

Medics in Primary Schools

Autumn 2023 – In-School Version

A QUEEN'S UNIVERSITY / SENTINUS PROGRAMME



QUEEN'S
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Sentinus
Science Technology Engineering Mathematics

Medics

in Primary Schools

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Welcome

The Medics in Primary School (MIPS) programme has been running for over twenty years, and during that time it has provided medical students with a unique opportunity to develop and enhance their communication and teaching skills.

In their document *Outcomes for Graduates*, the General Medical Council explains that all new qualified doctors should be able to “Communicate clearly, sensitively and effectively with individuals and groups regardless of their age”. This may involve conveying complex information in a sensitive and jargon-free manner at an appropriate pace. As a paediatrician, I am particularly eager that students learn to talk and listen to children.

Integral components of the MIPS programme include the opportunity for the medical students to prepare educational sessions (which need to be pitched at the right level), to be observed, and to be provided with constructive feedback in relation to their educational delivery and communication skills - all of these are essential parts of the learning cycle.

I wish you all every success and hope that the knowledge and skills which you acquire during this programme will provide you with a solid foundation for the rest of your undergraduate studies and your future careers. Enjoy this excellent SSC.

Professor Neil Kennedy
Director, Centre for Medical Education

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Background

The *Medics in Primary Schools* (MIPS) programme provides an opportunity for primary school pupils and medical students to develop their communication skills. The programme, which has been operating since 2001, has involved over 1000 medical students at Queen's University Belfast, working with over 20,000 primary pupils at 65 primary schools in the greater Belfast area. More recently it has operated online with a number of primary schools in the west of the Province. The programme is offered as a Student Selected Component within medical students' second year course. Students have a placement one afternoon a week for up to ten weeks in the spring semester in a primary school, during which they deliver a science and health education programme to upper primary pupils, and develop their own communication skills in working with young people. Since 2021 the programme has been presented in the autumn semester.

The MIPS Programme: The aims of *Medics in Primary Schools* are:

1. to enrich the teaching and learning of health education in primary schools,
2. to provide young role models in the classroom, and raise awareness of the work of medical professionals
3. to improve communication between medical professionals and young people

See the **Learning Outcomes** on page 11 for more detailed objectives, specified by the QUB School of Medicine, Dentistry and Biomedical Sciences.

The programme was developed by local writers, with the support of former Education and Library Board advisers and field officers, and reflects the Key Stage 2 programme of the Northern Ireland Curriculum. Students are provided with teaching and learning material, comprising a course that can be presented as a whole, or amended to suit students' expertise and the needs of the school. The parts are *Healthy Body* and *Healthy Breathing and Circulation*. This material is advisory: students are encouraged to follow their own special medical interests when they feel pupils would welcome this. Emphasis is very much on practical and investigative aspects of each theme. Teachers are encouraged to be proactive in their help and support of students. The programme works because teachers like it, understand it, and become involved. Constructive feedback from teachers is actively encouraged, both directly and by email, and students are encouraged to ask for comments on their work and on their developing pedagogic skills.

The Medical Students: Every second-year medical student at Queen's University is offered a Student Selected Component, covering two sessions a week during their first semester (September – January). One session each week is spent in school, the other is for research of resources and lesson preparation. Students who choose MIPS are given training in working with upper primary pupils, and they deliver a science and health education programme to their partner school. They receive this *Student Teaching and Learning Guide* detailing the material they may wish to teach, and ways are suggested through which the programme might be delivered.

There are two versions of the Guide: this in-school version and a parallel online version. The online version has online support material provided by Preethi Anne Jacob, a QUB medical student who participated in *Medics in Primary Schools* in 2019. Both versions of the Guide can be accessed on the MIPS area of the Sentinus website: www.sentinus.co.uk. Follow **Explore Programmes**, then **Primary** and (page 2) **Medics in**

Primary Schools. Additional resources, listed on page 12 of the Guide, are also available on the Sentinus website.

Finally, students are assessed on the pedagogic and communication skills they have developed during the programme, as outlined in the Assessment Appendix on pages 51 - 62. An electronic logbook is available, in in-school and online versions, on the MiPS area of the Sentinus website. Students are encouraged to download their version to record reflections on their experiences immediately following each session with their school. This can later be used as a basis for their reflective commentary.

The Pupils: As the programme operates on a half day basis, schools participating in-school must be within easy travelling distance of south Belfast, and schools and students must accept that travelling time means that the amount of time each student spends in school can vary significantly. About 20 – 30 primary schools in the Greater Belfast area enthusiastically engage in the programme each year. A further 10 – 20 schools outside easy travelling distances participate online.

Pupils look forward to the ‘young doctor’ visiting them each week and working with them. Their response is very positive: some see the student as a role model for them in considering potential careers in medicine or related areas.

The Teachers: During September the Programme Manager, Peter Mc Alister, contacts principals of potential schools outlining advantages to their school in participating, together with the schools’ responsibilities. This is particularly useful for schools new to the programme. Teachers from participating schools should also download this Guide and course materials available on the MiPS area of the Sentinus website. Teachers are encouraged to develop their mentoring skills with young medical students who do not intend to become teachers, but who do wish to develop their communication skills with young people. The following section is directed to teachers from Peter Mc Alister, Programme Manager for MiPS.

For Principals and Mentoring Teachers

Once again Queen's University School of Medicine and Sentinus are working in partnership to enable the *Medics in Primary Schools* (MiPS) initiative to run in autumn 2023. Seventy medical students will be taking part. Nearly thirty schools with about 1000 pupils in the Greater Belfast Area will participate in the programme: others further afield will participate online. Most of the Greater Belfast schools have taken part before, some as many as twenty times.

For schools new to the project, and to those returning schools, I would like to say *Welcome*, and thank you for your willing cooperation. Your ability to make a medical student feel comfortable, and benefit hugely from their experience in school, is much appreciated by all involved in the organisation and management of the programme.

This programme succeeds only if the teacher and student are working together. We are not trying to produce new teachers, and the medical students may not have all the teaching skills that student teachers

might have. The student has to co-operate with, and have the co-operation of, the teacher with whom she or he is working. Otherwise, the programme does not succeed.

At your student's **School Introduction Visit** during the week 23 – 27 October they should see you as a skilled professional at work. For most students their last experience in a primary classroom may have been sitting at a desk nearly ten years ago, so watching how a teacher works, while not a pupil, is a new experience. I suggest that in the early part of this session your student simply observes you in action, to see your style of teaching. If you involve the pupils in a practical activity, then please invite her / him to join in the action. This can help them to know pupils personally, and for pupils to get to know your student as a person. If there is time the student may wish to offer their **introductory Powerpoint presentation** (described on page 8) in this session.

It would be useful to let your student see your store cupboard, so that they are aware of resources available. Also inform them of the schools' photocopying policy, and how they can ensure that photocopied material is available in advance of their visit.

It would also be useful for you to look through this Student Guide in advance to be aware of what information your student is basing her / his teaching on. Please be aware that the Guide has more material than can be covered in the eight weeks available for the programme. It would be useful at this early stage to discuss those elements considered essential and identify sections which can be omitted.

Please note that the section on asthma should be regarded as essential.

Your student's next visit could be structured in such a way that, after their **initial presentation**, the pupils ask a series of questions, which interest them and enable them to find out more about your student. It would be very useful if your pupils have discussed and formulated some medical questions beforehand. The student will feel much more confident then, for they will then be talking about things with which they are familiar.

Feedback, both positive and constructively critical, from you as a teacher, is essential. This is a mechanism by which we all learn, and is much appreciated by all the students. It would be useful, if possible, to set aside 10 – 15 minutes after each lesson possibly to congratulate the student on her / his performance but, more usefully, to identify points for improvement and offer appropriate advice. Feedback by email would also be very welcome.

The formal **assessment process** (pages 51 - 62) is built into the programme and, for this to be successful, we need your co-operation. Students say that they would welcome some overall evaluation of their teaching. The teacher response form (see page 61) has been introduced as a result of student feedback. This format is modified from a list of *Competences for Beginning Teachers*, used in initial teacher training. In order to give you as little extra work as possible the form has a series of tick boxes and there is a space for you to add a professional comment at the end. This assessment form and instructions for use will be distributed to each school during the programme, and will be available online.

Each student has website access to a **logbook** to record their experiences. They are encouraged to use this weekly as a foundation for their assessed reflective commentary. In previous years we have found that some students use the logbook either intermittently or not at all. In order to encourage them to make full use of the logbook we are asking you as a teacher / mentor to sign off each part as completed.

A student should never be left on his / her own in charge of a class.

I must emphasise this: if an accident were to occur with only an unqualified person in charge, the school would have difficulty in refuting charges of abdication of responsibility.

Finally, may I once again emphasise to principals and teachers that, in the event that the student is not performing in the way the school would expect, I should be contacted. I promise action will be taken to remedy the situation.

My contact details are:

Peter Mc Alister

Telephone: 028 9061 4271 Mobile: 07896 953848 Email: ppmcalister@yahoo.com

Student Introduction

Welcome to MIPS, the *Medics in Primary Schools* programme. You will spend a morning or afternoon a week during most of the next four months presenting a relevant and interesting health education programme to a group of upper primary pupils. Your role will be to help develop their knowledge and understanding of their bodies and how to look after them, and to let them see you as a potential model for what they might be doing in about ten years' time.

During your time in school, you will probably be working with a Year 6 or Year 7 (P6 or P7) class, though you may be asked to work with younger pupils within Key Stage 2 (ages 8 – 11). You will not have to teach the class alone: there must be a teacher in the classroom with you at all times. The role of the class teacher will be to support you, apply discipline if necessary, and to observe your activity in order to provide you with the essential feedback you need to develop your teaching and explaining capability.

Most participating schools are allocated one MIPS student. However, in some larger schools, there may be two or more of you there, likely with different classes. You visit the school once each week, on a morning or afternoon to be arranged. Some students will be engaging with your schools online rather than face-to-face. You will be expected to spend the session when you are not at school researching material and resources, and preparing for the next teaching session. Previous participants following the same unit have found it useful to meet and exchange ideas as a pair or a group, or through electronic social media.

How long you spend in school depends on your travel time to get there and the school timetable. Please note that, because of variation in distances to schools, and in school timetables, there will inevitably be significant variation between students in the duration of your time in school.

Training meetings are at Queen's on Monday 16 and Tuesday 17 October. In these you will be introduced to the topics of the MIPS programme: *Healthy Body* and *Healthy Breathing and Circulation*. You will also be given an indication of what you need to know about current primary school education, and how it has changed since your time there.

School Introduction Visit. Depending on the dates of your school's half-term break, from the following week onwards you will be teaching the pupils, with your teacher as an active supporter, and responsible for keeping the class under control. This first session is your initial opportunity to meet the pupils you will be helping to learn over the next few weeks. We suggest that in the early part of this session you simply observe your teacher in action, to see her / his style. If the pupils are involved in a practical activity, you should also join in the action. This can help you to get to know the pupils personally, and for them to get to know you as a person.

In this visit, you should be given an opportunity to introduce yourself formally. We ask you to design your own powerpoint presentation to bring with you on this visit. Your initial slide should have the title *Medics in Primary Schools* at the top and should also include the logos of MIPS' supporters: Queen's University Belfast and Sentinus. These logos can be copied from the training Powerpoint presentation on the Sentinus website.

Suggested starting-point text for your presentation is provided below. The main questions are in bold, and some of the information you may wish to disclose follows each question:

- 1. Who am I?** Your background, where you live, your school education: how you got from primary school to where you are now, what you do in your spare time.
- 2. What do I do at Queen's?** Your university course, why you chose it, what you plan to do in the future.
- 3. Where do I study?** Where the School of Medicine is, who goes to it, how you can become a student.
- 4. Why am I here?** To teach science and health education, to learn from teacher and pupils, to answer pupils' questions.
- 5. When will I be in school?** Day, time, duration and type of lessons in MIPS.

Encourage pupils to ask you questions: they learn more effectively this way. You should feel comfortable with what information you disclose. Do be aware that although you are informing the pupils you should be discreet about yourself. To help ensure that this is a dialogue rather than just a front of class presentation, teachers should have asked their pupils to prepare some relevant questions in advance, and these can be taken at appropriate points. You might like to ask pupils to bring in a medical question they would like answered. You could then cover these either at the beginning of a later session, or at an appropriate point later in your teaching. But check with your class teacher that these questions and your proposed answers won't be embarrassing to other members of the class.

Before or during this first visit you should discuss with your teacher the units or parts of units (detailed on pages 21 - 50 of this Guide), which you will cover, and their order of presentation. Ask your teacher to let you see into the class store cupboard, so that you will be aware of resources available. Also ask about the procedure for printing photocopies of material you may wish to use. Discuss your response to potential questions on reproduction, drugs, substance and alcohol abuse in advance with your teacher, as schools

have their own policies in relation to these areas.

As you teach these units, feedback is essential if you are to improve your teaching skills and capabilities: you should set up a procedure for your teacher to comment constructively on your teaching if this is not done automatically. Suggest that your teacher emails a few notes of comment after each session.

You may also find it useful to hand out A5 sticky labels and ask pupils to write their first names large in felt tip pen, so that you can address individual pupils personally. This makes for more effective communication.

Mid programme reviews will be at Queen's University on Monday 11 and Tuesday 12 December.

Useful Websites

As the pupils will see you as a medical expert, you are likely to be asked medically related questions outside the scope of this Guide. We encourage you to respond within your expertise to questions on these and similar topics if they arise. The following websites relating to topics raised in previous years are useful starting points and were correct and active in July 2023. They are for your information. Check with your class teacher if you intend to use any of them in class.

- **Antimicrobial Resistance** www.nhs.uk/NHSEngland/ARC/Pages/AboutARC.aspx, follow **antibiotic resistance** (www.abpisschools.org.uk/topics/antimicrobial-resistance/introduction/). This material is written for the 16 – 19 age group and is therefore suitable for your own background information, rather than directly for pupils.
- **Attending the doctor**, <https://educationandbehavior.com/story-about-going-to-the-doctor> What to do if you are ill. This material is American. Review this website first if you intend to use it in class.
- **Bacteria / viruses** www.differencebetween.com/difference-between-bacteria-and-vs-viruses Compares and contrasts bacteria and viruses
- **Careers in healthcare, psychology and social healthcare** www.healthcareers.nhs.uk
- **Covid-19** www.nhs.uk/conditions/coronavirus-covid-19 This is a general NHS website page of advice for adults on the pandemic. Follow **Northern Ireland** (at the foot of the screen)
- **Going into hospital** www.nhs.uk/nhs-services/hospitals/going-into-hospital, follow **Going into hospital as a patient**. General information hospital admission, this is aimed at hospital patients in general, but should also be relevant to KS2 pupils
- **Health and safety**, and risk assessment www.safetybank.co.uk/health-and-safety-best-practice-guide This website is aimed mainly at industrial employers and employees. A Risk Assessment template is available on the MIPS area of the Sentinus website www.sentinus.co.uk.
- **Infectious diseases, common diseases and their symptoms** www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/dxc-20168651
- **Medication and drugs**: what they do / dangers / what are they made of www.abpisschools.org.uk/topic/medicines-to-treat-disease/1/1.
- **Mental health** www.mentalhealth.org.uk/northern-ireland for background information

- **Microorganisms** www.sciencelearn.org.nz/resources/176-microorganisms-friend-or-foe for explanation of microorganisms. This material from New Zealand.
- www.bbc.co.uk/bitesize/search?q=microorganisms&page=1 Information relating to microorganisms, particularly in relation to food.
- **Organ donation** www.organdonation.nhs.uk Discuss the use of this website with your class teacher
- **Radiotherapy** www.nhs.uk/conditions/radiotherapy Overview
- **Roles of healthcare professionals / multidisciplinary teams**
www.health.nsw.gov.au/healthone/Pages/Multidisciplinary-Team-Care.aspx An Australian overview
- **Stem cell research** www.bbc.com/bitesize/guides/zghqfcw/revision/4 General overview on Stem cells.
- **Sports related injuries**, www.healthline.com/health/sports-injuries, www.sportsinjuryclinic.net and www.betterhealth.vic.gov.au/health/healthyliving/sports-injuries Overviews
- **Ultrasound therapy** www.sportsinjuryclinic.net/treatments-therapies/ultrasound-therapy Overview.

Some general science websites, like ABPI, BBC Bitesize and BBC Science and Technology, and NHS are worth exploring as many of their biology and medicine resources can be used at appropriate points in your presentations:

ABPI (the Association of the British Pharmaceutical Industry) www.abpischools.org.uk click on **all Topics** and follow the relevant Topics column **on the left of the screen.**

BBC www.bbc.co.uk/programmes/genres/factual/scienceandnature/scienceandtechnology and www.bbc.co.uk/bitesize

NHS (the National Health Service) www.nhs.uk Follow **Health A – Z** for conditions, symptoms and treatment and **Medicines A – Z** (scroll down) for how medicines work.

www.healthcareers.nhs.uk. Follow **Career planning** for information on **350 careers in the NHS**. You can also find useful information on **Resources for teachers and careers advisers** (scroll down).

Websites listed above are provided as examples only: you can search for others or enter the topic you want into a Google or Bing search box. These are listed mainly for your own background information: please check with your teacher before using any of these with pupils in class. If you find more useful websites related to these topics, please let us know.

Some other topics raised by pupils in previous years (the brain and nervous system, healthy eating, effective exercise, teeth and dental hygiene) are outlined later in this Guide, but you might like to develop them further. Some of the websites listed above are worth exploring further as they include other useful topics. Other topics, particularly those associated with work and careers in health-related services, might be developed informally at appropriate points if you are given a lead by pupils.

Do not teach First Aid or CPR (CardioPulmonary Resuscitation) unless you have appropriate certificated training. Suggest that teachers key **first aid training in schools** into an internet search box for further information.

You will be expected to spend the afternoon when you are not at school researching material and resources for the next teaching session. Previous participants following the same unit have found it useful to meet or exchange ideas as a pair or a group, or through electronic social media.

Note that schools vary in their attitude to teachers' dress, and to the form of address to adults in the classroom. Female students should dress as they would for a hospital attachment. Male students should wear a tie for their first visit, and agree with their teacher appropriate dress for subsequent visits. Also decide with your class teacher how pupils should address you in class: first name or surname.

Learning Outcomes

Below are the learning outcomes specified by the School of Medicine for the MIPS Student Selected Component. On successfully completing MIPS you should be able to:

- *communicate effectively with young children on a one to one basis*
- *communicate effectively with young children in groups*
- *provide young children with concise explanations about health and scientific concepts*
- *communicate with teachers about lesson planning and content*
- *present ideas in a 'front of group' situation*
- *use ICT to convey health and scientific concepts appropriately to young children*
- *prepare lesson plans to manage teaching and learning material*
- *employ appropriate pedagogic strategies to convey medical and scientific concepts appropriately to young children*
- *reflect on positive and negative aspects of teaching activity*
- *improve performance following feedback from others and personal reflection*
- *manage time effectively*

A self-check form is included on page 62 of this Guide. You can use this as a starting point for your reflective commentary by entering comments after each teaching session. An electronic template of this self-check form, with space for comments (in Word format), is available on the MIPS area of the Sentinus website www.sentinus.co.uk. The Comments / Evidence box in this will expand to take your text.

The Student Teaching and Learning Guide

This Guide comprises teaching and learning material for all parts of the MIPS programme. Information on module assessment is included as an appendix. There are two versions of the Guide: this in-school version for students whose teaching is face to face, and an online version for those teaching remotely. Both are available on the MIPS area of the Sentinus website. Please regard the in-school version as your teaching base, but it's worth referring to the online version occasionally for ideas you might wish to use in your teaching.

Note that, apart from the section on pages 5 – 7 for principals and class teachers, the Guide is written for you as an adult student to develop your lessons, and to enable you to meet the learning outcomes above. Apart from the activity sheets and links to some websites for use on an interactive whiteboard, this material is not designed to be presented directly to pupils. The Guide concentrates on the teaching and learning aspects of the programme: you provide the medical input.

Starting with the idea of systems in general, **Healthy Body** covers aspects of some body systems, in this unit particularly the muscular, skeletal and digestive systems. The lungs and the circulatory system (see below) have their own unit. This is followed by a section on nutrition, and the effective and safe storage and preparation of food, emphasising the necessity for clean handling. Pupils are invited to explore how they learn *about* the outside world, and how they learn *from* the outside world. They investigate how they perceive the world around us, how their memory works, and how they can improve their thinking, memory and learning. Finally, in this part, pupils investigate the nature and function of their skin, supported by your expertise. Later material covers dangers to their skin including chemicals, sharp objects, dirt and, in particular, over-exposure to the Sun. You will help pupils understand how these dangers can be avoided.

Healthy Breathing and Circulation asks pupils to consider their hearts and lungs as essential related body organs that they need to keep in fit condition to live healthy lives. It covers the effect of exercise (or lack of it), and the dangers of nicotine, vaping, tar and alcohol, together with an introduction to lung disorders like asthma and bronchitis. Asthma is treated in greater detail. The final section teaches pupils about blood, its composition and circulation.

As the total time required to cover both parts completely is about more than eight or nine weeks, you are very unlikely to use all the material. **Although each part is divided into separate lessons, please regard this as advisory only, and discuss with your class teacher how the Guide material can be used most effectively.** You should work out an outline programme with your teacher at about the time of your introductory visit.

The class may already be familiar with some elements of the programme. With the agreement of your class teacher, these can be omitted, or your teacher may want you to cover them as reinforcement. If you feel it might be worthwhile to cover other aspects of health education, please do so – after first checking with your teacher about suitability, and being aware of time. Students often find that pupils ask more general questions outside the scope of the units, for example about meeting and talking with doctors, life in hospitals, diseases and general hygiene. If you feel responses are appropriate, and your class teacher agrees, treat these questions informally as they arise.

Formal areas like *ABC for Life*, CPR (CardioPulmonary Resuscitation) and First Aid should be left to trained professionals, unless you already have appropriate certificated training, and your class teacher agrees. Some students bring in their own resources, stethoscopes are an obvious example. This is encouraged, but again check with your class teacher before you do this. If required, a risk assessment form is available on the MIPS area of the Sentinus website www.sentinus.co.uk.

The Northern Ireland Curriculum

The current Northern Ireland primary curriculum, introduced in 2007, has an emphasis on developing skills and capabilities, rather than learning factual material. The curriculum is designed *to develop the young person as an individual, as a contributor to society, and as a contributor to the economy and the environment*. Science is no longer a discrete subject in the Northern Ireland Curriculum. It is now part of the area of learning: *The World Around Us*, which also includes history, geography and technology. As a

result of this, primary science teaching has declined significantly since 2007, so in some schools pupils may not have the background of science knowledge and understanding you may expect.

There is also an emphasis in the current Northern Ireland Curriculum on developing the cross-curricular skills of **Communication, Using Mathematics, and Using ICT** (Information and Communication Technologies). You should discuss with your teacher opportunities that may arise for developing skills and capabilities in these areas.

Important in the aims of the Northern Ireland Curriculum is a focus on **Personal Development and Mutual Understanding** (PD&MU: see [Personal Development and Mutual Understanding | CCEA](#)) of which **Personal Understanding and Health** is a part. Relevant health aims are listed below. PD&MU enables pupils to develop knowledge, understanding and skills in general through their exploration of effective learning strategies as well as investigating how to sustain their health, growth and well-being, and to cope safely with their environment. Employability is also a personal development theme, so it is useful to give pupils an idea of life as a student doctor and other medically related careers as the opportunity arises.

Within the *Personal Understanding and Health* area of the curriculum, teachers are expected to help their pupils to:

- *understand the benefits of a healthy lifestyle, including physical activity, healthy eating, rest and hygiene,*
- *recognise what shapes positive mental health,*
- *know about the harmful effects of tobacco, alcohol and solvents,*
- *understand that bacteria and viruses affect health, and that risks can be decreased when basic routines are followed,*
- *know how the body grows and develops,*
- *know the ways in which they learn best,*
- *identify and practice effective learning strategies,*

Please discuss with your class teacher and class how your activity in the classroom can help pupils meet these objectives. Also discuss guidance material with your teacher before you start each unit, particularly in relation to practical activities, and act on her / his advice. Some activities marked * in the Guide require advance preparation or previous-week planning with your teacher. Advice on how to develop a lesson plan is outlined below, and an outline lesson plan form is available on the MIPS area of the Sentinus website www.sentinus.co.uk.

Activity Sheets and Websites

There are references to **activity sheets** in each part of this Guide. These can be accessed on the MIPS area of the Sentinus website www.sentinus.co.uk. The activity sheets are *Word* documents aimed mainly at the middle range of Years 6 and 7 pupils. They may be used for individual or pair / group activities. Some may be given as homework, or used by the teacher between visits. Three general activity sheets are provided: G1 *Compare and contrast*, G2 *Group discussion* and G3 *Glossary*. These may be used as appropriate.

Activity sheets are provided in black and white only as, because of printing costs, your school may be

reluctant to print in colour. They are deliberately basic, and you will probably have to amend these to meet the abilities of your pupils: please discuss this with your class teacher, and feel free to develop them to meet your own, and your school's requirements. Please check your school's policy on photocopying, and let the school have advance copies by email of material you would like photocopied to be ready for your visit or online encounter. As the material you copy is for the benefit of the school's pupils, you should not be expected to pay for photocopying.

You should explore the **useful websites**, which are listed at appropriate points in the units, and the more comprehensive list included above. Have a quick scan of all the listed websites for a unit before you begin the unit, and note those you expect to be useful during your teaching of the unit. Several websites from the STEM collection (www.stem.org.uk) that may be of use to you are included on the *Useful websites* resource on the MIPS area of the Sentinus website. Please note that websites referenced in the text and ancillary material were correct in July 2023, but that website addresses, or their internal structure, may have changed since then.

Your teaching should involve the pupils in practical activities as much as possible. Pupils enjoy and learn from practical work, and many of the suggested websites can lead to useful practical work, or have useful additional activity sheets. Most of these sites are for your own background information, but several can be used directly with pupils. View the material in advance and, if in doubt about its suitability for class use, check with your teacher before you show it to pupils.

It's useful to keep an eye on news items. In 2020 - 21 we were able to include additional material on covid-19 in those years' Guides. During the 2022 session we have had strep-A, and a tragedy of breaking ice in Solihull. These were obviously important medically related news items, but they occurred too late for inclusion in the Guides. If serious medical emergencies occur during the 2023 session, it may be appropriate to spend some time outlining to pupils the implications of such events. You can find useful information on a range of medical conditions in www.nhs.uk/conditions (Health A to Z).

The following relevant resources are available to download from the Sentinus website:
www.sentinus.co.uk, follow **Programmes**, then **Primary** and (page 2) **Medics in Primary Schools**.

Apart from the Powerpoint Presentation, resources are in Word (.docx) format and can be amended as required.

MIPS Teaching and Learning Guide:

In-school version

Online version

- including Assessment Appendix

Form: Lesson Plan Outline

MIPS Student Personal Logbooks

In-school version

Online version

Training Day Powerpoint Presentation

Form: Risk Assessment

List, with links: Useful Websites

Self-check form: Learning Outcomes

Forms: MIPS Activity Sheets

2022 *Healthy Skin* unit

2022 *Healthy Brain* unit

Equipment Loan Request Form

Lesson Plans

A lesson plan is a teacher's detailed description of how she / he intends to teach one lesson. Most lesson plans include some or all of the components below:

- the **introduction**, possibly referring back to a previous lesson, and / or to pupils' experience
- the **development**, the sequence of activities that make up the main part of the lesson, including your presentation of material and guidance on individual, pair, group and class activities
- the **conclusion**, usually with the whole class, including your summary of the lesson with reference back to the extent to which the initial objectives were met.

Development material may include:

- the **title** of the lesson
- ***preparation** required in advance of the lesson, including any **background information** about the pupils or topic that you think is relevant
- the **time** needed to complete the lesson
- **background experience, knowledge and understanding** you assume the pupils already have. *Discuss this with your teacher in advance.
- **objectives / learning intentions** are what the pupil should **know, understand** and **be able to do** at the end of the lesson (these are included as *Pupils should learn* items within each content lesson in this Guide).
- **success criteria** are what you expect your pupils to be able to do if you have carried out your lesson successfully, so they should reflect the aims / objectives of the lesson. *They should be identified in advance discussion with your teacher with specification of which of the objectives / learning intentions you would expect (i) all, or (ii) most of the pupils to be able to achieve
- **references** to the Northern Ireland Curriculum as appropriate, including the cross-curricular skills: *Communication, Using Mathematics, and Using ICT*
- **resources** required for effectively presenting the lesson [Identify those that need advance planning, or photocopying – usually marked * in this Guide]
- **homework**, if appropriate, setting any further work the pupils should do in relation to the theme, or in advance of the next week.

A sample lesson plan, based on the first week of *Healthy Body* is included below (pages 16 – 18). Please do not feel that you must use this format, or every section of it: it is shown here as an example only of how the material of the Guide might be translated into a formal lesson plan: this is a maximum format: your lesson plans are likely to be much shorter than this. A Lesson Plan Outline template is available on the MIPS area of the Sentinus website www.sentinus.co.uk. Many other examples can be found by entering *Lesson Plans* in an internet search box.

A range of equipment to support classroom learning activities, including peak flow meters, sphygmomanometer / stethoscope combination kits, tape measures, and Glo Germ kits, is available from the Clinical Skills Education Centre for your use during this module. Details about these resources and booking procedures can be found below.

To book and arrange collection of this equipment, please complete and submit the Loan Request Form on the MiPS area of the Sentinus website. Do not call into the Centre to collect equipment without booking it first.

Sample Lesson Plan: Body Systems (Healthy Body – Week 1)

Lesson Title: Body Systems (Healthy Body - Week 1)

Advance Preparation and Background Information

- *Read Week 1 of the Healthy Body part of the Student Guide, and highlight key elements*
- *Discuss relevant points with my class teacher, including the school's policy on sex education and availability of photocopying, and with other MIPS students.*
- *Look through the websites:*

BBC - www.bbc.co.uk/science/humanbody/body/index_interactivebody.shtml

ABPI - www.abpischools.org.uk/topics/body-builder/body-builder/.

*Check Activity Sheets (see resources below) for relevance, and *arrange photocopying as appropriate*

Time required: 60 - 90 minutes.

Background experience, knowledge and understanding

Pupils should already be familiar with some systems, for example, a bicycle or more complex kitchen utensils. They should also be generally familiar with organs and systems in their bodies. Detail is not required initially: this will be developed by me during relevant lessons.

Objectives / Learning Intentions [from the Student Guide]

Pupils should learn

- *how to identify the components of a system*
- *how components of a system relate to one another*

- what happens if components of a system are damaged or missing
- to identify major body systems, and show these on an outline of the human body
- to identify some of the things that can go wrong with our body systems
- about the structure and function of muscles
- to recognise how muscles can deteriorate or be damaged

Success criteria

At the end of the lesson, all / most pupils should be able to:

- identify six major components of a bicycle (or any other system used as an example)
- describe how (for example) the pedals, chain and wheels of a bicycle are related
- explain what happens if the chain breaks while they are riding a bicycle
- identify six systems or organs in the human body
- explain what happens if one of these systems or organs is not working properly

*These criteria (for example, the number of components / organs required, and differentiation between 'all pupils' and 'most pupils') should be modified after discussion with my teacher in the light of class capabilities.

Northern Ireland Curriculum

The unit can contribute to Personal Understanding and Health, which is part of Personal Development and Mutual Understanding in the Northern Ireland Curriculum (see the Introduction to the Student Guide).

Communication: Accessing information from books, the internet, and other sources. Using scientific words and phrases appropriately, for example: system, digestive, muscle.

Using Mathematics: not relevant to this unit

Using ICT: Word processing. Accessing, and editing appropriately, information from books, and the internet and other electronic sources

**Resources*

Activity Sheet B1: Matching muscles *(cards cut out in advance)

Activity Sheets B7 or B8: Body glossary (possibly both formats)

Activity Sheet B9: Body systems glossary

Activity Sheet B10: Damaged organs

Clips identified from BBC and ABPI websites [Check these in advance]

Introduction

- 1. Introduce the idea of a system in general, as a group of interacting elements operating as a single unit. Examples: bicycle, food mixer, computer, car, the hot water or electrical system at home, the solar system.*
- 2. Ask pupils for other examples. Ask individual pupils to write down examples, then pairs or small groups to write down four examples, and finally bring these together as a class.*
- 3. Emphasise, by questioning the pupils, the idea that systems are made up of component parts that enable them to work effectively together as a single entity, and may not work properly if one or more components is damaged or missing.*

Development

Section 1. What is a system?

- 1. Choose one example (bicycle or similar example chosen by the class). Ask pupils to explain how the components of the system work together.*
- 2. Ask pupils what can happen if one component (for example: chain or tyres, or other appropriate example) is damaged or missing. Use Activity Sheet B9: Damaged organs*
- 3. Emphasise the idea that all components in a system should function effectively for the whole system to be effective, and that the system may not be effective, or may not work at all, if specific components are damaged or missing.*

Section 2. What are our body systems?

- 1. Discuss the idea of body systems as examples of systems in general*
- 2. Ask pupils in pairs to write down examples of systems within their own bodies.*
- 3. Ask them to join another group to compare their lists.*
- 4. Write a final class list from pupil responses on the board. Possible responses include digestive, respiratory, circulatory, central nervous, muscular, skeletal, reproductive, urinary, skin.*
- 5. Ask pupils to locate these on an outline of the body. Use Activity Sheet B10: Body systems.*
- 6. Ask pupils what can happen if one system, or part of a system, (for example: heart or liver) is damaged. Some of this may have to be answered from my own medical knowledge.*

7. Encourage pupils to ask questions. Formulating questions is an essential part of learning.

8. (If time) Use Activity Sheet B7 or B8: Body Glossary (as appropriate) to enable pupils to record what each body system does. This may be set as a homework activity if not used in class.

Section 3. What is our muscular system for?

1. Find out what games pupils play. Ask what injuries may occur.

Emphasise warming up before exercise. Emphasise concussion.

2. Through questioning and discussion develop the ideas about muscles in the Student Guide (Healthy Body) Section 3 (third paragraph)

3. Carry out the activity: Muscle Control in the Student Guide Section 3

4. For consolidation, use Activity Sheet B1: Matching muscles

Plenary / Conclusion

Ask pupils to summarise what they have learned. Refer back to the objectives.

Ask: Have you learned (each of the objectives)?

Homework

Activity sheet B7 or B8 as appropriate, if not used in class

MED-Lab at W5

If your school is planning a visit to W5, remind them that there is now a permanent exhibition covering aspects of the human body (supported by Almac) at W5. See <https://w5online.co.uk/explore/med-lab> MED-Lab takes visitors through the systems that keep our bodies alive and working effectively. It displays advanced imaging technologies that enable us to see inside our body. It shows what can go wrong with our body and how we find out about and, ideally, fix the problem.

Notes

Part 1: Healthy Body

Please discuss this guidance material with your class teacher before starting this unit, particularly in relation to practical activities, and act on her / his advice.

Some parts of this material may have been covered already by your class as part of the Northern Ireland Key Stage 2 Curriculum. You may omit this if agreed by your class teacher, or your role may be to reinforce pupils' knowledge and understanding of these areas, rather than to teach them about their bodies as new material. This unit can contribute to *Personal Understanding and Health*, which is part of the Northern Ireland Curriculum's area: *Personal Development and Mutual Understanding*.

For more information on *Personal Development and Mutual Understanding*, and useful resources that can be downloaded, see [Personal Development and Mutual Understanding | CCEA](#). Statutory requirements in this area are that teachers should enable pupils to develop knowledge, understanding and skills in:

- *their self esteem, self confidence and how they develop as individuals*
- *their management of a range of feelings and emotions and the feelings and emotions of others*
- *effective learning strategies, and*
- *how to sustain their health, growth and wellbeing, and coping safely and efficiently with their environment.*

CCEA material can also be used as appropriate to develop pupils' cross-curricular capabilities in *Communication*, *Using Mathematics*, and *Using ICT* (Information and Communication Technologies).

There are sixteen sections in this part covering, within a period of about six weeks:

(sections 1 – 5, weeks 1 – 2) *body systems*, includes most of the body except for the heart and lungs.

These systems are covered in *Healthy Breathing and Circulation*. You will find the ABPI (The Association of the British Pharmaceutical Industry) and BBC websites (www.abpischools.org.uk and www.bbc.co.uk/science/humanbody) particularly useful in relation to all body systems. The ABPI site enables access to a downloadable library of resources.

(sections 6 – 8, weeks 3 – 4) *using food effectively and safely*, looks at the relationship between a healthy diet and the development of pupils' bodies.

(sections 9 – 12, week 5) *understanding and caring for your largest organ, your skin*, describes your skin and what can damage it.

(sections 13 – 16, week 6) *using your brain in perceiving, thinking and learning*

Although the material is broken down into weeks, please regard this as advisory as your actual programme should be decided through discussion between you and your class teacher. Don't feel under pressure to complete everything in this Guide: you will probably find that there is more material than you can use in the time available. Please note that some activities or possible questions from pupils (marked *) require advance planning or discussion with your teacher the previous week.

Some elements may be omitted if they have already been effectively covered, or if they are regarded as too advanced or too simple for a particular class, for example, scatter graphs relating energy to the fat content of food, or photosynthesis as the inverse of respiration.

Week 1 – Body Systems

1. What is a system?

Pupils should learn

- *how to identify the components of a system*
- *how components of a system relate to one another*
- *what happens if components of a system are damaged or missing*

Introduce pupils to the idea of a system in general, as a group of interacting elements operating together as an effective unit. For example, pupils may already be familiar with a bicycle, computer or motor car, or the water system in their home. These are made up of component parts that enable them to work effectively together as a single system, and which may not work effectively, or not at all, if one of its components is damaged or missing.

Ask for other general examples. Pick one example – possibly a bicycle. Ask pupils to explain how the components of the system work together. Ask what can happen if one component (for example: the bicycle chain or tyres) is damaged or missing. Emphasise the idea that all components or organs in a system (including the systems in our own bodies) should function effectively for the system as a whole to be effective. Compare how a system, such as a motor car or our body functions, due to its different parts working together effectively. *You may wish to demonstrate a real system, for example a wind-up clock or a food mixer.

2. What are our body systems?

Pupils should learn

- *to identify major body systems, and show these on an outline of the human body,*
- *to identify some things that can go wrong with our bodies, and how these can be avoided*

Leading from section 1, ask pupils for examples of systems within their bodies. Possible responses include digestive, respiratory, circulatory, central nervous, endocrine, skin, muscular, skeletal, reproductive, urinary, (though pupils may not use these words). *Check in advance the school's policy on sex education, as pupils are likely to suggest the reproductive system.

Activity – Where's my liver?

*Provide pupils with outline body diagrams or copies of Activity Sheet B9: *Body systems*, and ask them to locate each system on an outline of the body. Activity sheets can be accessed on the Sentinus website: www.sentinus.co.uk, under the title *Activity Sheets*. *An alternative is to use the reverse side of a strip of wallpaper. Lay a pupil on the paper and draw an outline round her / him. Suggest that pupils use different colours for each system, as the digestive, circulatory and central nervous systems are extended throughout the body.

Activity – What can go wrong?

*Check with your class teacher in advance in case some pupils may be sensitive to this activity.

You may find that, as a starter, pupils may be motivated by the questions: *What can go wrong with parts of my body? What can I do about it?* You may wish to use Activity Sheet B10: *Damaged organs* here. You might decide in advance to discuss two or three specific ailments. Please note that heart and lung diseases, and asthma, are covered in *Healthy Breathing and Circulation*.

You may wish to introduce discussion here of:

- What happens when I go to the doctor?
- What happens if I go to hospital?

These questions may arise at other times during your school visits. Please respond as appropriate.

Extension activity – Going to the doctor

Divide pupils into groups of three or four. Ask pupils to discuss times when they visited the doctor or hospital for treatments like getting prescriptions for medicine, having wounds stitched or to discuss their worries. This is to establish understanding of how members of the public visit doctors for different treatments.

You will be introducing several technical terms in this and other sections of *Healthy Body*. *You may use Activity Sheet B7 or B8: *Body Glossary* here to enable pupils to build up a glossary of terms. Some words are included in this sheet, but pupils may add their own words, with their explanations. In Activity Sheet B7 pupils are asked to match terms with definitions: in Sheet B8 they are asked to make up their own definitions. Expect pupils to be able to identify body systems and organs, but not necessarily to remember all the names. Use Sheet B7 or B8 as you feel appropriate for your class.

You may wish to adapt this glossary activity sheet for other units. You can use Activity Sheet A6 for this.

Extension activity – Body cells

As an extension, you might tell pupils that our body systems and organs are composed of cells and show them some of the wide range of human body cells. *Search *human body cells* on the Internet for appropriate images. The idea of cells, as the smallest units of life, is referred to later in sections on X-rays, and on the digestive system and nutrition. It's useful for pupils to know (without detail) that our bodies are composed of different types of cells, with different functions. *You may be asked about stem cells.

3. What is our muscular system for?

Pupils should learn:

- *about the structure and function of muscles*
- *to recognise how muscles can deteriorate or be damaged*
- *about the importance of regular exercise of the muscles*

Talk about sport and games. Ask pupils about playground injuries and injuries to footballers, netball and tennis players and other athletes, for example and hamstring injuries and concussion. Encourage pupils to ask you questions about their muscles, and potential injuries: formulating questions is a key element of learning. Discuss the importance of warming up appropriately before exercise. Emphasise that muscles are less likely to be injured if they are made stronger and more flexible through regular use. Possibly

discuss the dangers of athletes taking steroids or other drugs to improve their muscles.

Some ideas to cover, preferably through questioning the pupils:

- The muscular system functions to enable movement. Muscles enable you to breathe, walk, smile, eat and digest your food.
- Muscle movements are either voluntary or involuntary. Voluntary movements are those we control. Ask for examples (kicking a ball etc). Involuntary movements are those we do not control. Ask for examples (heartbeat, peristalsis: contraction of the muscles in the gut during digestion, etc).
- Muscles account for about 40% of our body mass.
- Muscle cells are tiny fibres that slide past each other to enable muscle tissue to contract (shorten) and relax (lengthen).
- Muscles can contract to produce a pulling force, but muscles can't push. You can demonstrate this principle using a rubber band, which can also pull but not push. Stretch the rubber band to show comparison to how the muscle cells stretch. This means muscle work in pairs to produce opposite effects at, for example, your elbow or knee. As one muscle of the pair is contracted and shortened, the other muscle relaxes and lengthens. Together this pair of muscles is called an antagonistic pair.

Activity – Muscle control

1. Ask pupils to stand with their right arm bent at their elbow. Ask them to hold their upper arm muscles with their left hand while they straighten and bend their right arm. Discuss what they feel. They should be able to describe how their upper arm muscles (biceps) tighten.
2. Ask pupils to find the antagonistic pair of muscles, the biceps and triceps, near their elbow joint.
3. Working in pairs, ask pupils to place their hands over another pupil's arm muscles in turn to feel what happens as they move their arms. This may help them understand how the muscles tighten.

Ask pupils to copy the table below into their notebooks, and complete it to report the muscle movements when they bend their elbows, so that their biceps and triceps muscles contract and relax.

Movement (lower arm-raised or lowered?)	Biceps muscle (contracts or relaxes?)	Triceps muscle (contracts or relaxes?)
Lower arm is raised		
Lower arm is lowered		

Ask what happens if muscles are not used regularly: they degenerate (atrophy) so inactive people cannot generate enough muscle activity to take part in intense extended exercise. Inactive people may become lazy and overweight / obese. The increasing number of inactive children may lead to a rise in childhood obesity. *Be sensitive here if there are overweight children in the class: check with your class teacher. Ask pupils to make a list of ways they could use to motivate an inactive child to become more active.

You may use Activity Sheet B1: *Matching muscles* here.

You may find a series of useful introductory resources for this topic on

Week 2 - Bones

4. What is our skeletal system for?

Pupils should learn:

- *about the structure and function of the skeletal system*
- *to investigate bone structure*
- *to recognise dangers to the bones*
- *about the historical use of bone dimensions for measurement*

Ask pupils to feel some of their bones through their skin. Identify some of these. You might use the Latin names, but don't expect the pupils to remember these: however, they should remember their names in English. Ask them what makes up their skeleton. Explain that the skeletal system includes bones, ligaments and tendons. Ligaments and tendons are soft tissues made of collagen, a type of protein. Ligaments connect bone to bone, tendons connect muscles to bone. Emphasise that these are living, growing tissues, which can be easily damaged.

Activity – What are bones for?

Ask pupils what they know about bones. How many are there in the human body? What do they do in their bodies. Ask them to first (i) list some of these bone functions on their own, then (ii) bring their lists together in pairs or small groups, and finally (iii) with the whole class to complete a list (for example: protection (skull and spinal cord, rib cage), giving shape, enabling movement, helping to produce blood, storing minerals, and transferring sound (in the ear). You may find the website <http://kidshealth.org/kid/htbw/bones.html> (Nemours) useful here for a concise explanation of our bones and skeleton.

You can find useful resources for other areas of MIPS on the kidshealth site.

You may find this type of activity – asking each individual for a response, then asking for responses to be discussed in pairs or small groups, and finally in the whole class – useful in other parts of this course.

Activity – Reconnect them bones

*You will need sheets of A3 paper, and paper fasteners for this activity

Ask pupils to draw their skeleton on a sheet of A3 paper. You can use the Nemours *kidshealth* website above on screen as a model. Then ask them to draw the main bones separately to the same scale, and cut these out. Provide paper fasteners and ask them to connect these bones to form a skeleton. This activity may be done in pairs.

Ask pupils how our bones can be damaged, and how damage can be avoided. For example: the use of car seat belts, cycle helmets etc for protection in traffic accidents. Emphasise the importance of using a helmet when cycling, as the skull protects our brain inside, which can be easily damaged. Remind pupils about the importance of calcium in their bone structure.

Joints are formed where two bones meet. Ask pupils about different types of joint in the body (for

example: fixed, pivot, saddle, ball and socket, hinge). Explain that bones at a joint are held together and supported by connective tissues, ligaments mostly made from collagen. You may find the website www.bbc.co.uk/science/humanbody/body/factfiles/joints/ball_and_socket_joint.shtml which includes links to other types of joint, useful. You may find it easier to connect to this (and other websites) through the *Useful Websites* screen on the MIPS area of the Sentinus website www.sentinus.co.uk.

Medical X-rays

Ask pupils if any of them has been X-rayed, and why. X-rays are used in medicine and dentistry to look inside your body to see if there is anything wrong. Broken bones, some cancer growths, and tooth decay can be detected by an X-ray of part of a person. Explain to the class (with the help of any pupil who has been X-rayed recently, if willing) what happens when you are X-rayed.

Explain that too much use of X-rays can be dangerous. Although most pass through your body, they have high energy and can cause harm by altering body cells that they hit. Medical and dental X-rays are usually very low intensity, so there is little hazard. X-ray technicians go behind a lead shield when giving X-rays because they use X-rays often. *You may need to explain the difference between *energy* and *intensity*.

*You may be asked about the uses of high energy radiation in radiotherapy (see www.nhs.uk/conditions/radiotherapy).

*You might also discuss other means of looking inside the body (EEG, fMRI etc) here. Search for these on the Internet to find more information on these techniques.

Rules for personal safety

Pupils' bodies are fragile. It would be useful to draw attention to the following safety rules during your teaching sessions.

Playground Safety: Safety is a condition where we are out of danger. It is important to be safety conscious, particularly in relation to fall hazards, while in the playground, at home, while at school or anywhere else. Remember, safety has no quitting time.

Road Safety: Be careful while crossing the road: if possible, cross roads on light controlled or zebra crossings. Walk on the footpath, but check for broken street paving stones. Wear a seatbelt while travelling in a car or bus. Use a helmet and other protective equipment while cycling, skateboarding or skating. See www.nhs.uk/conditions/head-injury-and-concussion for information and advice on concussion.

Safety at Home: Don't play with mains electricity. Stay away from a gas stove and other fire sources. Be careful while handling sharp objects like scissors or knives. Maintain good housekeeping to prevent slip / trip / fall / cut hazards.

Extension activity – Handy measurement

Your skeleton has many bones of different lengths. Ask pupils about bones as historical units of measurement (for example: cubit, fathom, foot, hand, inch, pace, span). Ask them to measure and record some of these for their own bodies, and compare with others in the class. *You may give pupils Activity Sheet B3: *Handy measurement* at the end of a lesson, ask them to find out what each unit is, measure these for their own body at home, and then compare with the rest of the class next week.

Week 3 – You are what you eat.

5. What is our digestive system for?

Pupils should learn

- to identify and locate the major organs in the digestive system
- to understand the operation of the organs of the digestive system

This leads into sections 6 – 8 on Nutrition. Ask pupils what they already know about their digestive system.

- What are its organs? Expect responses: *mouth, throat, stomach, small and large intestines, liver, kidneys, pancreas.*
- Where are these organs? Show them on an outline of the human body. *You might reuse Activity Sheet B9: *Body systems* here, looking specifically at the digestive system,
- What are these organs for? What do they do?

Activity – Food in transit through our digestive system

Activity Sheet *B4: Food in transit* lists a number of steps that happen as food moves through your digestive system. These are given letters, but are not in a logical order. Ask pupils to list them in their correct order, and to use the letters to show on the diagram where these steps take place.

Some ideas to cover, preferably by questioning the pupils:

- the digestive system in an adult is about 9 metres (30 feet) in length, and food takes about two days to pass through it.
- Nutrients must enter your body cells to take part in chemical reactions essential to life.
- Cells are the smallest unit of life. They are tiny, so food needs to be broken into extremely small pieces to enter your cells. Starting with saliva in your mouth, this process is digestion, the breakdown of large food pieces to smaller soluble pieces that can be carried in the blood.

You may find the following websites useful:

- www.abpischools.org.uk/page/modules/dietanddigestion/diet8.cfm (ABPI)
- www.nidirect.gov.uk insert **Healthy eating** in the search box

6. How can we use food effectively?

Pupils should learn:

- about factors that contribute to good health including diet and hygiene
- how different types of food are used in our body
- what can go wrong in our bodies, related to food
- what is a 'good diet'
- how to keep their teeth healthy
- how to ensure that our body is effectively hydrated

Nutrients

This theme can be developed through your questioning of the pupils. Find out what they already know about nutrition. Ask pupils what food is for. Discuss the nutrients:

- carbohydrates (energy)
- fats (energy storage, heat insulation)

- protein (body development)
- vitamins: A, C, D etc (vision, teeth, bones)
- minerals: sodium, potassium, iron etc (blood cells, teeth)
- calcium (bones)
- fibre (preventing constipation)
- water (cell support, making blood)

To enable pupils to summarise their knowledge and understanding of how their bodies use each nutrient, you may use Activity Sheet B5: *What is food for?* here. You may find it useful to use a spray diagram. See <http://systems.open.ac.uk/materials/T552>. Click on **Spray diagrams** (top left).

What can go wrong? Ask pupils what happens if you eat inappropriate food or drink. (*Check if your class teacher knows any pupil with a diet related disease. *Develop this sensitively in relation to obese or underweight pupils: check with your class teacher). Diet related conditions include:

- coronary heart disease / hypertension
- some cancers
- being overweight / obese
- dental problems (see the activity *Healthy teeth* below)
- other diet issues: iron deficiency, coeliac disease, diabetes, anorexia, bulimia, food allergies and intolerances
- issues related to poor food hygiene (see section 8)
- alcohol and tobacco abuse

In the light of this, ask what is a 'good diet' or a 'balanced diet'. Ask what is 'junk food'. Many foods can be either 'junk' or 'healthy' depending on how, when and how frequently they are eaten.

Extension activity – Call the Gastroenterologist

Sometimes your digestive system doesn't work like it should and you feel sick. *If possible, invite a gastroenterologist (a doctor who specializes in digestive problems) to provide a short presentation to your class. Ask her / him to talk about the parts of the digestive system and ways to keep your digestive system working well. After the talk, pupils can be asked to write a thank you note to the doctor, including one new fact they learned about the digestive system.

This type of activity – inviting an appropriate expert from outside - can also be used with other topics, but check first with your class teacher.

Activity – the Eatwell Guide

The Eatwell Guide shows the different types of food we need to eat – and in what proportions – to have a well-balanced and healthy diet. There is useful information on the NHS site:

www.nhs.uk/live-well/eat-well/the-eatwell-guide/ and downloadable resources on the British Nutrition Foundation website: www.foodafactoflife.org.uk follow **7 – 11 Years / Healthy Eating**.

Activity – Healthy teeth

1. Ask pupils to feel along their teeth with their tongues. Why have their teeth different shapes? Help them to identify incisor, canine and molar teeth, and to discuss what each shape of tooth is for.

2. Ask each pupil to write down a question about teeth. *You may prefer to provide this as a homework exercise, and follow up with the rest of this and the following activity next week.* Then in groups of three or four let them discuss these questions. Visit each group to help them find answers. Discuss key questions with the class.

Activity – Rules for healthy teeth

Ask each pupil to write a sentence on how they look after their teeth. Bring these sentences together first within small groups, then in the whole class to develop a list of *Rules for Healthy Teeth*. In discussion, emphasise the importance of brushing their teeth in the morning and last thing at night, as well as cleaning between their teeth. Ask how often they visit their dentist for check-ups.

You may find the following website useful:

- www.dentalhealth.org/downloads-and-resources Choose from Key Stage 2 units. It's worth exploring the Dental Health site for further dental information.

Week 4

Activity – Healthy lunch

1. Remind pupils about the importance of a healthy diet. Emphasise the importance of calcium in developing healthy teeth. Say that, while sugar is a very good source of energy, it can also damage their teeth and may lead to obesity. Ask them, in pairs or small groups, to write down (1) five foods that contain calcium, and (2) five foods that contain sugar. Then develop these lists for the class.

2. Ask half the class (group 1) to identify items that **should** be in their lunch boxes. Ask the other half (group 2) to identify items that **should not** be in their lunch boxes. Following this discussion, ask pupils, in pairs or small groups, to draw a healthy lunch box that will be good for their teeth. Suggest that when they eat foods containing sugar, this should be during a meal, not between meals. For items identified by group 1 remind students to include foods that would create a balanced meal, one which would be healthy for their body. And ideally, they should clean their teeth after each meal.

You may find the following website useful:

- www.abpischools.org.uk (ABPI). Follow **all Topics**, then **Balanced Diet**. *You can find useful resources for other areas of MIPS on the ABPI site (check all Topics).*

7. How do we get energy from food?

Pupils should learn

- *how basic life processes like digestion and respiration relate in order to maintain healthy bodies*
- *why our bodies need energy from the world around us*
- *where this energy comes from*
- *about the security of our food supply*
- *about drought and water security and conservation*

Ensuring Food Security

Ask pupils how they think climate change will affect food supply. Climate change leads to extremes of weather, such as droughts and floods. Droughts lead to reduced crop yields. Plants breathe through their

roots so when the roots are in too much water by flooding they can't get the gases they need, and they are also liable to fungal diseases.

Food security means that everyone in the world should have access to enough safe and nutritious food to enable them to live active and healthy lives. Changing climate is having a significant, but uncertain impact on food security. Government and intergovernmental policies need to be developed on food safety and security, water allocations, and land use. Further information on food security is available on The *Home* and *Research* pages on the QUB Institute for Global Food Security website www.qub.ac.uk/Research/GRI/TheInstituteforGlobalFoodSecurity also provides useful information on Food Security. www.ifpri.org/topic/food-security (the International Food Policy Research Institute).

Increased rainfall and temperature in climate change result in increased water contamination and increased bacterial growth, leading to digestive illnesses. Climate change may also lead to significantly increased rainfall (resulting in flooding and increased pollution) or significantly decreased rainfall (resulting in drought and seriously decreased crop yields).

Energy from food

Ask pupils: What is energy? A simple but accurate answer is: *Energy is something that can make things move*. This includes things themselves. Ask where this energy comes from to operate, for example, washing machines, toys, cars, aeroplanes and people: from electricity (mains and batteries), food, petrol, gas and other solid and liquid fuels, wind, moving water, sunlight etc. Ultimately almost all the energy we use on Earth has originated in the Sun.

Ask pupils why their bodies need energy. Some possible answers:

- The heart uses energy to pump blood around the body
- The body needs energy to keep warm
- The muscles need more energy during active sports.
- The brain uses energy to think and learn. (Emphasise that our brains need a lot of energy: about 20% of the body's total energy needs)

Where does this energy come from? Food and drink, and oxygen in the air.

How do we get energy from food? Energy is released by respiration, a chemical reaction:

Respiration fuel + oxygen -> carbon dioxide + water + **energy**

Explain that this is a general chemical reaction for releasing energy from all types of fuel. Where do the fuel and oxygen come from? The fuel in a car is petrol or diesel: the fuel in our bodies comes from food, mainly sugars and fats. The oxygen comes from the air (about 20% of air is oxygen). Plant material like wood, fruit and seeds can be used as fuel. Wood is burned to provide heat energy, fruit and seeds are used as food. The original energy in these reactions comes from the Sun providing photosynthesis. Show that photosynthesis is the reverse reaction of what happens in plants:

Photosynthesis carbon dioxide + water + **energy** -> plant material + oxygen

Activity – Energy for life

Use Activity sheet *B6: Energy for life* here. *Ask the pupils the previous week to bring in examples of nutrition information from food wrappers. Explain that kilojoules (kJ) and kilocalories (kCal) are both units of energy, and that a kilocalorie is about 4 kilojoules. The joule is the unit of energy internationally used in science. Both units are normally given on food labels, as the amount of energy available from 100 grams of the food. A teaspoonful of sugar provides about 80 kilojoules of energy.

The amount of energy pupils need depends on their age, sex and lifestyle. Energy on food labels is normally recorded in kilojoules (kJ). At age 11 human energy needed per day is from about 8,000 kilojoules (about 1,900 kilocalories) for a fairly inactive pupil to about 11,000 kilojoules (about 2,600 kilocalories) for a very active one.

Homework activity – How much energy do I need to live?

*Ask pupils in advance to record their energy intake from food and drink during each of the three days before this lesson (in kilojoules or kilocalories). Explain that they can find this information on food packaging labels. Ask pupils to compare their own figures with their recommended intake. You might use www.omnicalculator.com/health/ee-estimated-energy-requirement, or enter **estimated energy requirement** in a search box to access a range of calculators. *These ask pupils to input their age, sex, height and mass, so you may need scales and a tape measure. *This needs to be done sensitively: ask your class teacher for advice in relation to overweight pupils. Emphasise that, while too many kilojoules of energy above the recommended minimum intake can be deposited as fat in their bodies, they need at least this amount for a healthy lifestyle.

Homework activity – Where does my food come from?

* Provide pupils with an outline map of the world. Search *outline map* to find an appropriate outline. Ask pupils over the next week to list six foods used at home and identify on the map what country they came from.

8. How can we use food safely?

Pupils should learn

- *how food can become unsafe to eat*
- *what can be done to avoid different types of contamination*
- *that heavier rainfall due to climate change can result in greater water contamination*
- *that increased bacterial growth resulting from climate change increases the danger of digestive illness*

Activity – What can go wrong with food?

Using food safely can be developed through your questioning of the children. Find out what they already know about food safety. Climate change can result in increased water contamination and increased bacterial growth, leading to digestive illnesses. Ask pupils to say what can go wrong with the following foods (for example: contamination by toxic material, fungus, bacteria or pests (animals or insects), and deterioration over time):

- raw meat
- cooked meat
- frozen food
- chilled food

- canned food (meat, fruit, vegetables etc)
- fruit juices (in glass and plastic bottles, waxed containers etc)
- milk

Refer to 'use by' and 'best before' dates, and the difference between them. See www.food.gov.uk/safety-hygiene/best-before-and-use-by-dates for information on this. Emphasise "always read the label".

Discuss contamination with pupils

- types of contamination (dirt, toxins, e coli, salmonella etc)
- how it happens
- its effect on the food, and on the consumer
- how contamination can be prevented.

Pupils should be advised to wash their hands before meals and after coming in from outside, particularly if they have been handling animals. If appropriate, link this with the *Glo Germ* hand washing exercise described on [page 36](#). You may choose to use the *Glo Gem* equipment at this point.

Useful websites:

www.sciencelearn.org.nz/resources/588-bacteria-good-bad-and-ugly for explanation of the different good and bad bacteria in and around us.

<https://learn.genetics.utah.edu/content/cells/scale/> for a comparison of sizes of different microorganisms.

Activity – Spreading bacteria

Bacteria divide in two about every 20 minutes or so as long as they have adequate food, liquid and warmth. Increasing global temperatures result in greater bacterial growth. Explain to pupils that bacteria die if it's too hot, and don't divide if it's too cold. Start with one bacterium. Ask pupils to write down how many there will be after 20 minutes, 40 minutes, 1 hour Go on as long as you like (after 10 hours there will be over 400 million). Emphasise the importance of cooking raw meat thoroughly to kill bacteria, for a sufficient time at the correct minimum temperature, and the importance of freezing perishable food that will be used later.

*If available, show pupils a needle probe thermometer for checking cooked food temperature. You can demonstrate this in a beaker of hot water.

Packaging: Ask pupils to say why specific types of packaging are used for particular foods. *It's useful to have examples available. *Pupils may be asked the previous week to bring in sample packaging materials for food preservation, for example: cans (be careful with sharp edges), waxed boxes, plastic bottles.

Pupils may not be aware of the differences between bacteria and viruses. If your pupils have direct access to the Internet, they may use Activity Sheet B11: *Bacteria and viruses* to find out more. This may be set as a homework.

Activity – Safe storage

*Ask pupils in advance to bring in pictures of food from magazine advertisements, for example, packs of flour, tomato sauce, milk, baked beans, canned soup, frozen peas, cheese, butter, sausages, eggs, yogurt, pasta, potatoes.
*Provide pupil groups with A3 pages labelled 'cupboard', 'refrigerator' and 'freezer', and ask them to place each picture in its proper storage. More than one answer may be acceptable for some items.

Extension Activity – Food safety

Ask pupils to design a poster they can put up in their kitchens to show people how to store and prepare food safely.

You may find the following websites useful for information on food preservation:

- www.howstuffworks.com/food-preservation.htm (Discovery Communications)
- http://en.wikipedia.org/wiki/Food_preservation

Extension activity – How the body fights infection

We have learnt about the different cells within the body. These include immune cells, white blood cells, macrophages, T cells, B cells, etc. These cells become active in different scenarios such as allergies, fever, etc. You may ask the pupils for times when they had a fever or allergic reaction.

View www.sciencelearn.org.nz/resources/165-fighting-infection-introduction for an explanation of how the body's immune system fights infection.

Week 5 – Skin

This week's material is condensed from a previous three-week unit. For further information, the original 2022 *Healthy Skin* unit is available on the MiPS area of the Sentinus website.

9. What is skin? What does it do?

Pupils should learn:

- *the structure of their skin, including its basic components*
- *the purpose of each component of their skin*

***Check in advance if the school has these resources:**

- lenses (+20D, if available) or hand magnifier
- Sellotape (for skin peeling)
- "head" and other types of thermometer
- (if available) temperature sensors and computer
- microscopes

Activity – Investigating my skin

The theme should be developed through your questioning of the children. Ask pupils to look at their own skin (or a Sellotape peeling) through a lens (and microscope if available). The Sellotape peeling is made by sticking a piece of Sellotape to the pupil's fingertip and removing it (an impression of the pupil's fingerprint should be seen). Ask them to draw and describe what they see. *You may find Activity Sheet B12: *Magnification* useful here to get across the idea of magnification.

Activity – Skin Structure

Develop on the board a diagram of the skin (which should be similar to the diagram below) from pupils' answers to questions. Also encourage the pupils to ask you questions. Do **not** show the diagram or the website as a first step. Alternatively you might use www.abpischools.org.uk/topic/skin-structure-and-function/5/1 Invite pupils individually to come to the interactive whiteboard to drag labels of the structures of the skin to appropriate blanks. You can also explain the function of the different structures while the pupils perform this activity.

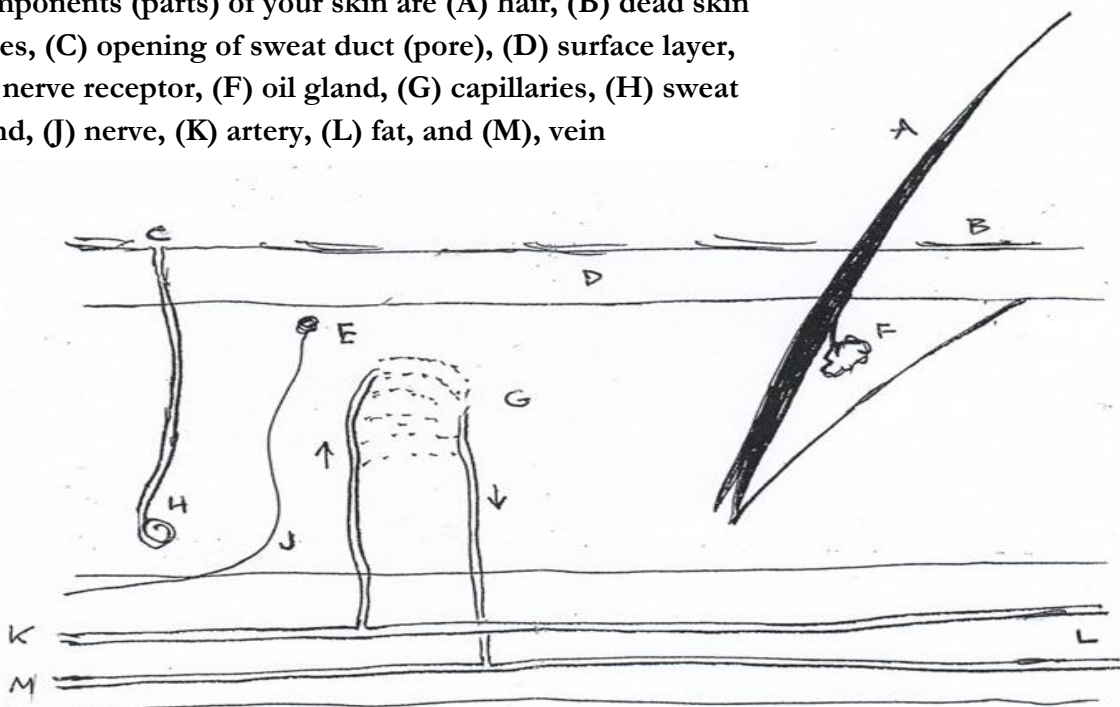
The diagram on page 2 of the ABPI web resource above can be used at the end of the topic for consolidation or revision. Pupils need not remember the diagram, but they should understand the relationships between components. You may use Activity Sheet B14: *Labelling Skin* here.

Pupils should know that our skin includes the following components:

- (1) surface (epidermis),
- (2) soft tissue (dermis),
- (3) hair and oil glands,
- (4) sweat glands,
- (5) nerves,
- (6) blood (arteries > capillaries > veins), and
- (7) fat

Terms in brackets above should be discussed, but not necessarily to be remembered by pupils.

Components (parts) of your skin are (A) hair, (B) dead skin flakes, (C) opening of sweat duct (pore), (D) surface layer, (E) nerve receptor, (F) oil gland, (G) capillaries, (H) sweat gland, (J) nerve, (K) artery, (L) fat, and (M), vein



Ask the question: What is each component for?

Pupils should understand the operation of each of these components in relation to

- (1) temperature control,
- (2) heat insulation,

- (3) energy storage,
- (4) sense of touch,
- (5) protection from harm, and
- (6) keeping water and other unwanted materials out of their body

Optional Homework Activity – Connecting Skin

Use Activity Sheet B14: *Connecting Skin*. The column on the left lists some components of your skin. The column on the right lists some functions of these components. Draw lines connecting each component to the appropriate function. There may be more than one line in connection with some boxes.

You may find the following websites useful:

- **British Association of Dermatologists** www.bad.org.uk/patient-information-leaflets for information on professional leaflets and presentations on skin, which can be downloaded for your own background information. Note that these are designed for you as a health professional, not directly for pupils.
- **ABPI: the Association of the British Pharmaceutical Industry** www.abpischools.org.uk Follow **all Topics**, then scroll down the Topics column to **Skin Structure and Function**. This is written for Key Stage 4, but the material can be used at primary level with your appropriate commentary.

You will find useful information for other areas of MIPS on the all topics part of the ABPI website.

10. How can we protect our skin, and keep it healthy?

Pupils should learn:

- *about potential dangers to their skin*
- *how they can be protected from these dangers*

Note: this should **not** be regarded as a first aid session, as most schools have their own policies and procedures on first aid.

Activity – Skin under attack

Ask each pupil to list four things that can attack their skin. Then ask them, in small groups and finally as a class, to develop a more comprehensive list. This should include:

- (1) chemicals and allergens,
- (2) germs / bacteria / viruses / fungi
- (3) dirt, which may contain germs and dangerous chemicals
- (4) sharp objects
- (5) insect and animal stings and bites
- (6) wind, dryness, and air and water pollution
- (7) excessive sun exposure

Activity – Save our skin

Divide the class into small groups of three or four, and allocate one of the dangers 1 – 6 (and any others provided by the class) to each group. Ask the groups to find out (i) how the danger can attack their skin, (ii) how to prevent damage, and (iii) what to do if their skin is damaged. After 5 – 10 minutes, ask each group to report on at least one aspect of their investigation. Treat danger 7 (excessive sun exposure) separately using the resources below. You may use Activity Sheet B13: *Saving my Skin* here.

You can use this type of reporting back activity in other units

Extension Activity – Stings and grazes

You might find the BBC material *Bites and Stings* useful here and elsewhere: www.bbc.co.uk/teach/class-clips-video/pshe-ks2-bites-and-stings/zxnxqfr. This website has useful first aid information not confined to bites and stings. Emphasise means of protecting your skin from these dangers: the importance of hygiene and skincare, bathing and hand washing, protective clothing when necessary, safe handling of tools and chemicals.

Discuss what happens when you cut or graze your skin: the importance of washing the wound and covering it to keep out dirt and germs. Suggest that if they have a recent wound, they keep a diary (with drawings) of what happens as the wound heals, and the scab falls off.

Activity – Effective hand washing

Covid-19 experience emphasises the importance of effective hand washing. **Glo Germ* units for the assessment of hand washing technique are useful here. These units are available from the Clinical Skills Education Centre. Pupils apply gel to their hands, and then put their hands under the ultra-violet lamp. The parts of their hands where bacteria may exist glow in the ultra-violet light. The pupils then wash their hands and repeat the exercise. On the second occasion the number of bacteria is reduced (but probably not eliminated).

There is useful resource material on effective hand-washing techniques on www.glogerm.com. Click on **Education**, then (dropdown) **School Worksheets**. USA Grade 6 is about the middle of our KS2. MIPS Activity Sheet B13: *Saving my skin* may be useful here for consolidation and revision.

The Government guide to effective hand washing is available at www.yas.nhs.uk/media/3142/detailed-handwashing-poster.pdf. It might be worth suggesting that the school put up either the Glo Germ or NHS poster in a prominent position near the sink.

11. How can we protect our skin from the sun, and keep it healthy?

Identify means of protecting the skin from dangers associated with the sun. *You can find several useful resources at www.careinthesun.org, managed by Cancer Focus Northern Ireland. Follow **Resources**, then **Schools**. This has downloadable resources, including teachers' guides, background information and statistics, as well as activities for children.

12. What else can we find out about our skin?

If you have time, other possible topics include: plastic surgery, aging, acne and eczema, fingerprinting. Use your expertise or enter these words or phrases into an internet search engine for more information and ideas.

Activity – Good habits: Personal hygiene

Personal hygiene is how you care for your body and maintain good health. Ask pupils individually to list three good hygiene habits. Then ask them to come together in groups of three or four to build up a larger list. Then build up a final list on the board. Some examples include:

1. Washing your hands after returning from outside, and before every time you have food

2. Bathing daily and combing your hair
3. Brushing your teeth twice daily
4. Clipping your nails periodically
5. Covering your mouth while coughing or sneezing
6. Changing your underclothes daily

Week 6 – Use your head: perceiving and thinking.

This week's material is condensed from a previous three-week unit. For further information, the original 2022 *Healthy Brain* unit is available on the MiPS area of the Sentinus website.

The Northern Ireland Curriculum, introduced in 2007, is clearly related to the processes of perceiving, thinking and learning. See <http://ccea.org.uk>, follow **Key Stage 1&2**, then **Curriculum** and (Read more) **Personal Development and Mutual Understanding** (PD&MU). See also the curriculum **Big Picture** (in Useful Links).

While this unit covers perception and the thinking and learning aspects of the brain, it avoids discussing mental health as this should be covered in the school's own programme within Personal Development and Mutual Understanding.

13. How do I learn about the outside world?

Pupils should learn that we get information from the world around us through our senses:

- *seeing: what, where, how far, how close up, magnified, one or many, large or small?*
- *hearing: range of sounds, loudness, pitch or frequency*
- *tasting: bitter, salty, sour, sweet, savoury*
- *smelling: nice, nasty*
- *touching: temperature, texture, hardness, pain, pleasure*

Activity – The world around us

Ask pupils how we find out about the world around us. This can start from the questions:

- How do we know what is outside of us?
- What are our senses? Where are they located in our bodies?
- What sort of information do our senses provide?
- How do our senses connect with our brains?

Encourage pupils to ask you questions. Develop the idea of perception. As well as our own perception we also find out about the world around us by talking with people, reading books and using television and the internet sensibly. See <http://en.wikipedia.org/wiki/Sense> for background information.

Activity – Finding out about the world around us

1. Divide the class into five groups. Ask each group to discuss for three minutes one of the following questions: What can I find out about the world around us by touching / seeing / smelling / hearing / tasting? How can I do this?
2. Then ask a representative from each group to report to the whole class.

Activity – Keep still

Perception, using our senses, is the first step towards making sense of the world around us.

- Ask pupils to sit still for one minute and, individually, to record all the sounds they hear during this time. Ask them to listen more carefully for quiet sounds. Notice the range of sounds in the environment.
- Record the sounds on the board. Ask pupils to classify these. Discuss what criteria we can use for classifying (possibly natural, human or mechanical sources, loud or soft, high or low pitch).
- Are there sounds we don't notice in everyday life? Senses have ranges of sensitivity. Ask how we might increase our sound sensitivity.

Activity – See better

Ask pupils to look in front of them, and out through the window, and record all the things they see during one minute. Ask how we might increase our ability to see small things, leading to the idea of using magnifying glasses and microscopes, and to see far away things using telescopes or binoculars. Emphasise the idea that our senses can be enhanced through the appropriate technology. Develop ideas on the physical processes of seeing. Try and get as much information as possible through questioning the pupils.

A possible sequence might be:

- structure of the eye
- function of the parts of the eye
- what can go wrong with each of these parts
- what can be done if something goes wrong
- how the operation of the eye be improved

For detail enter 'eye structure diagram' in an internet search box

Activity – Pinhole camera

**You may need to ask pupils or the school to collect empty Pringles or similar containers in advance for this activity.*

You can show how an image of the world around us can be projected onto the retina using a pinhole camera made from a Pringles container (see www.exploratorium.edu/science_explorer/pringles_pinhole.html, or search 'pinhole camera' for instructions). Cut the tube so that the longer (camera) piece is 20 centimetres. The image is faint: ask how this can be improved. Making the pinhole larger results in a brighter image, but poorer focus, leading the idea of using a lens. Our eye is obviously more complex, and the use of a lens increases the amount of light that can be gathered, and enables sharper focus.

***(Extension)** If you have access to a +5 dioptre lens, place this lens in the enlarged pinhole of the 20 cm tube. What happens to the image then?

Wikipedia provides a useful article on optical illusions (http://en.wikipedia.org/wiki/Optical_illusions). You might use some of these on an interactive whiteboard.

While this section has concentrated on the senses of seeing and hearing, discuss the idea that we and other animals also get a lot of information about the world around us through smelling, tasting and touching. Blind people can read through Braille, using their sense of touch. Many animals use their sense of smell much more than we do, and dogs can be trained to smell out illegal drugs and detect specific diseases. You can find further information and activities on:

14. How can I learn from the outside world?

Pupils should learn that we learn through our interaction with the environment.

When we meet a new experience or a problem in the environment, we either:

- change the environment around us (as a simple example, we open a door so that we can go through it, or as a more complex example, we organise a group to clear up litter on a local beach), or
- change ourselves, the neuron connection structure in our brain (know not to touch a hot kettle next time). According to Jean Piaget (www.simplypsychology.org/piaget.html and associated websites), we *adapt* the world around us to suit ourselves, or we *accommodate* ourselves to the world. This is the process of learning, and so we learn from experience. This is an oversimplification: read the reference above for more information.

This is common sense, and should be developed from questioning the pupils about their experiences in learning: How did you learn to play football, cook a meal, about energy ...? Introduce *neurons* simply without detail as the electrical connections in the brain and spinal cord – like a computer (though emphasise that the human brain can do far more than the fastest computer – but AI (artificial intelligence) may change this.)

15. How can I improve my memory and learning?

Pupils should learn that

- *reinforcing neuron connections develops memory and learning.*
- *there are several types of memory*

Activity – Effective learning

*Ask your class teacher about a topic (not necessarily science) that the pupils have covered recently in class. You may use Activity Sheet A1: *Increasing Learning* here.

1. Write the title of the topic on the board. Ask each pupil to write down two important points about the topic.
2. Ask them to share their ideas in pairs, then small groups.
3. Provide each group with a sheet of A1 (flipchart size) paper. Ask groups to organise their material on paper, so that they can remember it easily. Some may use bullet points or a spray diagram, or other means of presentation. They have to think about clustering material, connecting it to other material, using mnemonics, and presenting it so that others can understand it.

See <http://systems.open.ac.uk/materials/T552>. Click on **Spray diagrams** (top left). However, appreciate that many pupils may prefer to learn through words rather than pictures or diagrams.

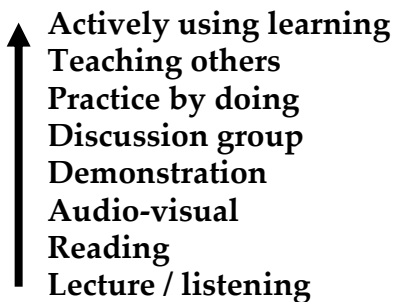
You can find further information on different types of memory at <http://en.wikipedia.org/wiki/Memory> and www.human-memory.net/types.html.

Activity – On the other hand

Practice helps you to learn new things and to get better at doing them. Ask pupils to write their name with the hand they don't normally use. Repeat this continually for about two minutes. Now compare the final

attempt with the first. Which is better? Not reinforcing memory causes withering of the neuron connections (for example, reducing our ability to learn a second language after the age of two or three).

Increasing Learning



Actively using learning
Teaching others
Practice by doing
Discussion group
Demonstration
Audio-visual
Reading
Lecture / listening

How well we learn depends on learning actively rather than passively. We can learn some things by just listening to someone talk or passive reading. We learn more by seeing as well, as in reading actively (asking, after you read each paragraph, ‘what was that paragraph all about?’) or using audio-visual material. It helps even more if we see a demonstration or take part in discussion about what we have heard and seen. Probably the most effective way of learning for ourselves is to teach what we have learned to other people. The more the neuron connections in our brain are reinforced the more effectively we learn.

On the basis of what pupils have learned about how memories are stored in the brain, develop means of improving memory: structuring the information, teaching others. This information is summarized in the diagram above, which leads up from least to most effective means of learning. Listening is passive. Reading is also passive, but you can stop and re-read material to get a better understanding. In discussion groups you can improve understanding by exchanging ideas. To teach others effectively or actively using learning you need to understand what you’re doing.

16. How can I look after my brain?

Ask the children for answers to the question: *How can I look after my brain?* Then group ideas, possibly including:

- Protect it: wear a cycle helmet and sports protection as appropriate. Know that fire kills by suffocation more often than burning (so oxygen doesn’t get to the brain). Learn to swim.
- Have a broad, balanced diet. Identify diet fads and fashions. Emphasise the importance of factual research-based knowledge in this area.
- Take appropriate body and brain exercise: ensure effective breathing and blood circulation to carry oxygen to your brain. Do thinking exercises in puzzles and games.
- Have enough sleep and rest, for recovery. But – there are still many things that we don’t understand about the brain and sleep.

Developing cross-curricular skills

Communication:

- using appropriately scientific words and phrases related to the units, for example: system, muscles, voluntary movement, biceps, digestive system, collagen, nutrition, respiration, contamination, neuron, and developing a glossary of these terms.
- reporting on investigations and what they have learned, using a range of media including paper, electronic, verbal class presentations

Using mathematics:

- drawing appropriate tables and graphs, and extracting useful information from these.
- food energy calculations

Using ICT:

- word processing and presentation of information,
- accessing information on websites, and choosing appropriate material.

Notes

Part 2: Healthy Breathing and Circulation

Please discuss this guidance material with your class teacher before starting this unit, particularly in relation to practical activities, and act on her / his advice.

Apart from the sections on blood and the material on asthma, some of this material may already have been covered by your class. Your role then may be to reinforce the children's knowledge and understanding of the structure, function and protection of heart and lungs rather than teach these as new material (weeks 1 – 2). There is an extended section on asthma and its effects (week 3). Pupils are unlikely to have covered the function of blood in detail (week 4).

Week 1

1. What is our heart: what does it do?

2. How can we keep our heart healthy?

Pupils should learn:

- *the location of the heart and lungs within the body, and their relationship with each other and with other organs*
- *that the heart is a muscular pump that pumps blood around the body*
- *the positive effects of diet and exercise on the heart*
- *the negative effects of nicotine, tar, vaping and carbon monoxide in cigarette smoke, on the heart and lungs*
- *what is meant by blood pressure and pulse rate, and why these are important*
- *the negative effects of increasing air pollution (particulates and ozone), and increasing global temperatures*
- *about Frank Pantridge's part in the invention of the portable defibrillator*
- *how circulation of the blood was reported by William Harvey*

The aims above can be developed through your questioning of the pupils. Find out what they already know about the heart. Ask them:

- where their heart is in their body
- what their heart does

Explain what is meant by blood pressure, and why this is important.

Help pupils to locate their heart and lungs as their heart beats and they breathe in and out. Ask them to feel their pulse as blood flows through their arteries.

Develop an outline diagram of the heart from children's answers to questions, your own knowledge, and information from the Internet (see, for example [Human Heart Diagram Labeled | Science Trends](#)). Identify components of the heart's structure. What is each component for?

Explain how the heart pumps blood through the body as it beats. The right side of the heart is responsible for receiving used blood from the body (through veins) and sending it to the lungs to get oxygen. The left side of the heart is responsible for sending refreshed blood from the lungs to the rest of the body through

arteries. The heart, veins and arteries work together to send blood throughout your body (blood circulation).

Activity – Pulse rate

The number of times your heart beats in one minute, that is it pushes the blood through your arteries, is your pulse rate. Ask pupils to predict what can change their pulse rate. Ask them how they feel after running continuously for five minutes. Answers can include feeling breathless, hot, the heart beating against their chest.

*Check with your teacher if any pupils may have heart or breathing problems that might prevent them from carrying out these exercises.

*You need exercise space and facilities, clocks or stopwatches (possibly pupils' electronic watches or cellphones), and graph paper for this activity.

Ask pupils to predict what can change pulse rate. Ask them to measure their pulse rate.

- (1) before exercise (running on the spot for one minute),
- (2) immediately after exercise,
- (3) five minutes later.

Ask pupils, if possible, to record the mean (average) of three pulse measurements at each point in the activity. Ask what they can learn from their results. Draw a graph of pulse rate against time immediately before, immediately after, and five minutes after exercise. Look at and discuss: the mean value for the class, boy / girl variation (if any), bar chart of ranges. You may use activity sheet *C1: Pulse rate* here.

Activity – Frank Pantridge

Frank Pantridge was a heart consultant at the Royal Victoria Hospital and Queen's University Belfast from 1950 to 1982. Ask pupils what they know about him. Ask them to use books and the Internet to find out about him, then to write 50 - 100 words about his achievements. Also, ask them to find out and record (i) what a defibrillator does, (ii) where they might find one, (iii) how they could find out when and how to use one, and (iv) why it is so useful. They should realise that it would be useful to know how to use a defibrillator before there is a necessity to use one.

Extension Activity – William Harvey

Ask pupils to look at www.bbc.co.uk/history/historic_figures/harvey_william.shtml and write about fifty words on him. The Wikipedia site http://en.wikipedia.org/wiki/William_Harvey provides links to additional information.

Useful websites

- **Association of the British Pharmaceutical Industry** www.abpischools.org.uk Follow **all Topics**, then **Heart and circulation**. This is written for Key Stage 4, but edited material can be used at primary level
- **Wellcome Trust** www.stem.org.uk/elibrary/resource/34279 on the effect of exercise on the heart
- **Royal Society** www.stem.org.uk/resources/elibrary/resource/315584/what-affects-your-heart-rate

Week 2

3. What are our lungs: what do they do?

4. How can we keep our lungs healthy?

Pupils should learn:

- *the location of the lungs within the body, and their relationship with other organs*
- *that we need oxygen to stay alive, and that this comes from the air*
- *how circulation and respiration relate in order to maintain healthy bodies*
- *that air enters the lungs by breathing*
- *the effects of coughing and sneezing in spreading disease*
- *about asthma, its prevention and treatment (This is treated in more detail in [pages 45 – 48](#))*
- *the effect of exercise on the lung and diaphragm muscles*
- *that smoking can cause lung cancer, emphysema and chronic bronchitis*
- *the effects of coronaviruses, including covid-19*
- *about increased allergies and lung infections throughout the year due to increased airborne pollen*
- *about the effects of pollution and high ambient temperatures on the heart and lungs*

These themes can be developed through your questioning of the pupils. Find out what they already know about the lungs. Ask them:

- where their lungs are in their body
- what their lungs do
- what is in the air they breathe in (mostly nitrogen, but emphasise about 20% oxygen) and breathe out (mostly nitrogen, but about 4% carbon dioxide and some water vapour)
- what happens when they cough or sneeze
- what happens when they breathe in dust.

Activity – PM2.5

* You will need a football and some very small steel ball bearings or small screw nails (or similar very small objects) for this activity.

PM2.5 particles are **particulate material** (PM) in the atmosphere that have a diameter of less than 2.5 μm (micrometers), about one thirtieth the diameter of a human hair. Ask about half the class to form a line around the room. Hand a football to the pupil at one end of the line. Ask her / him to pass the ball to the next person and so on along the line. Now take the football from the pupil at the other end of the line and hand them a very small ball bearing and ask them to send this back. Repeat the exercise with the other half of the class. Quite likely the small object will get lost somewhere along the pupil lines.

Air passages in the lungs are lined with cilia, hair-like projections that move microbes and dust out of these passages. Particles as small as PM2.5 tend to get trapped within the lungs, like the ball bearing, and cause inflammation because they are foreign there.

Activity – Lung operation

Demonstrate on yourself how your lungs and diaphragm work together. Ask pupils to follow your movements:

1. Put one hand on your chest and the other on the upper part of your tummy.

2. Now breathe in deeply. You will notice that your chest and your tummy rise as the air goes into your lungs.

This activity explains how your lungs inflate (chest rises) and your diaphragm lowers to allow breathing in (your lungs can extend to their maximum potential and help create a vacuum in the lungs to pull air in). When you breathe out your lungs expel all the air (your chest falls) and your diaphragm returns to original position.

You may find the following websites useful:

- **University of Edinburgh** www.youtube.com/watch?v=eGicIbMde2E showing how the lungs and diaphragm work together to help in breathing. Several other useful youtube videos are identified on this website.
- **Encyclopaedia Britannica** <https://kids.britannica.com/kids/article/lung/353400> for information on lung function. Click on either **kids** or **students**.

Activity – Breathing lungs

*You need exercise space and facilities, clocks or stopwatches, and means of measuring lung capacity and volume, for this activity. See the box below. *Check with your teacher if any pupils may have heart or breathing problems and respond appropriately.

Ask pupils to measure:

- (1) their lung volume,
- (2) their breathing rate before and after exercise (running on the spot for one minute),
- (3) their peak flow rate (peak expiratory flow rate)

What can they learn from these results?

Develop diagrams of the lungs from children's answers to questions, your own knowledge, and information from reference books or the Internet. Identify their structure. What is each component for? Explain the blood flow connection between the heart and lungs, and to the rest of the body.

Identify dangers to the lungs (from children's answers to your questioning):

- (1) dust and dirt (including asbestos),
- (2) chemicals,
- (3) cigarette smoke,
- (4) germs: bacteria / viruses
- (5) vaping

Ask pupils what protection is needed against each of these, what protection do we already have, and how can we enhance this protection? *Before discussing asthma (see below), lung cancer or other lung conditions, check with your class teacher if this may be a sensitive issue for some pupils.

Vaping is an increasing problem for young people. It can lead to nicotine addiction. Vaping products also use some harmful metals and toxic chemicals which can damage the lungs and other organs.

Activity – Healthy lungs poster

Ask pupils to design a poster on how to keep their lungs healthy. Themes might include:

1. Smoking is bad for health

2. Exercise makes your lungs stronger

This may be a group activity in class, or set as a homework activity.

*Check if your school is involved in *Smokebusters* organised by Cancer Focus Northern Ireland (<https://cancerfocusni.org/primary-programmes/smokebusters/>). If not, suggest they join. It might also be useful to look at <https://cancerfocusni.org/cancer-prevention>.

Covid-19

Covid-19 was very much at the front of the news since early 2020. It is now less prevalent but not eliminated. According to the World Health Organisation (<https://covid19.who.int/>), by early May 2023 there have been over 765 million confirmed covid-19 cases and nearly seven million covid related deaths worldwide. Check on www.health-ni.gov.uk/coronavirus for current local information.

Next week is devoted to Asthma, which up to 15% of your pupils may have. You should read the following notes and act accordingly.

***Asthma**

Week 3 of this unit concentrates on asthma. It would be useful to ask pupils to spend about half an hour in advance browsing through www.abpischools.org.uk/topics/ (Follow **Breathing and asthma** in the Topics column). This is written for Key Stage 3, but can be used at primary level. The *NHS* site www.nhs.uk/conditions/asthma/ and *Asthma + Lung UK*, www.asthmaandlung.org.uk are also useful.

*You should read **The National Capabilities Framework for Professionals who care for Children and Young People with Asthma** at [National-Capabilities-Framework-3.pdf \(e-lfh.org.uk\)](#). Tier 3 lists the asthma-related learning outcomes relevant to doctors in training.

*Find out in advance from your class teacher which pupils in your class have asthma and whether it may be appropriate to ask them specific questions in class. Ask the teacher to read through the next week's work and let you know by email if any parts may cause problems. Please suggest to pupils with asthma that they should bring their inhalers with them next week.

Week 3 – Asthma

This week's material is based on work produced in 2001 for the SCAMP programme by the South and East Belfast Health and Social Services Trust.

The material assumes that you have successfully covered Unit Code MED 1028 (Cardiovascular, Respiratory and Haematological Systems) Case Number 6 in your medical studies.

Pupils should learn:

- *how asthma affects the lungs and related breathing tubes / airways*
- *how a mild attack of asthma can be treated in an emergency*
- *how an attack of asthma can be treated in an emergency*
- *how asthma can be treated in the long term to prevent future attacks*
- *how asthma may be prevented*
- *what other people can do to help people with asthma*

5. Introduction to asthma

Check with your class teacher about whether encouraging pupils to discuss their asthma is appropriate.

Again, the aims above can be developed through your questioning of the pupils. Ask them:

- what they already know about asthma
- if they know anyone with asthma
- if any of them has asthma

You can use questions like *What next?* Nationally, about 15% of key stage 2 children have been diagnosed with asthma, so you may get help from some children with asthma in your class.

What is asthma?

Asthma is a condition that affects the air tubes (mainly the trachea and two bronchi) that carry air into and out of our lungs. The muscles around these tubes can tighten and they become narrow. They produce mucus which then tends towards blocking the already constricted tubes. The origins of Asthma as a condition are uncertain. If it begins before the age of twelve it is probably an interaction between genetic factors and early life exposures (for example, certain viral infections and allergen exposure). If after age twelve the source is more likely to be a trigger of environmental origin. At present there is no cure for asthma, but there are several fairly successful means of treatment. Asthma is non-transmissible: it is not caused by germs.

What are the triggers for asthma?

If your class teacher considers it appropriate, start by asking pupils with asthma what causes their asthma attacks. Triggers for asthma are any things that irritate your breathing tubes and cause the symptoms of asthma. These are shown in the table below, which is ordered in relation to the frequency of the trigger. Some people's asthma is associated with substances they work with, like paint sprays, animals, flour, latex and sawdust. Asthma differs from person to person and they may be affected by one or more different triggers.

Infections, like colds and influenza	Allergies, like pollen and dust mites	Animal fur and feathers
Home: condensation, mould and damp	Exercise	Sudden changes in weather. Wind, humidity, thunderstorms
Feelings and emotions, like laughter	Heating in buildings	Being outside
Some food and drink	Smoking tobacco, vaping (e-Cigarettes) and smoke from other sources	Some cuddly toys

What are the symptoms of asthma?

Asthma symptoms include:

- a feeling of tightness around your chest,
- finding it hard to breathe,
- wheezing when you breathe out,
- a lot of coughing.

As a means of remembering these symptoms you can ask pupils to remember the acronym: SWIFT

- S** Shortness of breath
- W** Wheezing
- I** Increased coughing
- F** Fast breathing
- T** Tightness in the chest

Some or all of these symptoms happen because the lining of the breathing airways of someone with asthma swells and produces mucus, and the muscles around your breathing airways begin to tighten.

More severe asthma attacks include:

- becoming very short of breath,
- working hard to breathe (indrawing of the rib cage, including above and below the chest wall), and
- being unable to speak in sentences.

How do inhalers help?

If any of these symptoms occur it will become harder to breathe and you should then use your **reliever** inhaler, which treats the symptoms. There are two main types of inhaler:

- **Reliever inhalers** are used when symptoms occur. They relax the muscles of your breathing airways to help air to get in and out of your lungs. They should relieve your symptoms within a few minutes, but may cause a temporary faster heartbeat. Reliever inhalers are usually blue.
- **Preventer inhalers** must be used regularly, normally twice a day to reduce symptoms, so they need to be taken every day even when you are well. They reduce the inflammation inside your airways to enable air to get in and out of your lungs more freely. Preventer inhalers can be red, brown or orange. Black or purple inhalers are combinations of reliever and preventer.

What action is needed in the event of a pupil having a mild asthma attack?

If a child has a mild asthma attack, then:

- try to calm the child
- loosen any tight clothing
- seat the child in an upright position
- encourage deep, steady breathing
- use the reliever (one puff of the (usually blue) reliever every 30 seconds, up to ten puffs)

If the child improves within five minutes, then let her / him resume previous activity.

If the child does not improve, have someone call her / his parents or guardians, and continue using the reliever every 30 seconds. See the guidelines next for a severe attack.

What action is needed in the event of a pupil having a severe asthma attack?

If a child is having a severe asthma attack, then

- have someone contact a doctor and the child's parents or guardians immediately
- try to calm the child
- loosen any tight clothing
- seat the child in an upright position
- encourage deep, steady breathing
- use the reliever (one puff every 30 seconds)

If the child's condition has not improved at this point, dial 999 for an ambulance.

- if the child has a supply of oral steroids, give these now.
- while awaiting the ambulance you can give the child a further round of up to 10 puffs blue salbutamol inhaler.

Week 4 - Blood

6. What is your blood, and what does it do?

Pupils should learn some of the following:

- *that blood carries essential gases and food to all parts of the body*
- *the difference between arteries, capillaries and veins*
- *the function of red cells (oxygen and glucose carrying), white cells (disease protection) and platelets (clotting)*
- *the role of blood in developing resistance to disease*
- *what anaemia is, and how it is related to diet*
- *what blood tests are for*
- *about the work of the Blood Transfusion Service*

The objectives above can be developed through your questioning of the children. Find out what they already know about blood. What is blood? What are its components (red cells, white cells, platelets and plasma)? What does each component do? How can blood be used to detect potential illnesses? What are blood tests for? The NHS Blood and Transplant website www.blood.co.uk/about-blood/components is useful here. Blood is not part of the current Key Stage 2 curriculum, so their knowledge of blood is likely to be considerably less than they know about the heart and lungs. You may use Activity Sheet C2: *Blood, glorious blood* here for consolidation and revision.

Ask the pupils to identify the differences between arteries, capillaries and veins. Explain what each does, and how its form enables each to perform its specific function.

View www.fi.edu/heart/its-alive for an explanation of blood and its components within the body.

Activity – Spraying blood.

Use the answers from the pupils, and your own knowledge and understanding, to build up a spray diagram, summarising the properties of blood. You can find information on developing spray diagrams on <http://systems.open.ac.uk/materials/T552> - click on **Spray diagram**. You may use Activity Sheet C3: *Spraying blood* as a starting point. You might build up a class response on the interactive whiteboard.

You may find it effective to use spray diagrams in other units.

The information on your spray diagram should be similar to the information pupils have written into their Activity Sheet C2: *Blood, glorious blood*. Ask pupils which sheet they think would be most useful in helping them remember information about blood. Some pupils prefer listing information in words and brief notes only, others find diagrams more useful. Explain that different people learn and remember in different ways.

You may refer to the websites below, and your own background, to develop pupils' understanding of the need for blood donation, how donated blood is used, and the uses of blood tests.

- www.nibts.org (Northern Ireland Blood Transfusion Service)
- www.blood.co.uk (NHS Blood and Transplant)

- www.nhs.uk/conditions/Blood-tests/Pages/Introduction.aspx (NHS) about blood tests

Developing cross-curricular skills in *Healthy Heart and Lungs*

Communication:

- using scientific words and phrases related to the units, for example, heart, lungs, circulation, respiration, red cells, white cells
- making posters to illustrate, for example, the action of the heart, lungs and blood, the dangers of tobacco smoke
- reporting on investigations, using a range of media including paper, electronic, verbal class presentations

Using mathematics:

- accurate time measurement, volume measurement,
- drawing tables and appropriate types of graph
- calculating mean values of sets of results

Using ICT:

- word processing and presentation of information,
- accessing information on websites, and choosing appropriate material.

Notes

Medics in Primary Schools

Assessment Appendix: Autumn 2023 – Spring 2024

There are two summative and one formative assessment for this module.

The format of each is outlined below:

Practical assessment of teaching skills

This formative assessment will be undertaken by the classroom teacher. See page 61 of this appendix for a copy of the proforma used for this assessment. This assessment should be undertaken on completion of your fourth or fifth session in the classroom. No weighting has been assigned to this assessment component. **However, you must include the completed pro-forma as an appendix with your reflective written commentary.** You must also reflect on the comments made by the teacher and indicate how they will inform future teaching practice.

Reflective Commentary

Weighting: 70%

Submission Date: Midnight, Tuesday 13 February 2024

Reflective written commentary on experience (maximum number of words 2,000). Please see below for guidelines on completion of the reflective commentary. The marking scheme used to assess your work can also be found below.

Completed assessments must be uploaded on the module Canvas page by the published submission date.

Please save your reflective commentary with appendices as one PDF file using this format:

Cover page - NAME, STUDENT NUMBER, MODULE NAME & NUMBER

Please name your file with your SURNAME, first name and MIPS [for example, BLACKWOOD, Bronagh, MIPS.pdf]

Lesson Plan

One lesson plan developed and used during the module must be submitted for assessment. See [pages 58 - 59](#) for the proforma showing how this is assessed.

Weighting: 30%

Submission Date: This must be submitted as an Appendix to your Reflective Commentary

Log Book

A Log Book is available on the MiPS area of the Sentinus website, on which you can record your personal reflections and other notes about your experiences during the module. This is provided to help you to record your experiences in real time and act as an aide mémoire when you are preparing work for the summative assessment.

Please do not submit the Log Book with your end of Semester summative assessment.

Guidelines for Completing the Reflective Commentary

The aim of this assignment is to provide you with an opportunity to reflect on the learning opportunities offered during the module.

The commentary should include details about the development of your communication, presentation, computing and IT skills during this special study module.

You should also comment on your perceptions of the pupils' knowledge and understanding of physiology and health related issues. Did this differ from your expectations? If so, why?

The techniques that you developed to deliver the material should also be discussed. You should comment on how this changed during the semester.

You may find the following framework useful when reflecting on your experience in the classroom:

- did you always deliver the lessons as you had planned; if not, why not?
- did you modify your style of delivery as the module progressed? For example, did you present information in a more simplistic manner?
- your observations of the pupils' motivation, enthusiasm. Were pupils more enthusiastic about some topics than others?
- did you find it easier to prepare and deliver material on some topics than others?
- what knowledge and skills have you gained as a result of completing this module?

See pages 56 - 58 for a copy of the pro-forma used to assess this piece of work.

Referencing your Work

Use the Vancouver system.

Extracts from University Regulations

Attendance

100% attendance is normally required at all classes. A minimum of 75% attendance is acceptable for absences with a valid reason e.g. illness. In accordance with University Regulations, students must inform the medical school of any absences. A student considering being absent for any part of a module must apply by e-mail using the pro-forma (which can be found on the medical education portal) as far in advance as possible, with a minimum of 3 weeks in advance for planned leave, and by the start of the leave period for unplanned leave. The application should be sent by email to the curriculum lead for Year 2, Professor Mary-Frances McMullin m.mcmullin@qub.ac.uk, and copied to the SSC semester lead, Dr David Bell d.bell@qub.ac.uk, and administrative support lead for the year, Ms Sarah Hagan, s.hagan@qub.ac.uk, who will collate applications.

Students who do not satisfy attendance requirements will normally be required to undertake additional work during the summer before the module mark will be given to the Examination Board. Students must submit medical certificates or other evidence of extenuating circumstances (including self-certification for short periods of illness) to **Mrs Joanna Scott via the Centre for Medical Education General Office (Ground Floor, WMB)** within 3 days of returning to their studies. Students should sign attendance sheets provided by their SSC co-ordinator at each formal SSC session. A head count of the number of students present will also be made. If there is a discrepancy between the two, the issue of additional names, and who signed in absent colleagues, will be resolved before anyone leaves the room, as the University cannot take action retrospectively. Students who sign attendance sheets on behalf of their absent friends should be aware that this is a fraudulent act and brings their 'fitness to practice' as a medical doctor into jeopardy.

In addition to weekly attendance at the primary school students are required to attend the introductory session and the mid-semester review meeting.

Late submission of work

Students who submit work late will be penalised. Coursework signed in after the published submission deadline will be automatically penalised at the rate of 5% marks for each day late, up to a maximum of 5 working days late, after which a mark of zero will be awarded for that element. NOTE: exemption from late penalties will be the exception rather than the rule (please refer to the Notes for Undergraduate Medical Students Booklet for guidance regarding extenuating circumstances). Application for late submission of coursework should be made using the approved form **available from the Centre for Medical Education General Office (Ground Floor, WMB) and submitted to the member(s) of staff designated by the School (Mrs Joanna Scott)** within 3 days after the deadline for submission of the work.

Professionalism

The General Medical Council and the University expect you to understand that your behaviour at all times both in the clinical environment and outside of your studies must justify the trust that patients and the public have in you as a future member of the medical profession. As an undergraduate medical student you **are** studying to become a member of a trusted profession and will come into contact with patients and members of the public. Queen's University Belfast will graduate only students who are fit to practice.

You will throughout the undergraduate medical programme receive support, feedback, teaching and assessment on professionalism across four domains:

- Knowledge, skills and performance
- Safety and quality
- Communication, partnership and teamwork
- Maintaining trust

and are required to reflect on your practice in your Personal and Professional Development Portfolio. You will find more information and resources on professionalism and fitness to practise in the **Professionalism** area of the medical education portal www.med.qub.ac.uk/portal

Plagiarism

Plagiarism can be defined as one author using another's exact words without acknowledgement as though they were his / her own. This is a serious offence and the University's policy can be found in the General Regulations of the University.

Turnitin Submission

All work uploaded to Canvas for assessment will be automatically subject to a plagiarism check via the Turnitin website. You are not required to do anything to facilitate this check. This check will apply to dissertations, essays, reflective journals, portfolios etc. but **not** to PowerPoint or poster presentations. However, in regard to PowerPoint presentations and posters, please note that you are still expected to attribute sources of factual information, published data, graphs and images used within your slides or on your poster. Not to do so could amount to plagiarism.

Turnitin will be configured in such a way that you will not be able to view the similarity index generated; scrutiny of the Turnitin report is used by the assessors alongside their own academic judgement of the written work submitted, we have not specified a cut-off level of similarity index which by itself is deemed (un)acceptable. Please submit only the final version of your assignment to Turnitin, including your bibliography and any figures / tables.

If you are in any doubt regarding the definition of plagiarism or have any questions regarding the use of Turnitin please ask your individual SSC co-ordinator or alternatively contact the SSC Co-ordinator for Year 2, Dr David Bell (d.bell@qub.ac.uk), or the SSC Programme Administrator Ms Rosie McGaughey (R.McGaughey@qub.ac.uk).

For further information on regulations, please read the Pathway Specific Regulations for Medicine issued to all students at the start of each academic year.

Information about Student Support and Guidance

SSC Co-ordinator for Year 2:

Telephone: 028 9097 2244

Dr David Bell

Email d.bell@qub.ac.uk

Overall SSC Programme Co-ordinator:

Telephone: 028 9097 2160

Dr Vivienne Crawford

Email v.crawford@qub.ac.uk

SSC Programme Administrator:

Telephone: 028 9097 5770

Ms Rosie McGaughey

Email r.mcgaughey@qub.ac.uk

Head of Student Support and Guidance:

Telephone: 028 9097 1438

Professor Mark Harbinson

Email m.harbinson@qub.ac.uk

Support Lead/Advisor of Studies for Year 2:

Telephone: 028 9097 2244

Dr David Bell

Email d.bell@qub.ac.uk

Student Support and Guidance Officer:

Telephone: 028 9097 2453

Mrs Joanna Scott

Email joanna.scott@qub.ac.uk

Curriculum Enquiries:

Telephone: 028 9097 2239

Mrs Linda McGuinness

Email l.mcguinness@qub.ac.uk

Progress and Assessment Enquiries:

Telephone: 028 9097 2452

Mrs Sarah Crawford

Email Sarah.Crawford@qub.ac.uk

Disability Officer:

Telephone:

Mr Robin Baker

Email: r.baker@qub.ac.uk

Electronic Support

www.med.qub.ac.uk/portal

Marking Scheme for the Reflective Commentary

Name:	Marked by:
--------------	-------------------

	1	2	3	4	5	6	Weighted Total
Personal reflections at outset Reasons for choosing module, reflection on prior experiences/views, identification of individual learning needs, initial reaction to first session							
Content accurate, relevant, focussed, has reflected in sufficient depth across the breadth of course or specified number of sessions, purposeful discussion providing evidence of active learning Weighted x 2							
Use of source materials Incorporation of personal experiences, materials from other modules, references to appropriate theory and principles, research literature.							
Coherence and Continuity Logical progression across portfolio, evidence of action plan for the next session and subsequent evaluation of that plan							
Personal Development Reaction to impact of module activities on personal development and on preconceived ideas before taking the module, impression of the process as well as content of learning							
Professional Practice Reflections on impact specifically on future professional practice, provides examples of how will change practice, apply to other parts of course, career							

Other Affords coordinator opportunity to specify a particular issue relating to their module that students should reflect on development of teaching skills, response of pupils to classroom activities							
Evaluation of extent to which learning needs were met by the module activities							
Presentation professional presentation including font size, layout, grammar and spelling, clarity of expression, correct citation of literature in text and bibliography							

Total Mark (out of a possible 60 marks)		
Word limit: 6 marks (10% of final mark) should be deducted if the portfolio is more or less than 10% different from recommended word limit, that is for 2000 words more than 2200 or less than 1800 words.	Marks deducted Yes/No?	
Final Mark (out of a possible 60 marks)		
<i>Module co-ordinators should convert this mark depending on the weighting of the dissertation in relation to the total mark for the SSC. For a weighting of 70% of the total module mark the following would apply: mark out of 60, divide by 60 and multiply by 70.</i>		

These marks are provisional and are given for the purposes of feedback only. The final mark may be adjusted at the discretion of the Year II Examination Board in consultation with the External Examiner to ensure standardisation across the SSC programme.

Guide to Using the Scale

Marking Scheme for the Reflective Commentary

6. Excellent; as for 5 but greater evidence of use of relevant source material and has highlighted some difficulties experienced when applying some of the concepts and ideas
5. Very good; the portfolio is very well written and presented; candidate has accessed additional source material and integrated material from other modules. Candidate has reflected on the relevance of the module content for his/her own personal development and future professional practice. Provides examples of changes to practice. Use of source materials, personal experiences, incorporation of materials from other modules, inclusion of appropriate references to theory and principles
4. Good; the candidate has reflected on all of the major topics discussed during the module, there is some evidence of integration across the module; there may be some factual inaccuracies. Discussion may lack focus. The candidate has accessed some source material other than that recommended in the module guide.
3. Average; the candidate demonstrates some evidence of reflection and has made reference to the recommended source material. The portfolio has not addressed the breadth of topics covered in the module. Some information in places about how the knowledge acquired during the module will impact on personal and professional development. There may be a few factual inaccuracies. Discussion may lack focus in some places.
2. Poor; the candidate demonstrates little evidence of reflection and has made insufficient use of the recommended source material. The portfolio may focus on only one or a few topics or aspects of the module. Very little information about how the knowledge acquired during the module will impact on personal and professional development. Significant factual inaccuracies. Discussion lacks focus throughout.
1. Very poor; the candidate has completed a portfolio however the information presented is either not relevant to the module or mere repetition of the factual information presented during the teaching sessions.
- 0 Missing; the candidate did not submit a portfolio.

SSC Teaching Resource Marking Scheme

Name:	Marked by:
--------------	-------------------

	0	1	2	3	4	5	6	Total
Professional layout and presentation Clear easy to follow resource.								
Content Appropriate for age range of pupils. Easy to follow.								
Coherence Tasks and information provided are clear and easy to follow								
Evidence of use of external resources								
Other Allows co-ordinator opportunity to specify a particular issue relating to their module. Context of lesson articulated clearly, evidence of planning for unexpected / what to do if something goes wrong								
Total Mark (out of a possible 30 marks)								
					Marks deducted Yes / No?			
Final Mark (out of a possible 30 marks)								
<i>Module co-ordinators should convert this mark depending on the weighting of the presentation in relation to the total mark for the SSC: for example, for a weighting of 30% of the total module mark the actual mark should apply.</i>								

Guide to Using the Scale

SSC Teaching Resource Marking Scheme

6. Excellent (student has demonstrated exceptional knowledge / skills in relation to this criterion)
5. Very good (as above but there are a number of areas which require *minor* modification / improvement)
4. Good (as above but there are significant areas which require more substantial modification / improvement)
3. Average (student has met the basic requirements in relation to this criterion but has not demonstrated any elements of outstanding ability)
2. Poor (student has addressed the criterion but work requires *major* modification / improvement)
1. Very poor (very little evidence that this criterion has been achieved)
0. Missing (student has not made any attempt to address this criterion)

Teacher Response Form

Competences relevant to students in the Medics in Primary School (MIPS) programme

Student:	School:
-----------------	----------------

Descriptors: 6 Outstanding 5 Very Good 4 Good 3 Satisfactory 2 Inadequate 1 Unsatisfactory

Please tick as appropriate

Competence: The student is a person who	6	5	4	3	2	1
... shows a willingness to learn						
... can communicate easily and effectively						
... can establish and maintain constructive relationships with children						
... can integrate a wide range of knowledge and skills and apply these appropriately and effectively in practical situations						
... plans and employs a variety of teaching strategies to the topic						
... encourages pupils to develop powers of observation and inquiry						
... captures and maintains pupils' attention, interaction and involvement						
... makes appropriate use of the range of available resources						
... seeks advice when necessary						
... consistently displays a professional attitude						
....prepares clear and appropriate lesson plans						
Total (out of 60)						

Additional comments by teacher (optional)
--

MIPS Learning Outcomes – Self-check

Below are the learning outcomes specified by the School of Medicine for the MIPS Student Selected Component. Please tick in the 'Yes' box those learning outcomes you feel you have successfully achieved, and comment or record evidence for this in the third column. You can then use this as a starting point for your reflective commentary. An electronic version is available on the MIPS area of the Sentinus website www.sentinus.co.uk. The Comments / Evidence box in this will expand to take your text.

Learning Outcome: I can	Yes	Comments / Evidence
... communicate effectively with young children on a one to one basis		
... communicate effectively with young children in groups		
... provide young children with concise explanations about health and scientific concepts		
... communicate with teachers about lesson planning and content		
... present ideas in a 'front of group' situation		
... use ICT to convey health and scientific concepts appropriately to young children		
... prepare lesson plans to manage and organise teaching and learning material		
... employ appropriate pedagogic strategies to convey medical and scientific concepts appropriately to young children		
... reflect on positive and negative aspects of teaching activity		
... improve performance following feedback from others and personal reflection		
... manage time effectively		

Medics in Primary Schools

A Queen's / Sentinus Programme

For Information Contact:

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T: 028 9061 4271
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Sentinus
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