# Sample Unit – Investigating Science Life Skills – Year 11

***Sample for implementation for Year 11 from 2018***

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| **Unit title** | This is MeModule 1: Cause and Effect | **Duration** | 6 weeks |
| **Unit description** | In this unit, students explore aspects of the human body. Through the processes of working scientifically, students develop the skills necessary for planning and carrying out scientific investigations. They develop an understanding of the many interrelated functions of the human body and how they might work together. They explore how their own actions may influence their body’s function and reactions. |
| **Outcomes** A student:* poses questions and hypotheses for scientific investigation SCLS6-1
* plans an investigation individually or collaboratively to obtain primary or secondary data and information SCLS6-2
* participates in investigations individually or collaboratively to collect primary or secondary data and information SCLS6-3
* collects and represents qualitative or quantitative data and information using media as appropriate SCLS6-4
* identifies how primary or secondary data is used in scientific investigations SCLS6-8
* uses patterns and trends in data to make observations and draw conclusions SCLS6-9
 |
| **Working Scientifically skills**In this unit, students will apply the processes of working scientifically when asking questions and making predictions in relation to those questions, planning and conducting investigations to record observations about the functions of the body, and drawing conclusions and communicating their findings. *Note: This unit includes practical investigations. Teachers will need to comply with legislation, guidelines and system and school requirements in relation to student health and safety.*  |
| **Assessment overview**Evidence of student learning can be gathered through teacher observation of Working Scientifically skills:* working collaboratively to plan and/or conduct an activity
* participating in an investigation by following a sequence
* making predictions
* posing questions
* collecting, recording and interpreting data and information
* conducting investigations safely
* communicating findings using appropriate scientific language.

Evidence of student learning can be gathered through the completion of self and peer-assessment checklists. Checklists may include skills such as:* working collaboratively with others
* making predictions
* following instructions
* participating safely in investigations
* making observations
* recording data
* organising data
* communicating findings.

Evidence of student learning can be gathered through student work samples relating to investigations conducted. |

| **Content** | **Teaching, learning and assessment** | **Resources** |
| --- | --- | --- |
| *Working scientifically* Students:* ask questions about the world around them Personal and social capability icon
* make observations and pose questions based on these observations

*Observing*Students:* make observations using descriptions, including numbers, measurements and statistics Literacy icon Numeracy icon
* recognise that qualitative data is data that is observed and described but not measured
* recognise that quantitative data is data that is observed and can be measured, and involves numbers Numeracy icon
 | Reviewwith students how observations are made in our everyday experiences and in the field of science. Discuss both qualitative and quantitative measurements. Have students use all their senses to make descriptive observations of themselves, such as hair length and colour, skin tone, eye colour.Have students make quantitative measurements of themselves and peers, including:* height
* weight
* head circumference.

Students work in pairs to answer the question: How am I different/similar to my peers? Observations may be recorded as lists or in a Venn diagram. Responses should include at least one qualitative and one quantitative observation. |  |
| *Working scientifically* Students:* ask questions about the world around them Personal and social capability icon
* relate collected information and data to questions or hypotheses Critical and creative thinking icon
* draw conclusions from data and information gathered in an investigation Critical and creative thinking icon

ObservationsStudents:* identify that people make observations using their senses: what they can see, hear, feel or smell
* make observations using descriptions, including numbers, measurements and statistics Literacy icon Numeracy icon
 | **Food smells so good!**Introduce this activity with a range of foods with a strong and appealing smell. Examples include citrus fruits, mint chocolate, lollies (eg musk sticks) and bananas. Ask the students to observe their physical reactions when they see and smell the food. Prompt with questions such as:* Do you notice anything happening in your mouth?
* Do you notice anything happening in your stomach?
* Do you want to eat the food?

Lead a class discussion to make the link between what is sensed and their physical reactions. Different reactions to stimulus may also be explored. Lead the discussion toward areas for further investigation, for example the contribution of sight and smell to consuming food.**Investigation**: Tasting foods with and without the sense of smell.Pose the question, ‘If smelling food makes my mouth water, does it help me taste the food?’Students eat a piece of potato and a piece of apple while blindfolded and holding their noses. Can they tell whether they are eating the potato or apple?What conclusions can be drawn from this investigation?**Additional activity**Explore the question, ‘Does everyone like the same foods and flavours?’ | Range of foods with strong and appealing smell.Science Kids: *Science Experiment for Kids – Taste Testing without Smell*<http://www.sciencekids.co.nz/experiments/smelltaste.html> |
| *Working scientifically*Students: * describe data and information collected https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX https://lh3.googleusercontent.com/n0zZlSUFWK-J6GiESmY6WriA-shkYJBglOW__p2rVBSswIeZV2ZgXkgHfyAPUHp8N0ohVVjNKAp4vtPO5kEPci1V_HjvoDLaFjeVM_hd9j7rFh6RuokHdn0lvv4CAJPUHP-6eqqv
* draw conclusions from data and information gathered in an investigation https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* communicate ideas related to an investigation https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX
* use digital, visual, written or oral forms of communication as appropriate https://lh6.googleusercontent.com/WSefKq_SVlkCAk8JjIg-pKyEHoJ9mbq8vmhjNlaSXq0PM2NXsYXw6HhprbvvU0SC_O7S7pZxOTygyLn98r1oPNm-O5E79mQsI6M1JEU8xlv8c6iKp1oIe6_2wgLfuojrK4cfjYe5 https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX

*Role of observations*Students:* make observations from investigations, including observations that can be measured, for example: Numeracy icon
* communicate observations in a variety of ways, for example:  Information and communication technology capability icon Literacy icon Numeracy icon
 | **Why do I have two eyes?**Introduce this activity by reviewing students’ understanding of the structure and function of human eyes.Have students cover one eye and note what they observe. Can they still see? Do they notice any changes to what they can see?**Investigation**: Are two eyes better than one? Introduce the investigation by posing the question, ‘If I can see with one eye, why do I have two?’Students hold a pencil lengthwise in each hand. With one eye closed or covered, students try to touch the erasers on the end of each pencil together. What happens? What conclusions can be drawn from this?**Investigation**: The blind spot.Pose the question, ‘Can our eyes see everything we are looking at?’Students undertake selected exercises from Neuroscience for Kids to explore the blind spot (the area on the retina that cannot respond to light). When is it particularly important to be aware of our blind spot? Discuss with students how the blind spot may affect activities such as driving, cycling, crossing the road.Provide students with self and/or peer skills checklists. Students complete the checklists, assessing their own or others’ skills. Skills which could be included:* following written instructions
* making observations
* recording data.
 | KidsHealth: *Experiments to Try – Are Two Eyes Better Than One?*<http://kidshealth.org/en/kids/experiment-eyes.html?WT.ac=ctg>Pencils with erasers on the endNeuroscience for Kids: *The Blind Spot*<https://faculty.washington.edu/chudler/chvision.html> Self and/or peer- assessment checklists |
| *Working scientifically*Students:* identify questions that can be scientifically tested
* make predictions based on questions that can be scientifically tested
* recognise the need to plan an investigation to test questions or hypotheses https://lh5.googleusercontent.com/Rxtd35_bD9NYVAYTpCQ-l7NjzMfiyFajA_6a4YcahraxXOTfH4tnHYhUexf1uMPSXbOwgmNnpyg5qdPeM0mzCxt4kZSRo3k71lpcoUKMsqqj_fEDdSEoLDDRM41ErrQUfCaz07YL https://lh5.googleusercontent.com/WVSnRyGnrqlCrqSS5v-anrdJeyEAzrmzIiGCgHA5OJdUeM-cCS7sZ7L1q4KU1DJHGVnzOB3HSZxQawqPOH2MDWicptTdg2Aj316dtBVlxMBzJCmuKPz_ZlS8HaFKfik1Fzg9rcXa
* participate in making decisions about how to test questions or hypotheses
* work individually and/or collaboratively to design a scientific investigation to test a question or hypothesis https://lh5.googleusercontent.com/WVSnRyGnrqlCrqSS5v-anrdJeyEAzrmzIiGCgHA5OJdUeM-cCS7sZ7L1q4KU1DJHGVnzOB3HSZxQawqPOH2MDWicptTdg2Aj316dtBVlxMBzJCmuKPz_ZlS8HaFKfik1Fzg9rcXa
* record aspects of a plan for a scientific investigation using an appropriate format https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX
* recognise ethical considerations when planning a scientific investigation https://lh3.googleusercontent.com/u9Q-K3qkh-ETSYSEvQ96QaJzNrkBOnNMTeMUAb_2Jjx8niU5WdHJED7Z4Pzurxf-cPHr5F9KROrHd4sWrUvT8paxDaAkiC3hWhGdUgCOv_X0Vd9S66GWsZtUllCP8dAybkHSciHR
* relate collected information and data to questions or hypotheses https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* use appropriate scientific language when representing information or data https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX
* draw conclusions from data and information gathered in an investigation https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* recognise and use problem-solving skills, eg questioning, collaboration, planning https://lh5.googleusercontent.com/Rxtd35_bD9NYVAYTpCQ-l7NjzMfiyFajA_6a4YcahraxXOTfH4tnHYhUexf1uMPSXbOwgmNnpyg5qdPeM0mzCxt4kZSRo3k71lpcoUKMsqqj_fEDdSEoLDDRM41ErrQUfCaz07YL https://lh5.googleusercontent.com/WVSnRyGnrqlCrqSS5v-anrdJeyEAzrmzIiGCgHA5OJdUeM-cCS7sZ7L1q4KU1DJHGVnzOB3HSZxQawqPOH2MDWicptTdg2Aj316dtBVlxMBzJCmuKPz_ZlS8HaFKfik1Fzg9rcXa
* communicate ideas related to an investigation https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX
* use scientific language when communicating about an investigation https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX
* use digital, visual, written or oral forms of communication as appropriate https://lh6.googleusercontent.com/WSefKq_SVlkCAk8JjIg-pKyEHoJ9mbq8vmhjNlaSXq0PM2NXsYXw6HhprbvvU0SC_O7S7pZxOTygyLn98r1oPNm-O5E79mQsI6M1JEU8xlv8c6iKp1oIe6_2wgLfuojrK4cfjYe5 https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX

*Role of observations*Students:* communicate observations in a variety of ways  Information and communication technology capability icon Literacy icon Numeracy icon
* apply conventions when collecting and recording observations Critical and creative thinking icon  Information and communication technology capability icon Literacy icon Work and enterprise

*Observation as evidence*Students:* demonstrate safe practices when participating in an investigation Work and enterprise
 | **What does my skin do?**Lead the class in a discussion of the sense of touch. Consider factors such as:* function of touch
* detection of rough/smooth, soft/hard
* detection of temperature.

**Investigation**: Skin sensitivity.Independently or with assistance, have the students work in collaborative groups to consider the question, ‘Are all areas of our skin equally sensitive?’ From their discussions, have students plan a safe investigation into the inquiry question, such as the KidsHealth investigation (it is recommended that the teacher specifies areas of the body that students will use in this investigation, such as fingers, cheek, palm, upper arm, shoulder, calf).Students make a prediction then carry out their investigation and select the most appropriate way of recording their observations. At the end of the investigation, lead the students in comparing results gained between groups and developing a conclusion to the inquiry question. Provide verbal, visual or written scaffolds if required. *Note*: Prior to this investigation, discuss appropriate touching with students, including asking permission before touching, areas of the body that are appropriate to touch, and expressing discomfort or a request to stop. Ensure all students are provided with a choice to participate in the investigation.With teacher guidance discuss the question, ‘Why are some areas more sensitive than others?’Provide students with self and/or peer skills checklists. Students complete the checklists, assessing their own or others’ skills. Skills which could be included:* working collaboratively with others
* following written instructions
* making observations
* recording data
* organising data
* communicating findings.

**Additional activities**Conduct experiments to investigate temperature perception and how our sense of touch can be informed by our other senses. Draw conclusions about how our senses work together to give us information. | KidsHealth: *Experiments to Try – Head, Shoulders, Knees and Toes*<http://kidshealth.org/en/kids/experiment-head.html>Range of objects with differing surface textureBlindfoldSelf and/or peer-assessment checklistsHome Science Tools: *Test Your Sense of Touch*<https://www.homesciencetools.com/a/sense-touch-perception-experiment>Three glasses of waterStopwatch or clockKidsHealth: *Experiments to Try – Brain Box*<http://kidshealth.org/en/kids/experiment-brainbox.html>Pillowcase, sock and range of objects such as tennis ball, rubber ball, baseball, cricket ball |
| *Working scientifically*Students:* make predictions based on questions that can be scientifically tested
* participate in making decisions about how to test questions or hypotheses
* work individually and/or collaboratively to design a scientific investigation to test a question or hypothesis https://lh5.googleusercontent.com/WVSnRyGnrqlCrqSS5v-anrdJeyEAzrmzIiGCgHA5OJdUeM-cCS7sZ7L1q4KU1DJHGVnzOB3HSZxQawqPOH2MDWicptTdg2Aj316dtBVlxMBzJCmuKPz_ZlS8HaFKfik1Fzg9rcXa
* recognise variables to be measured, changed and maintained in an investigation https://lh5.googleusercontent.com/IgYyZGyDyB28iBMNCjiZ1KbmAIve8AlHfOPQPXqn8NC_aPegbvHTbzMR3EKm6ilUjLX7l9oqXwX5dPNLVfSBG_OnZIDS1MZMsv6OpLwzTocJuABBhfk-yj1BlbpoioCXdFXoMiSd
* identify ways to change and measure variables in an investigation https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* follow a plan to participate in an investigation https://lh5.googleusercontent.com/Rxtd35_bD9NYVAYTpCQ-l7NjzMfiyFajA_6a4YcahraxXOTfH4tnHYhUexf1uMPSXbOwgmNnpyg5qdPeM0mzCxt4kZSRo3k71lpcoUKMsqqj_fEDdSEoLDDRM41ErrQUfCaz07YL
* use scientific equipment and materials accurately https://lh6.googleusercontent.com/WSefKq_SVlkCAk8JjIg-pKyEHoJ9mbq8vmhjNlaSXq0PM2NXsYXw6HhprbvvU0SC_O7S7pZxOTygyLn98r1oPNm-O5E79mQsI6M1JEU8xlv8c6iKp1oIe6_2wgLfuojrK4cfjYe5
* engage in safe practices when participating in an investigation
* accurately record observations and data when participating in an investigation https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX https://lh3.googleusercontent.com/n0zZlSUFWK-J6GiESmY6WriA-shkYJBglOW__p2rVBSswIeZV2ZgXkgHfyAPUHp8N0ohVVjNKAp4vtPO5kEPci1V_HjvoDLaFjeVM_hd9j7rFh6RuokHdn0lvv4CAJPUHP-6eqqv
* relate collected information and data to questions or hypotheses https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* use appropriate scientific language when representing information or data https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX
* identify data that can be measured https://lh3.googleusercontent.com/n0zZlSUFWK-J6GiESmY6WriA-shkYJBglOW__p2rVBSswIeZV2ZgXkgHfyAPUHp8N0ohVVjNKAp4vtPO5kEPci1V_HjvoDLaFjeVM_hd9j7rFh6RuokHdn0lvv4CAJPUHP-6eqqv
* draw conclusions from data and information gathered in an investigation https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* recognise and use problem-solving skills, eg questioning, collaboration, planning https://lh5.googleusercontent.com/Rxtd35_bD9NYVAYTpCQ-l7NjzMfiyFajA_6a4YcahraxXOTfH4tnHYhUexf1uMPSXbOwgmNnpyg5qdPeM0mzCxt4kZSRo3k71lpcoUKMsqqj_fEDdSEoLDDRM41ErrQUfCaz07YL https://lh5.googleusercontent.com/WVSnRyGnrqlCrqSS5v-anrdJeyEAzrmzIiGCgHA5OJdUeM-cCS7sZ7L1q4KU1DJHGVnzOB3HSZxQawqPOH2MDWicptTdg2Aj316dtBVlxMBzJCmuKPz_ZlS8HaFKfik1Fzg9rcXa
* communicate ideas related to an investigation https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX

*Role of observations*Students:* make observations from investigations, including observations that can be measured Numeracy icon
* communicate observations in a variety of ways  Information and communication technology capability icon Literacy icon Numeracy icon
* apply conventions when collecting and recording observations Critical and creative thinking icon  Information and communication technology capability icon Literacy icon Work and enterprise icon
* recognise that some observations can be used to make predictions Critical and creative thinking icon

*Observations as evidence*Students:* recognise the role of variables in a scientific investigation
* identify variables to be measured, changed or maintained in a scientific investigation Critical and creative thinking icon
* investigate how variables in a scientific investigation can be maintained Critical and creative thinking icon

*Conclusions promote further investigations*Students:* pose questions for testing that lead to further investigations Critical and creative thinking icon
 | **How does my body react to stimuli?**What would happen if we placed our hand on a hot stove? What about if a ball is thrown at us or the wind blows some dirt into our eyes? Explain to students the reactions our body makes in these instances are known as ‘reflexes’. These are movements we make involuntarily in response to stimulus, such as the heat on the stove. We are not telling our hand to move, it is a reflex action that occurs. Taking into account students’ needs and capabilities, explore a range of reflexes, using the Neuroscience For Kids website. Students observe how quickly a reflex occurs. **Investigation**: Reaction timeExplain to students that reactions are different from reflexes because they are voluntary. That is, our brain sends a message that our body is to react in some way. Pose the question, ‘Do we always react at the same speed?’ Students complete the reaction time investigation (see Home Science Tools resource) to measure how quickly they react in a particular situation and whether or not their reaction time changes under the same conditions. Before commencing the investigation, students identify the variables that must be controlled. Students use the data gathered to draw a conclusion in response to the question posed.Discuss with students factors that may affect our reaction time, for example attention, fatigue, injury, alcohol, drugs. Independently or with assistance, have the students work in collaborative groups to consider how they might adjust the previous investigation to test if reaction time is affected by lack of attention, for example playing a song or displaying a film clip in front of the student to interrupt attention. Students predict what will happen to the reaction time and conduct the investigation. Students compare results gained between groups, consider if their hypothesis was correct and develop a conclusion. Provide verbal, visual or written scaffolds if required. Lead the class in a discussion of when it would be important to maintain attention and fast reaction time, for example driving, sport, handling hazardous materials. Provide students with self and/or peer skills checklists. Students complete the checklists, assessing their own or others’ skills. Skills which could be included:* working collaboratively with others
* making predictions
* making observations
* recording data
* communicating findings.

**Additional activities**Students consider which is faster, a reflex or a voluntary movement, and whether or not this could be tested. | Neuroscience for Kids – *Reflexes*<https://faculty.washington.edu/chudler/chreflex.html> Home Science Tools – *Reaction time*<https://www.homesciencetools.com/a/measure-reaction-time-science-project> Self and/or peer-assessment checklists |
| *Working scientifically*Students:* make observations and pose questions based on these observations
* make predictions based on questions that can be scientifically tested
* recognise the need to plan an investigation to test questions or hypotheses https://lh5.googleusercontent.com/Rxtd35_bD9NYVAYTpCQ-l7NjzMfiyFajA_6a4YcahraxXOTfH4tnHYhUexf1uMPSXbOwgmNnpyg5qdPeM0mzCxt4kZSRo3k71lpcoUKMsqqj_fEDdSEoLDDRM41ErrQUfCaz07YL https://lh5.googleusercontent.com/WVSnRyGnrqlCrqSS5v-anrdJeyEAzrmzIiGCgHA5OJdUeM-cCS7sZ7L1q4KU1DJHGVnzOB3HSZxQawqPOH2MDWicptTdg2Aj316dtBVlxMBzJCmuKPz_ZlS8HaFKfik1Fzg9rcXa
* participate in making decisions about how to test questions or hypotheses
* select appropriate scientific equipment and materials that can be used to test a question or hypothesis https://lh6.googleusercontent.com/WSefKq_SVlkCAk8JjIg-pKyEHoJ9mbq8vmhjNlaSXq0PM2NXsYXw6HhprbvvU0SC_O7S7pZxOTygyLn98r1oPNm-O5E79mQsI6M1JEU8xlv8c6iKp1oIe6_2wgLfuojrK4cfjYe5 https://lh5.googleusercontent.com/WVSnRyGnrqlCrqSS5v-anrdJeyEAzrmzIiGCgHA5OJdUeM-cCS7sZ7L1q4KU1DJHGVnzOB3HSZxQawqPOH2MDWicptTdg2Aj316dtBVlxMBzJCmuKPz_ZlS8HaFKfik1Fzg9rcXa
* work individually and/or collaboratively to design a scientific investigation to test a question or hypothesis https://lh5.googleusercontent.com/WVSnRyGnrqlCrqSS5v-anrdJeyEAzrmzIiGCgHA5OJdUeM-cCS7sZ7L1q4KU1DJHGVnzOB3HSZxQawqPOH2MDWicptTdg2Aj316dtBVlxMBzJCmuKPz_ZlS8HaFKfik1Fzg9rcXa
* record aspects of a plan for a scientific investigation using an appropriate format https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX
* recognise safe and unsafe practices when planning a scientific investigation
* recognise variables to be measured, changed and maintained in an investigation https://lh5.googleusercontent.com/IgYyZGyDyB28iBMNCjiZ1KbmAIve8AlHfOPQPXqn8NC_aPegbvHTbzMR3EKm6ilUjLX7l9oqXwX5dPNLVfSBG_OnZIDS1MZMsv6OpLwzTocJuABBhfk-yj1BlbpoioCXdFXoMiSd
* identify ways to change and measure variables in an investigation https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* follow a plan to participate in an investigation https://lh5.googleusercontent.com/Rxtd35_bD9NYVAYTpCQ-l7NjzMfiyFajA_6a4YcahraxXOTfH4tnHYhUexf1uMPSXbOwgmNnpyg5qdPeM0mzCxt4kZSRo3k71lpcoUKMsqqj_fEDdSEoLDDRM41ErrQUfCaz07YL
* use scientific equipment and materials accurately https://lh6.googleusercontent.com/WSefKq_SVlkCAk8JjIg-pKyEHoJ9mbq8vmhjNlaSXq0PM2NXsYXw6HhprbvvU0SC_O7S7pZxOTygyLn98r1oPNm-O5E79mQsI6M1JEU8xlv8c6iKp1oIe6_2wgLfuojrK4cfjYe5
* engage in safe practices when participating in an investigation
* accurately record observations and data when participating in an investigation https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX https://lh3.googleusercontent.com/n0zZlSUFWK-J6GiESmY6WriA-shkYJBglOW__p2rVBSswIeZV2ZgXkgHfyAPUHp8N0ohVVjNKAp4vtPO5kEPci1V_HjvoDLaFjeVM_hd9j7rFh6RuokHdn0lvv4CAJPUHP-6eqqv
* relate collected information and data to questions or hypotheses https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* use appropriate scientific language when representing information or data https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX
* describe patterns and trends in data Critical and creative thinking icon
* draw conclusions from data and information gathered in an investigation https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
* use digital, visual, written or oral forms of communication as appropriate https://lh6.googleusercontent.com/WSefKq_SVlkCAk8JjIg-pKyEHoJ9mbq8vmhjNlaSXq0PM2NXsYXw6HhprbvvU0SC_O7S7pZxOTygyLn98r1oPNm-O5E79mQsI6M1JEU8xlv8c6iKp1oIe6_2wgLfuojrK4cfjYe5 https://lh5.googleusercontent.com/BaJe4_V7hOW-x1HTRBokL9dorYjTQQgjMCbVGhKlu6CWHO5webOqzPU3bIjnWKgc3mzujAsVntcPnKGg-HNd2P-f3MAD774pepFCOCtzf75c-reGcSd0KVsUdipv0YdLCTfxlVKX

*Role of observations*Students:* make observations from investigations, including observations that can be measured Numeracy icon
* communicate observations in a variety of ways  Information and communication technology capability icon Literacy icon Numeracy icon
* apply conventions when collecting and recording observations Critical and creative thinking icon  Information and communication technology capability icon Literacy icon Work and enterprise icon

*Observations as evidence*Students:* identify risks involved in an investigation
* describe ways to minimise the risks in an investigation Critical and creative thinking icon
* demonstrate safe practices when participating in an investigation Work and enterprise
* identify variables to be measured, changed or maintained in a scientific investigation https://lh6.googleusercontent.com/EdvWh_GyIWeWkoGzdGdG9BqJEgLeSCWG-ycm_Ma_NHT-SdquLmMhWNsXEBePNJdnyi80i2boeVBa6HKHOXPlb8dY9U3FQdu17gGxh2NIB93Ce9_NblFf7MPQ2sow38VEV8vn-tit
 | **How does my body react to physical activity?**Review students’ understanding of the purpose and function of the heart. A video such as *How to Feel Your Heart Beat* may assist students’ understanding of how the heart works. **Investigation:** Heart ratePose the question, ‘What effect does exercise have on our heart rate?’ Taking into consideration students’ needs and abilities, students work in pairs to record their resting heart rate, their heart rate after physical activity and how long it takes the heart rate to return to resting level. What conclusions can be drawn about the effects of exercise on heart rate?Students follow the process of Predict, Observe, Record and Compare to investigate which type of physical activity has the greatest effect on our heart rate. Physical activities can be selected according to the needs and abilities of students and could include:* walking
* skipping
* walking up stairs or stepping up and down onto a box
* running (for a distance or on the spot)
* arm circles.

Students make a prediction before starting the investigation. As a class or in groups or pairs, students plan how they will conduct the investigation, identifying the variables they will control, the variables that will be changed and the variable being tested. In their planning, students also identify risks involved in the investigation and how these could be minimised. They conduct the investigation and record their observations in a table. As a class, students compare the results recorded and decide whether their original hypothesis was correct. Students draw a conclusion about the type of physical activity that has the greatest effect on our heart rate. Provide students with self and/or peer skills checklists. Students complete the checklists, assessing their own or others’ skills. Skills which could be included:* working collaboratively with others
* following written instructions
* making observations
* participating safely in investigations
* recording data
* organising data
* communicating findings.
 | *How to Feel Your Heart Beat*<https://www.youtube.com/watch?v=tF9-jLZNM10> Science Sparks – *Heart Rate Investigation* <http://www.science-sparks.com/2013/07/24/heart-rate-investigation/> StopwatchSelf and/or peer-assessment checklists |
| *Working scientifically*Students:* describe data and information collected Literacy icon Numeracy icon
* use scientific language when communicating about an investigation Literacy icon
* use digital, visual, written or oral forms of communication as appropriate https://lh6.googleusercontent.com/WSefKq_SVlkCAk8JjIg-pKyEHoJ9mbq8vmhjNlaSXq0PM2NXsYXw6HhprbvvU0SC_O7S7pZxOTygyLn98r1oPNm-O5E79mQsI6M1JEU8xlv8c6iKp1oIe6_2wgLfuojrK4cfjYe5 Literacy icon

*Role of observations*Students:* communicate observations in a variety of ways, for example:  Information and communication technology capability icon Literacy icon Numeracy icon

*Observations as evidence*Students:* compare observations made in everyday life with primary data gathered in a scientific investigation Critical and creative thinking icon
 | Students create a life-size drawing of themselves by lying on butcher’s paper and having someone trace around them. They fill in their features such as eyes, nose, ears, hair, fingers and toes. Students use their life-size drawing to record qualitative and quantitative observations they have made about themselves through the investigations conducted, such as hair colour, eye colour, height, senses (eg taste, smell and touch), parts of the body that perform reflex reactions, resting heart rate. Students select the most interesting fact they have learned about their body from participating in the investigations. They record a reflection on what they have learned and how making and recording observations have helped them to understand more about their body.  |  |

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| Reflection and Evaluation |