learned? How did you learn? What skills have you developed?

These have been recorded on the Pupil Learning Journal – see attached.

What have I learned?

I have learned about different types of micro-organisms, how their growth can be controlled and prevented. I have learned about disease and how the body fights disease. I have learned how pathogens can enter the body.

How did you learn?

I learned by PowerPoint's, completing practical activities, class notes, internet research to make my own PowerPoint and information sheets.

What skills have you developed?

I have developed a better understanding of micro-organisms by using information from different sources to answer questions.

I have developed my team building skills during practical work.

I am learning how to work better in a group.

Did the learner successfully attain the outcomes? YES/NO

Yes

S2 Biology

Learning Journal : Micro-organisms

Name: name blanked out **Class:** 2E2

Below are the experiences and outcomes that you will cover in the Micro-organisms topic.

Body Systems and Cells

SCN 2-13a I have contributed to investigations into the role of micro-organisms in producing and breaking down some materials.

SCN 3-13b I have contributed to investigations into the different type of micro-organisms and can explain how their growth can be controlled

SCN 3-13c I have explored how the body defends itself against disease and can describe how vaccines can provide protection

Health & Wellbeing

HWB 3-16a I am learning to assess and manage risk, to protect myself and others, and to reduce the potential for harm when possible.

Use the questions below to help assess your learning on a regular basis as you progress through this topic.

Lesson Starter

- Name two ways in which the body defends itself against disease.
- Describe two ways in which you can protect yourself from harm caused by microorganisms.
- Write down three risks that you face when working with microorganisms.

Starter

1. Name one way which our body defends us from harmful micro-organisms

2. What do our eyes contain that protects us from bacteria

3. Why is it important that our airways contain mucus?

science

S2 Micro-organisms Homework 3

Answer the questions in full sentences in your homework jotter.

Questions

1a	What type of white blood cell is involved in non-specific immune responses?	1 mark
1b	How do these cells combat invading pathogens like bacteria?	1 mark
1c	What general name is given to this process?	1 mark
2a	What type of white blood cell is involved in specific immune responses?	1 mark
2b	What molecules, also involved in immunity, are produced by these cells?	1 mark
2c	How do these molecules bind to their particular antigen?	1 mark
3a	Why do we seldom get ill due to the same pathogen twice?	1 mark
3b	What are the three differences between the primary and secondary immune responses?	3 marks

Remember to get homework signed. 10 marks

16/11/17

Harmful Micro-Organisms

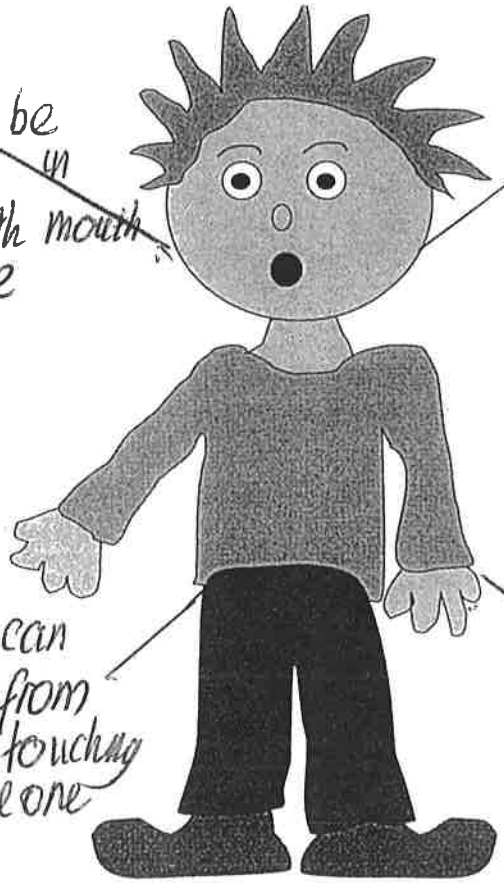
Disease can happen when micro-organisms get inside the body. These sorts of disease are called infections.

Most infectious deseases are caused by bacteria and viruses but a few are caused by fungi.

How They Spread

SCN3-13c ✓

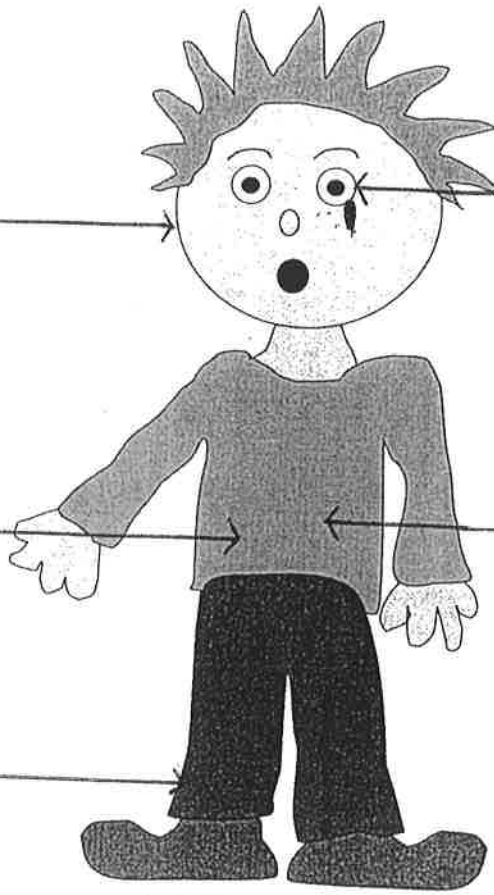
Entry of pathogens.



HOW DISEASES ARE SPREAD

SCN3-13c/.

- well done Sofia!
- great labelling of your diagram.



BODY'S DEFENSES

Beautiful work.
Good use of ruler & pencil

21/11/17.

Protective Body Feature	How does the feature protect the body from invading pathogens
Skin acts as barrier	prevents harmful microbes entering the body.
Stomach produces stomach acid	destroys microbes that have been digested
Platelets in Blood	Seals wounds by clotting so prevents entry
Mucus in Airways	traps microbes so prevents anything entering lungs
Tears contain enzymes	enzymes that kill bacteria

23/11/17 Homework 3

SCN 3-13c ✓

1. a) Phagocytes is the type of white blood cell that is involved in non-specific immune responces. ✓ (1)
b) These cells combat invading patogens by attaching to them, engulfing them in a vacuole and releasing digestive enzymes to break down and absorb the pathogen ✓ (1)
c) This proses is gerally called Phagocytosis ✓ (1)

Excellent work [redacted]! Good clear sentences. Well done.

23/11/17 Immune Defence

- Immunity is an organs ability to resist infec disease (once it has entered the body)
- When a pathogen entres the body, our body reads.
- Our body contians white blood cells which defe us from these sp. pathogens
- There a two major classes of white blo cells:

1. Phagocytes
2. Lymphocytes

Phagocytosis

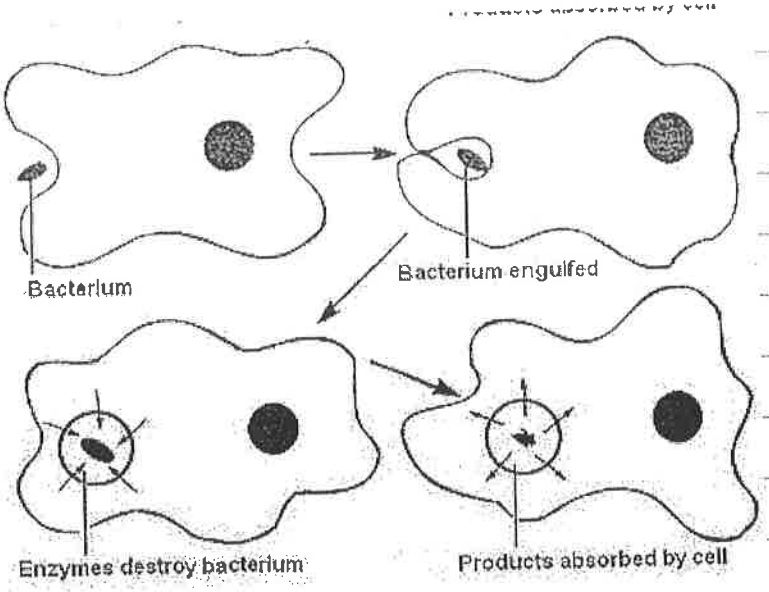
Watch your spelling

Is a non-spesific sp immune respone sp by whi phagocytes engulf and digest a wide range of m microbes in a process called phagocitosis

Steps of Phagocytosis

1. When a harmful bacteria enters the body, it releases a chemical which phagocytes can detect and move towards
2. The phagocyte then attaches to the bacteria
3. This allows the phagocyte to engulf the bacteria in a vacuole
4. 4. Phagocytes release digestive enzymes into the vacuole which contains the bacteria
5. 5. The bacteria is then broken down and absorbed by

4/11/17



Lymphocytes

- Lymphocytes carry out specific immune response.
- Lymphocytes product antibodies in response to invading diseases
- They have receptors on the surface, which can match and fit a particular antigen.
- An antigen is a molecule that is recognised as alien by the bodys white blood cells and is present on the surface of bacteria, viruses and other pathogens

29/11/17 Starter

1. They seal wounds that could potentially let in pathogens by clotting ✓
2. Non-specific immune response ✓
3. phagocytosis ✓

Great work :)

28/11/17 Starter

1. The skin protect us from disease by creating a barrier. Also platelets in blood seal cuts by clotting. ✓✓
2. You can protect yourself from harm cause by microorganisms by washing hands and cooking food thoughly. ✓✓
3. We face the risks of getting a disease passing on the dicease and ~~[illegible]~~ contaminating equipment when handling microorganisms. ✓✓

HWB 3-16A ✓

Great contribution to class discussion. You've really understood the risks faced when working with microorganisms :)