

PLASTICS CHALLENGE

PowerPoint notes

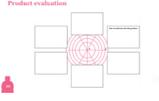
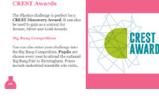


1.	<p>PLASTICS CHALLENGE A 5730 and enterprise challenge to reduce the impact of waste plastic. Practical ACTION</p>	<p>Introduce the challenge Explain to your pupils that they will be using their STEM skills to try and solve a problem linked to the impact of plastic waste around the world.</p>
2.	<p>What do you see? Look at a series of photos of photographs of plastic waste. How many different types of plastic can you see? What do you see? What are the most common types of plastic? What do these items do for people and why do we need them?</p>	<p>What do you see? To be used in conjunction with the Pupil sheet Starter Activity <i>What do you see?</i> the photographs from Nepal show a range of people (including children) picking through waste from waste tip sites on the outskirts of Kathmandu (the capital city of Nepal). The collectors often live in ex-treme poverty. Throughout the Plastics challenge pupils will find out how Practical Action's work in Nepal is supporting waste collectors.</p>
3.	<p>Rubbish facts... in the UK The average person produces 100kg of rubbish each year. The average person produces 10kg of plastic waste each year. The average person produces 1kg of plastic waste each year. The average person produces 100g of plastic waste each year.</p>	<p>Rubbish facts...in the UK The website wrap.org.uk/content/fast-facts-plastics has great facts about plastic waste in the UK.</p>
4.	<p>Kathmandu - Nepal Kathmandu is the capital city in Nepal. It has a population of 1,376,000 people (2020). Ask pupils if they know anything about the people and the environment in Nepal.</p>	<p>Kathmandu - Nepal Kathmandu is the capital city in Nepal. It has a population of 1,376,000 people (2020). Ask pupils if they know anything about the people and the environment in Nepal.</p>
5.	<p>Sayeed and Sunil Sayeed and Sunil received their protective clothing from a project that Practical Action funds in Nepal. The project aims to support waste collectors and pickers to have better working conditions.</p>	<p>Sayeed and Sunil Sayeed and Sunil received their protective clothing from a project that Practical Action funds in Nepal. The project aims to support waste collectors and pickers to have better working conditions.</p>
6.	<p>Sorting plastics Different plastics have different symbols which tells us the polymers they are made from and whether they can be recycled. At recycling plants, plastics get sorted by the polymers as it gives the biggest financial return and increases the potential uses for this material after recycling.</p>	<p>Sorting plastics Different plastics have different symbols which tells us the polymers they are made from and whether they can be recycled. At recycling plants, plastics get sorted by the polymers as it gives the biggest financial return and increases the potential uses for this material after recycling.</p>
7.	<p>Waste timeline For this activity you can use either the <i>Waste timeline cards</i> from the pupil activity sheets or the actual items. Tell the pupils that they are to assume the items have been thrown away in a household bin and therefore decompose at a landfill site.</p>	<p>Waste timeline For this activity you can use either the <i>Waste timeline cards</i> from the pupil activity sheets or the actual items. Tell the pupils that they are to assume the items have been thrown away in a household bin and therefore decompose at a landfill site.</p>
8.	<p>Check your timeline Check pupils understanding of the term 'decompose'. The time items take to decompose will depend on the climate and other environmental conditions in a landfill site. If you had time and wanted this activity to have more impact, you might choose to put some of these items under soil in the school grounds and observe their decomposition after a month, etc.</p>	<p>Check your timeline Check pupils understanding of the term 'decompose'. The time items take to decompose will depend on the climate and other environmental conditions in a landfill site. If you had time and wanted this activity to have more impact, you might choose to put some of these items under soil in the school grounds and observe their decomposition after a month, etc.</p>
9.	<p>Time to decompose There are many website which give timings for decomposition of different materials. They include down2earthmaterials.ie/2013/02/14/decompose/</p>	<p>Time to decompose There are many website which give timings for decomposition of different materials. They include down2earthmaterials.ie/2013/02/14/decompose/</p>
10.	<p>Lifecycle of plastic Pupils have the chance to carry out a Lifecycle analysis (LCA) of a plastic bottle as a way to reduce the environmental impact of the product. They can record their activity on the <i>Lifecycle analysis sheet</i>. It's possible to do a LCA on any product – so you might choose to differentiate this activity by selecting 'simpler' and more 'complex' plastic items.</p>	<p>Lifecycle of plastic Pupils have the chance to carry out a Lifecycle analysis (LCA) of a plastic bottle as a way to reduce the environmental impact of the product. They can record their activity on the <i>Lifecycle analysis sheet</i>. It's possible to do a LCA on any product – so you might choose to differentiate this activity by selecting 'simpler' and more 'complex' plastic items.</p>
11.	<p>4Rs The 3Rs Reduce, Reuse and Recycle are likely to be very familiar to pupils. Rethink gives the opportunity to look at the bigger picture of the product to ask questions such as, do we need this product at all? How else could the problem be addressed? To extend the LCA activity and for definitions that explain the difference between reuse and recycle go to practicalaction.org/schools/dt-engineering</p>	<p>4Rs The 3Rs Reduce, Reuse and Recycle are likely to be very familiar to pupils. Rethink gives the opportunity to look at the bigger picture of the product to ask questions such as, do we need this product at all? How else could the problem be addressed? To extend the LCA activity and for definitions that explain the difference between reuse and recycle go to practicalaction.org/schools/dt-engineering</p>



<p>12.</p>		<p>Recycling plastics: True or false? All of the fact cards are true! To extend this activity ask pupils to research facts around plastics and get them to make their own set of true or false cards.</p>
<p>13.</p>		<p>The Sustainable Development Goals The Sustainable Development Goals (SDGs) also known as the Global Goals are introduced to give pupils information about a set of 17 targets to address global problems. To find out more about the global goals go to practicalaction.org/schools/sdgs.</p>
<p>14.</p>		<p>The Sustainable Development Goals We recommend that you use the pupil sheet <i>Sustainable Development Goals</i>, so that pupils can consider which of the goal targets could be reached by addressing problems caused by plastic waste.</p>
<p>15.</p>		<p>Mystery plastics If you choose to run this Science investigation then you might choose to demonstrate safe ways to cut or mark the plastics. After the pupils have recorded their test results on the <i>Mystery plastics</i> sheet they can use the <i>Sorting key</i> to work out the different plastics they have investigated. You might want to show them the items that you cut the samples from e.g: Plastic milk carton, etc.</p>
<p>16.</p>		<p>Mystery plastics – results When you reveal the mystery plastics, you might want to extend the activity by asking the pupils to match up their mystery plastics with the relevant <i>Chemistry of Plastics cards</i> (pupil sheets) so that they can see the recycling codes, compound names, other uses, etc.</p>
<p>17.</p>		<p>Plastics challenge Now that the pupils have a good understanding of the problems caused by waste plastic their own challenge begins! You may want to choose to present the Nepal or UK Design contexts or allow the pupils to choose. The following three slides show two specific contexts.</p>
<p>18.</p>		<p>Plastics into profit To introduce this context you might like show the pupils snips from the videos of some of the women's group producing their crafts. They can be viewed here bit.ly/youtube-plastic-bag-coaster (How to make a coaster out of plastic bags) and/or bit.ly/youtube-plastic-bag-purse (How to make a purse from plastic bags).</p>
<p>19.</p>		<p>Plastics challenge - Nepal The Nepalese and UK challenges are both available for the pupils on the <i>Design contexts</i> sheet.</p>
<p>20.</p>		<p>Plastic challenge - UK This UK context for reusing plastic for products is an alternative for teachers and pupils who prefer a local context.</p>
<p>21.</p>		<p>Present your work If you are planning for your pupils to enter their Plastics challenge work for a CREST Award, then it is essential that they present their work. You will find the pupil <i>Feedback sheet</i> helps pupils to provide peer feedback. To make the feedback activity more fun, you might choose to ask pupils to present their work in a 'Dragon's Den' style.</p>



22.		<p>Product evaluation</p> <p>This is one way of pupils evaluating their products against their original design criteria. For other product evaluation tools go to practicalaction.org/schools/dt-engineering.</p>
23.		<p>Ingenious solutions</p> <p>The women's business is thriving. It's important to stress that when people secure an income that not only does it enable them to feed themselves and their families it also provides opportunities to lift themselves out of poverty longer term. Families enjoy better health and can send their children to school.</p>
24.		<p>Which Global goals?</p> <p>As shown and discussed in the previous PPT slide the impact of securing an income from reusing plastics has wide reaching benefits. Share the <i>Sustainable Development Goals</i> pupil sheet and encourage the pupils to think of how the enterprise has helped reached a range of goal targets. We suggest that at least ten of the goals are impacted by this project including Goals of No Poverty, Zero Hunger, Good Health, Quality Education, Gender Equality, Sustainable Cities, Responsible Consumption, etc.</p>
25.		<p>Celebrating success</p> <p>There are a number of ways in which pupils can gain acknowledgement for their work on the challenge. Firstly <i>Plastics challenge certificates</i> are available for each pupil taking part in the challenge. More formal opportunities are explained on the following slide.</p>
26.		<p>CREST Awards</p> <p>Taking part in the Plastics challenge is a great way for pupils to gain a CREST Award. The challenge is aligned to the Discovery Award, but can be as the starting point for a Bronze, Silver or Gold Award. More details in the Teacher's Guide.</p> <p>Big Bang Fair and competition</p> <p>Pupils who have taken part in a STEM challenge can enter their work into the Big Bang competition. This is a great way for pupils to showcase their work to other pupils and adults at a regional Big Bang event. If they become finalists they will be invited to attend the National Big Bang Fair which takes place in March each year. Both of these are amazing, inspiring experiences for young people. competition.thebigbangfair.co.uk</p>
27.		<p>Practical Action</p> <p>If you and your pupils have enjoyed the challenge, then please look at our other STEM challenges based on Practical Action's international work. They can be found here practicalaction.org/stem</p>