

# Education Plan Summary

Age	Subject	Content	Learning Outcomes	Plastic Ocean Focus
11-14	Biology	Bioaccumulation	<p>State that organisms depend on each other and toxic substances can bioaccumulate up the food chain.</p> <p>Describe how toxic materials can accumulate in a food web and describe the interdependence of organisms in a food web.</p> <p>Explain why toxic materials have greater effect on top predators in a food chain and explain how organisms are interdependent.</p>	Toxins from chemicals in the sea, some from plastics, adhere to plastic in the ocean and multiply. Toxic microplastics resemble plankton, are ingested and toxins bioaccumulate up the food chain causing harm to health.
14-16	Biology	Pollution	<p>Describe how humans can produce pollution of land and water.</p> <p>Explain how plastic creates land and water pollution.</p> <p>Explain how plastic waste reduces biodiversity.</p>	Effect of plastic on the biodiversity of land and sea.
14-16	Chemistry	Life Cycle Assessment	<p>State the purpose and main stages of a life cycle assessment (LCA).</p> <p>Describe the main factors to consider when producing a LCA.</p> <p>Create a LCA to compare two material options designed for the same purpose.</p>	Plastic has a significant effect on the environment and its indestructibility causes a problem at its end of life.
14-16	Chemistry	Combustion of Hydrocarbons	<p>Define complete and incomplete combustion, write word equations for complete and incomplete combustion of a hydrocarbon and state some health effects of burning plastic.</p> <p>Compare complete and incomplete combustion, write symbol equations for complete and incomplete combustion of hydrocarbons and describe some health effects of burning plastic.</p> <p>Explain how the products of incomplete combustion can be lethal, the dangers of using plastic as a fuel and write balanced symbol equations for combustion of hydrocarbons.</p>	Plastic is made of hydrocarbons, as are alkanes and alkenes. Some communities use plastic as a fuel which can contribute to a range of health problems.

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11-14	Physics	Speed	<p>State the equation for speed and calculate speed in an investigation.</p> <p>Describe how to calculate speed and apply this in a practical context.</p> <p>Rearrange the speed equation and calculate speed in a practical context.</p>	Plastic often ends up in the sea, 80% in the sea originates from land. Travels around the oceans and accumulates in the centre of the gyres. Grows biota and can eventually sink.
11-14	Maths	Converting units of measurement	<p>To be able to convert between different units of measurement to visualise the area of plastics found in marine animal.</p> <p>To be able to convert between different units of measurement to assess the area of plastics found in a marine animal.</p> <p>To be able to convert between different units of measurement, including micro units, to assess the area of plastics found in marine animals.</p>	Animals, particularly marine animals, are adversely affected by plastic pollution. Example of ingestion by albatross is used in the lesson.
14-16	Geography	<b>Urbanisation 1.</b> Metro-Manila as an example of a Newly Emerging Economy (NEE)	<p>Identify challenges of a rapidly-growing population as social, economic or environmental.</p> <p>Describe some features of Metro Manila as an example of a Newly Emerging Economy (NEE).</p> <p>Explain how specific social, economic and environmental challenges affect the population of Metro Manila.</p>	Challenges of waste management and the effects of plastic pollution on the city and what could happen in the future.
14-16	Geography	<b>Urbanisation 2.</b> Informal settlements	<p>Describe the main features of a squatter settlement.</p> <p>Explain what challenges are faced by the people living in squatter settlements.</p> <p>Evaluate the impact of plastic on the people living in a squatter settlement in Manila.</p>	Plastic as an environmental challenge for people living in shanty towns.
14-16	Geography	<b>Urbanisation 3.</b> Improving Informal Settlements	<p>Identify methods to improve the conditions in a shanty town.</p> <p>Evaluate different methods to improve conditions in a shanty town.</p> <p>Justify reasons for prioritising different methods to improve conditions in a shanty town.</p>	Plastic and the associated health risks and pollution is a high priority for governments to improve when looking a funding improvements to informal settlements. Various charities and organisations work together to try and do this.

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14-16	Design Technology	Plastic as a Material	<p>Give examples of thermosetting and thermoplastics and their uses and outline some sustainability issues with using plastic in designs.</p> <p>Describe the differences between thermosetting and thermoplastics and why they are chosen as a material. Describe the sustainability issues with using plastic.</p> <p>Explain the properties of thermosetting and thermoplastic and explain why there are sustainability issues when using plastic.</p>	<p>Plastics come in a range of forms with different properties. Designers have a responsibility to use sustainable materials when designing products.</p>
14-16	English	Interpretation	<p>Identify and begin to interpret explicit information and ideas and can start to read between the lines.</p> <p>Identify and interpret explicit information and ideas and can attempt to identify implicit details.</p> <p>Identify and interpret explicit and implicit information and ideas.</p>	<p>Single use plastic and alternatives – paper bags vs plastic bags, and microplastics causing health issues.</p>
11-14	English	Linguistics	<p>Communicate in a tone/style that generally suits the purpose. I am beginning to use vocabulary for effect and some linguistic devices.</p> <p>Communicate in an engaging tone/style using vocabulary for effect and some linguistic devices.</p> <p>Communicate convincingly using extensive and ambitious vocabulary and linguistic devices.</p>	<p>Toy soldier as an example of plastic ending up in the stomach of an albatross chick.</p>