# Stage 2 Scientific Studies – Program

*The science of water dam to drain annotated.*

This program articulates with LAP 02: Dam to drain

**Term 1**

| **Week** | **Day 1** **Single Lesson** | **Day 2** **Double Lesson**  | **Day 3****Single Lesson** | **Day 4****Single Lesson** |
| --- | --- | --- | --- | --- |
| 1 | Intro Course: Expectations, LAP and AssessmentScientific Method vs Engineering Design Process to link with deconstructing a problem – designing a solutionResearch skills – source selection and correct referencing. | Practical Design Terminology Notes and Discussion on Scientific Method. Concentrate on controlled, dependent and independent variables.--------------------------------------------Practical Worksheet 1- Introduction, Purpose, Hypothesis, Variables, Controls, Material, Method and Conclusion | Data Collection, Recording and PresentationGraphing Task:different types of graphs,consider different types of data.Use of Microsoft Excel to display graphs. Linear graphs to include R2 values, equations and trendlines.Explain how to determine random and systematic errors from a linear scatter plot graph. | Formative Practical‘Latent heat of ice and water’.Heat ice water in a beaker on a Bunsen burner – record temperature every minute. Take results directly into MS Excel and graph data on the spot.Draw conclusions from the data (latent heat of fusion and vaporisation; water can’t get past 100⁰C even though the flame can be 700⁰C).Work in teams of 2-3. |
| 2 | Theory and prac lesson – how to deconstruct a problem.How to brainstorm – (individually and collectively) – and record brainstorming ideas.[How to mind map](https://www.youtube.com/watch?v=MJJeT22UpZA) and communicate your mindmap.How to combine mindmaps and brain storming to help design a solutionHow to communicate your deconstruction to the target audienceHave a small practice brainstorm and mind map session. | Design practical activity:**Insert some kind of STEM based practical activity which requires students to break down a problem and design a solution…**Easy suggestion is a bridge building competition. Make it fun – memorable and collaborative. Should **not** relate to water treatment.This activity is used purely to build team cohesion and develop critical thinking and imagination. | Documentary lesson:Show an Engineering Documentary – to demonstrate vision to reality of science and engineering.An example being [Impossible Bridges Denmark to Sweden megastructures documentary](https://youtu.be/6TNE6RkCSTs).<https://www.enhancetv.com.au> has quite a selection available. ClickView has one on the Sydney Harbour bridge <https://clickv.ie/w/-htj> | Theory lesson:How to write a prac report (with examples)* Introduction
* Purpose
* Hypothesis
* Variables
* Safety
* Apparatus list & diagram
* Method (succinct)
* Results sheets
* Analysis of results
* Error analysis
* Conclusion
 |
| 3 | Theory lesson:Chemical rate of reaction – highlighting the importance of aqueous chemical reactions (chemical reactions in water).[Show this TEDEd video](https://youtu.be/OttRV5ykP7A) on reaction rates. Introduce the practical - [the effect of concentration on reaction rate (sodium thiosulphate and hydrochloric acid).](https://www.flinnsci.com/rate-of-reaction-of-sodium-thiosulfate-and-hydrochloric-acid2/vel1860/)[Prac sheet here.](https://www.flinnsci.com/globalassets/flinn-scientific/all-free-pdfs/dc91860.pdf?v=b9e291b6202a46a5b324013f57e3f533)Commence deconstructing the problem in small groups – teacher supported. | **Formative Collaboration Practical: Deconstruct a Problem.**Continue the deconstruction for rate of reaction: [the effect of concentration on reaction rate (sodium thiosulphate and hydrochloric acid).](https://www.flinnsci.com/rate-of-reaction-of-sodium-thiosulfate-and-hydrochloric-acid2/vel1860/)[Prac sheet here.](https://www.flinnsci.com/globalassets/flinn-scientific/all-free-pdfs/dc91860.pdf?v=b9e291b6202a46a5b324013f57e3f533)Focus on design aspects of hypothesis, variables, control and method, risk assessment etc.Students to work in small teams at all stages including on the report. | **Rate of reaction: the effect of concentration on reaction rate.** Undertake Practical Investigation Representing Data: data collection, recording in tables and calculate averages.Work as a small team to complete. | **Rate of reaction: the effect of concentration on reaction rate** Recording of results in a graph – conc vs time and conc vs 1/time.Identify patterns in data and discuss scatter.Work as a small team to complete. |
| 4 | **Rate of reaction: the effect of concentration on reaction rate** Critically analyse data to draw conclusions with justification.Focus somewhat on error analysis and rectification.Consider limitations of conclusions.Work as a small team to complete and present. | **Formative prac: Rate of reaction: the effect of temperature on reaction rate** Repeat the prac – however, this time the concentration and amounts of sodium thiosuphate and hydrochloric acid remain the same – the temperature varies.Record results. | **Formative prac: Rate of reaction: the effect of temperature on reaction rate** Analyse and publish data.Commence a formative practical repot. | **Formative prac: Rate of reaction: the effect of temperature on reaction rate** Complete and submit formative practical report. |
| 5 | Theory lesson:Water treatment for mains water supply in various climates/areas including urban, rural and coastal.[Example video here.](https://www.youtube.com/watch?v=eIoSt0-K7wI)Water treatment for bottled water. Discuss the ‘[raw water](https://www.sbs.com.au/food/health/article/2018/03/05/raw-water-it-healthy-trend-or-dangerous-fad)’ trend.Discuss the common mineral additives of bottled water.Class taste test – deionised water vs bottled spring water vs tap water.Chlorination and fluoridation of town water – focus only on how it’s doneBriefly look at individual household options for water treatment – include options for hard water treatment. | **Completion practical – separation of a mixture.**5g of sodium chloride is mixed into a solution of iron filings, large pebbles, small pebbles, sand and water. Students are to devise a method to separate and retrieve the sodium chloride. Once they have considered it they are to proceed. The aim is to retrieve as much sodium chloride as possible with it being as pure as possible. Discuss percent yield and errors. | Theory lesson – sewerage treatment methods:* chemical
* biological
* grey water vs black water

Focus on the treatment plant closest to the school. | Documentary lesson: Filthy Cities – Season 1 Episode 1 – Medieval LondonDocumentary looks at the evolution of the sanitation system in London as the city started to sink under its own s\*it.<https://clickv.ie/w/iitj><https://www.enhancetv.com.au/video/filthy-cities-medieval-london/13996> |
| 6 | **Summative Inquiry Folio: Design Task**Prac: Flocculation and filtration.Individually students design an experiment using the Scientific Method to take a sample of dirty water and make it clean. Literally go outside – get a heap of dirt and stir it into water. Add some clay if necessary.Students are to individually deconstruct the problem – ensuring any deconstruction notes are saved and submitted as a part of the assessment. | **Summative Inquiry Folio: Design Task**Students are to complete the design aspect of the task including:* Introduction
* Purpose
* Hypothesis
* Variables
* Apparatus list and diagram
* Method
* Blank results table

Written by hand in test conditions on a provided proforma with the relevant headings. Extra writing paper as necessary. Open book.  | **Summative Inquiry Folio: Design Task**Students carry out their method and record results.In the event a method is unworkable or the teacher/school can not provide the apparatus requested the teacher is to amend the method to suit.As a last resort the teacher can provide a workable method to permit the prac to happen. | **Summative Inquiry Folio: Design Task**Students complete – under the same conditions as before:* Analysis of results
* Analysis of errors
* Suggestions for improvements
* A conclusion.

Combine this submission at the end of the lesson with any deconstruction notes and the design component. Assess as one complete practical. |
| 7 | **Summative Inquiry Folio: Design Task**Final lesson with all materials included so students can make final amendments to their submissions. Full prac report collected at the completion of the period. | Pairs research activity – water in poor countries.In pairs students are to prepare a Powerpoint presentation about an issue which effects water provision in developing countries – topics include (but are not limited to):* cholera outbreaks, treatment and control
* typhoid outbreaks, treatment and control
* guinea worm in Africa
* Cryptosporidium infection in Torres Strait mains water
* sewerage treatment in a developing country
* water scarcity in a developing country

Students pairs complete and submit an Powerpoint slide. | Presentation lesson:Each group should have their own topic.Topics to be presented to the class using the powerpoint slideshows created.Time for teacher scaffolded class discussions about the difficulties facing developing countries and the safe provision of water.If time is left you can show organisations changing the world like [WaterAid](https://www.youtube.com/watch?v=eudZdeUn5rA). [ThankYou](https://thankyou.co/) Water and [SoapAid](https://www.youtube.com/watch?v=1veXQZJuLZ0) worth a look too. | Theory lesson:Recycling water in urban and rural settings – including for use as drinking water. Lesson to include common myths and the science backing them. Could look at Toowoomba as a case study.Desalination as an option to boost water supplies.Teach the process of desalination/use a documentary or video to explain RO and how it works. |
| 8 | Theory lesson:The difference between oil and water – polar and non-polar liquids.Surfactants and how soap cleans dishes and clothes.The benefits and drawbacks of tripolyphosphate in water.How hard water is treated using a zeolite cation exchange column.If you haven’t shown it show the [SoapAid](https://www.youtube.com/watch?v=1veXQZJuLZ0) video here. | Completion practical: Create your own home made soap.Using oils and sodium hydroxide powder you can create high quality soap.[Practical is here.](http://pascoes.com.au/wp-content/uploads/2012/08/Caustic_soda_soap_recipe.pdf)NB. Caustic soda is dangerous.This is a highly successful prac where students can, by their own hands, change oils into a solid soap which they can use in the future. | How water is stored for communities (urban and rural) – include some focus on the relevant local method. Topics of interest can include:* Hoover Dam
* Snowy Mountains Scheme
* Tasmanian Hydroelectric Powerstation and cloud seeding in Tasmania
* Three Gorges Dam in China
* [Any of the large aqua ducts across the world](https://en.wikipedia.org/wiki/List_of_aqueducts).
* Water crisis in South Africa.
 | Theory lesson:How pools are kept healthy.Saltwater chlorination.Chemical chlorination.The effects of chlorine and it’s ions in the treatment and control of bacteria and algae.* The importance of pH balancing in the pool environment.
 |
| 9 | **Summative Inquiry Folio: Scientific scepticism – introducing the drive to seek truth.**Show the class the documentary ‘Principals of Curiosity’ by Brian Dunning.[Link here.](https://www.youtube.com/watch?v=NKY6jJbyCo0)Discuss the merits of a sceptical and scientific approach to assessing a particular problem.As a way of showing students what companies will sell show them [this video from The Checkout](https://www.youtube.com/watch?v=MTa_ccZBvEg) on chlorophyll supplements. | **Summative Inquiry Folio: Investigate the myths – researching water treatment** **methods** small groups undertake research of common beliefs/myths in relation to the benefits and negatives of * alkalising water,
* chlorinating water,
* fluoridation of water,
* desalination,
* recycling of water,

The students present their report as a multimodal presentation with a maximum of 3 minutes per student.N.B. List is not exhaustive.Commence research task. | **Summative Inquiry Folio: Investigate the myths – researching water treatment** Continue research task. | **Summative Inquiry Folio: Investigate the myths – researching water treatment** Continue research task. |
| 10 | **Summative Inquiry Folio: Investigate the myths – researching water treatment** Continue research task. | **Summative Inquiry Folio: Investigate the myths – researching water treatment** Multimodal presentations made to class – 3 minutes per student. | **Documentary:**Focus – water engineering projects - Three Gorges DamEnsure the documentary has a focus on engineering and science and its effects on society. This is a lead in to the SHE task.Example:[Extreme Engineering Unlimited Water Source – Megastructures](https://www.youtube.com/watch?v=VSEbpqQyegY) (relating to Adelaide Desal Plant). | Documentary:Focus – water treatment; pre or post useEnsure the documentary has a focus on engineering and science and its effects on society. This is a lead in to the SHE task.Documentary maybe - such as [TED Talk - Michael Pritchard: How to make filthy water drinkable](https://www.youtube.com/watch?v=rXepkIWPhFQ) |

I like this task too. Could link back to bottled water idea.

**Term 2**

| **Week** | **Day 1** **Single Lesson** | **Day 2** **Double Lesson**  | **Day 3****Single Lesson** | **Day 4****Single Lesson** |
| --- | --- | --- | --- | --- |
| 1 | Theory lesson:Source analysis and correct referencing.Cover off on where to find the latest research – and how to interpret said pages.Show examples of biased sources and comment on how to detect bias and how to use biased resources.Describe how to research an author’s academic background and credentials. | Theory/Research lesson:**Explain SHE task** – roughly 1/3rd scientific theory, 1/3rd SHE from one and max two SHE focus points (and their dot points).Students to commence informal research on suggested topic.Students to select a focus topic, get it approved by the teacher and have the topic locked in. No changes without prior approval from the teacher.Students to hand in a basic structure (skeleton outline) of the SHE task. | Research lesson:**Continue SHE task** | Research lesson:**Continue SHE task.** |
| 2 | Research lesson:**Continue SHE task** | Research lesson:**Conclude and submit SHE task** | Theory lesson – how it happens and effects:Ocean acidificationEutrophicationAcid rain effects on waterwaysIndustrial spillages and waste pumped into waterways* chemical industry
* mining industry
* oil/gas industry
* fracking industry
* PFAS

Oil spills, effects and clean up.Include brief intro to Le Chatelier’s principle. | Research lesson:Explain the upcoming data collection and representation task.Students to research water quality testing indicators and what each test is indicative of.Once some research has been done the teacher can scaffold the missing material and introduce students to the equipment they will be using to measure the health of waterways and water storage locations. This can include natural and man made – ie. tap water, stream water, dam water etc. |
| 3 | **Summative inquiry folio: Data collection and representation task – water quality**Familiarise and practice with equipment.Select locations for testing. | **Summative inquiry folio: Data collection and representation task – water quality**Carry out field excursions as necessary, collect samples and test water. | **Summative inquiry folio: Data collection and representation task – water quality**Carry out field excursions as necessary, collect samples and test water. | **Summative inquiry folio: Data collection and representation task – water quality**Carry out field excursions as necessary, collect samples and test water. |
| 4 | **Summative inquiry folio: Data collection and representation task – water quality**Carry out field excursions as necessary, collect samples and test water. | **Summative inquiry folio: Data collection and representation task – water quality**Carry out field excursions as necessary, collect samples and test water. | **Summative inquiry folio: Data collection and representation task – water quality**Collect data – process and prepare for presentation | **Summative inquiry folio: Data collection and representation task – water quality**Work on poster/powerpoint |
| 5 | **Summative inquiry folio: Data collection and representation task – water quality**Work on poster/powerpoint | **Summative inquiry folio: Data collection and representation task – water quality**Finalise poster/powerpoint | **Summative inquiry folio: Data collection and representation task – water quality**Present poster/powerpoint | **Summative inquiry folio: Data collection and representation task – water quality**Present poster/powerpoint |
| 6 | Documentary lesson:BBC Documentary - The Toilet: An unspoken history[Youtube in HD](https://www.youtube.com/watch?v=0ZHm3vkavgM)Comment on the amazing benefits of the S-bend in the toilet.[Show the SHE behind the rimless toilet.](https://www.youtube.com/watch?v=_u2Zi41e9Qs) [Comment on the EcoFlow flushless toilet.](https://www.youtube.com/watch?v=rmZKxXG_U8k) | **Formative research task: hydroponics (NB. NOT aquaponics)**Students to research the topic of hydroponic growth systems and select a business or project which uses hydroponics to grow their product. Each small group must select a different business.[Example video here](https://www.youtube.com/watch?v=KCup_B_RHM4) on Sundrop Farms and their hydroponic tomatoes.  | **Formative research task: hydroponics**Students to research the topic of hydroponic growth systems and their chosen business – they compile a powerpoint with informative pictures. | **Formative research task: hydroponics** Students to present their findings to the class. |
| 7 | **Formative research task: aquaponics**Students to research the topic of aquaponics and select a business or project which uses aquaponics to grow their product. Each small group must select a different business. | **Formative research task: aquaponics**Students continue their aquaponics research and present their findings in a power point presentation with informative pictures. | **Formative research task: aquaculture**Students to present their findings to the class. | **Documentary lesson:**TEDx Aquaponics videos:[**https://youtu.be/7nIL9hWW3-Q**](https://youtu.be/7nIL9hWW3-Q)[**https://youtu.be/7zwnjfeYAOs**](https://youtu.be/7zwnjfeYAOs)TED hydroponics video:[**https://youtu.be/YhvfOlPYifY**](https://youtu.be/YhvfOlPYifY)NASA Vid – growing veggies on ISS:[**https://youtu.be/SgpU08WJm0c**](https://youtu.be/SgpU08WJm0c) |
| 8 | **Summative Collaborative Inquiry****Aquaculture/permaculture**In groups, students brainstorm- they deconstruct the problem and consider potential requirements that need to be tested for their purposes. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Introduce Personal Journal- format (maximum pages 12 pages). | **Summative Collaborative Inquiry****Aquaculture/permaculture**Method, safety. Risks. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Continue the design process. |
| 9 | **Summative Collaborative Inquiry****Aquaculture/permaculture**Evaluation of initial method/design. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Evaluation and trialling of method/design. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Evaluation and trialling of method/design. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Evaluation and trialling of method/design. |
| 10 | **Summative Collaborative Inquiry****Aquaculture/permaculture**Evaluation and trialling of method/design. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Analysis and evaluation of data/personal journal. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Analysis and evaluation of data/personal journal. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Preparation for the recorded presentation |
| 11 | **Summative Collaborative Inquiry****Aquaculture/permaculture**Preparation for the recorded presentation | **Summative Collaborative Inquiry****Aquaculture/permaculture**Presentations. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Presentations. | **Summative Collaborative Inquiry****Aquaculture/permaculture**Presentations. |

**Term 3**

| **Week** | **Day 1** **Single Lesson** | **Day 2** **Double Lesson**  | **Day 3****Single Lesson** | **Day 4****Single Lesson** |
| --- | --- | --- | --- | --- |
| 1 | Documentary session:\*\*\* WARNING \*\*\* the science in this doco is good but the language is a little ‘rough’ as it’s a Vice doco.<https://youtu.be/QV9x79_WYbk>[Landline report: Brown Gold: A surprising ingredient helping to drought-proof properties](http://www.abc.net.au/news/2018-07-08/brown-gold%3A-a-surprising-ingredient-helping-to/9955830) | Research session:Students to choose a city in Australia and investigate and report on what happens to the sewerage there. This should include what happens to any biosolids and where the treated waste water is jettisoned.Findings to be placed on a powerpoint presentation, mindmap or poster. | Inquiry and research session:Students are to research the waste treatment and water reclamation systems used on the International Space Station and present their findings in a 1 page summary report. | Documentary lesson:Planet Earth II – DesertsThe world's deserts are lands of extremes that force animals to come up with ingenious ways of coping with hostile conditions, giving rise to the most incredible survival stories on earth.[LQ from EnhanceTV.](https://www.enhancetv.com.au/video/planet-earth-ii-deserts/39835)[720P from ClickView.](https://clickv.ie/w/Bttj) |
| 2 | SHE lesson – bringing water to barren places and technologies which have changed the world.[Fog Water Nets.](https://www.youtube.com/watch?v=h8rQ5aHAnuE)[Lifestraw](https://www.youtube.com/watch?v=7WX40BnHfvE)[Solarball](https://www.youtube.com/watch?v=IY16Nrh1u_A)[Adelaide Uni Eng Students create water filter with chip packets.](http://www.abc.net.au/news/2014-09-15/foil-chip-packets-life-saving-water-purifier-university-png/5743740)[TEDEd video on water quality](https://www.youtube.com/watch?v=G244Q4AGJ7U)Just to show SHE in practice on developing nations (not water related) [this video on providing lighting solutions to poor Nepalese](https://www.youtube.com/watch?v=ZachHQz6Eyk) is good. | Movie lesson:The Martian with Matt DamonFocussing on the production of water and growth of food on Mars.[LQ from EnhanceTV.](https://www.enhancetv.com.au/video/the-martian/32014)[720P from ClickView.](https://clickv.ie/w/7ttj) | Continue the Martian.Discuss the implications of water reclamation and purification if establishing the first Mars colony. | Theory lesson: water in amazing places – ISS focusStudents to watch videos involving water on the ISS:<https://youtu.be/o8TssbmY-GM><https://youtu.be/BCjH3k5gODI><https://youtu.be/iGiQZIb34_s><https://youtu.be/uIjNfZbUYu8><https://youtu.be/3bCoGC532p8><https://youtu.be/9Z2KNDGNnlc><https://youtu.be/bhGydridbEA>(All links to CSA or NASA vids). |
| 3 | Inquiry Skills- revision and review of Term 1 and 2.Revise engineering design process and the scientific method.Revise deconstruction of a problem and communicating a deconstruction. | Inquiry Skills- revision and review of Term 1 and 2, leading to discussion on Individual Inquiry and Proposal. | **Summative:****Individual Inquiry Proposal**Scientific Method or Engineering Design Process: review options.Planning and ideas. | **Summative:****Individual Inquiry Proposal**Planning continued. |
| 4 | **Design Task Revision: Formative Practicals- individual****Separation of soluble or invisible substances from a liquid**Students design a practical using the scientific method.The substances will include an ‘unknown’ amount of ethanol and an ‘unknown’ amount of sodium chloride dissolved into distilled water. | **Distillation prac:**Conduct practical to separate ethanol and sodium chloride and accurately determine the amounts of sodium chloride and ethanol retrieved.Compare to the original ‘unknown’ amounts added by the lab tech or teacher.It’s preferable if they’re added in front of the students so they know the substances were actually added to the water itself. | Analyse results.Error analysis.Conclusion. | Documentary lesson:Focussing on the microscopic life we can’t see.Life on Us Episode 1 – Your Private Wildlife[LQ from EnhanceTV.](https://www.enhancetv.com.au/video/life-on-us-your-private-wildlife/14799)[480P from ClickView.](https://clickv.ie/w/Lttj)There is an unexplored planet in the Solar System. A strange world of bizarre creatures locked in a fight for survival. This planet is the human body and it's teeming with unknown ecosystems. Our bodies are home to a trillion cells that are not us - but are very much the making of us. |
|  |  |  |  |
| 5 | **Summative: Individual Inquiry Proposal** Class Time. | **Summative: Individual Inquiry Proposal**Finalise. | **Summative:** **Individual Inquiry Proposal**Due Date. | Review Proposal.Order forms for equipment. Risk Assessments. |
| 6 | Inquiry and research lesson:Students are to research different ways to treat water in order to render it safe from bacteria and viruses. This is to take two avenues:1. Water for consumption
2. Water treated for release back into natural waterways

Students are to list five major bacteria and viruses which are waterborne and detail their effects and treatment.[Show this video on how to test lake water for bacteria.](https://youtu.be/Q3drQnnlc8A)[Other options include using lab prepared ingredients to prepare an agar petri dish.](https://youtu.be/O32-Pc83s_4)[You can bring in specific kits like Coliscan which are easy to use.](http://appslabs.com.au/coliscan.htm) | Petri dish bacteria activity:Using the scientific method students are to design a practical to1. Detect the presence of bacteria in several water sources
2. Determine the effectiveness of soap and alcohol hand gel in killing bacteria on the hands

Carry out the practical once the groups have discussed their methods. Teacher to scaffold where necessary.Pre-prep agar-nutrient plates.If possible perhaps pre-arrange students to bring water in a bottle from their local creeks etc.Incubate samples for 24 hours. | Practical lesson:Interpret the results and draw conclusions. | Documentary lesson:Focussing on the microscopic life we can’t see.Life on Us Episode 2 – Superhuman.Our health, body shape, mood and even our evolution are determined by the unseen life forms that swarm throughout our bodies. As the series concludes, we realise that the key to our existence is in maintaining the delicate balance between ourselves and all the other species that we've evolved with - both inside and out. We will never again look at our bodies in the same way.[LQ from EnhanceTV.](https://www.enhancetv.com.au/video/life-on-us-superhuman/14848)[480P from ClickView.](https://clickv.ie/w/Ottj) |
| 7 | Based on teacher feedback, make any necessary changes to method and risk assessment.  | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** |
| 8 | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** |
| 9 | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** |
| 10 | **Summative: Individual Inquiry****Report- class time** | **Summative: Individual Inquiry****Report- class time** | **Summative: Individual Inquiry****Report- class time** | **Summative: Individual Inquiry****Report- class time** |

**Term 4**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Day 1** **Single Lesson** | **Day 2** **Double Lesson**  | **Day 3****Single Lesson** | **Day 4****Single Lesson** |
| **1** | **Summative: Individual Inquiry****Report- class time** | **Summative: Individual Inquiry** **Report – Draft Due** | **Summative: Individual Inquiry****Final Report- class time** | **Summative: Individual Inquiry****Final Report- class time** |
| **2** | **Summative: Individual Inquiry****Final Report- class time** | **Summative: Individual Inquiry****Final Report- class time** | **Summative: Individual Inquiry****Final Report- class time** | **Summative: Individual Inquiry****Final Report- Due** |