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| **Materials and their properties** | | | |
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| Matching materials to products | | | |
| **Subject(s):** Science  **Approx time:** 20 - 40 minutes | |  | **Key words / Topics:**   * Material * Cardboard * Fabric * Glass * Plastic * Wood * Bendy * Clear * Hard/Soft * Stretchy * Waterproof * Light/Heavy * Strong |
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| **Suggested Learning Outcomes** | |  |  |
| * To be able to describe the simple physical properties of a variety of everyday materials * To be able to compare and group together a variety of everyday materials on the basis of their simple physical properties. | | | |
| **Introduction** | |  |  |
| This is one of a set of resources developed to support the teaching of the primary national curriculum. They are designed to support the delivery of key topics within maths and science. This resource focusses on the evaluation of everyday products and what materials they are made form.  What are the properties that products need to be able to fulfil their required function? What are the reasons why specific materials used to make products? Understanding this will sow the seeds for learners to become informed consumers. | | | |
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| **Activity** | |  | **Teacher notes** |
| **Introduction (5-10 minutes)**  Teacher explains that materials all around us and give examples in the classroom. Then explain that learners are going to evaluate several everyday products, identifying the properties they need and the materials that would be suitable to make form.  **Product evaluation (10-20 minutes)**  Teacher to discuss the products as shown in the teacher presentation and listed below. For each product, discuss what properties are typically important, linking these to the materials used in the examples, then pose the following questions:   * Bag evaluation - which bag is best for carrying heavy shopping? * Bowl evaluation - which bowl would be best for a baby? * Chair evaluation - which chair would be best for the outdoors?   **Discussing the use of materials (5-15 minutes)**  Revisit some of the items identified in the introduction, or some other random products – how do learners now explain the materials used? | |  | This activity could be carried out in pairs or as table groups, to facilitate discussion.  **Materials in the room**  Consider stools, sinks, pens, crayons, paper displays on walls, doors, door handles etc. Discuss why those materials have been used, in the context of the properties needed to carry out what the product is needed to do.  **Product evaluation**  If possible, the teacher should acquire some actual products i.e. plastic/canvas shopping bag, glass/plastic bowl. Chairs will be in the room.  When describing each product, ensure that the key words used are understood by all the learners. Allow time for discussion for the properties required. |
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| **Differentiation** | |  |  |
| **Basic** | |  | **Extension** |
| Learners could be given the two pictures of a product and, with separately cut out words, place the most appropriate word onto the pictures.  Alternatively, key words for properties could be provided on sort cards, which learners could allocate to products. | |  | Learners could be given additional objects, such as pegs made from wood and plastic, or 300mm rulers made from wood, plastic and metal. They must explain why each material has been used for that product and which is the best choice.  Learners could carry out some basic comparative testing of the different materials in the products, to see how bendy/hard/strong they are.  Use the internet to investigate what common products are made from e.g. windows, window frames, cups, cutlery etc.. |
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| **Resources** | |  | **Required files** icon-docicon-pdficon-ppt |
| * Several actual products that the learners can hold and discuss. | |  | Materials and their properties presentation |
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| **Additional websites** | |  |  |
| * **Bitesize – What material do we use?:** <https://www.bbc.co.uk/bitesize/topics/zrssgk7/articles/z9pgcdm> * **YouTube: Year 1 materials and their properties** <https://www.youtube.com/watch?v=C4UlCEMlo9k> * **YouTube: 3C Materials song:** <https://www.youtube.com/watch?v=xOKr462HLc0> | | | |
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| **Related activities (to build a full lesson)** | |  |  |
| **Starters** (Options)   * Show the **YouTube: 3C Materials song:** <https://www.youtube.com/watch?v=xOKr462HLc0> * Discuss the materials in the room. | **Extension** (Options)   * Show bitesize video What material do we use?:<https://www.bbc.co.uk/bitesize/topics/zrssgk7/articles/z9pgcdm> * Find 3 things at home made from wood. * For some selected additional objects, learners explain why each material has been used for that product and which is the best choice. * Learners could carry out some basic comparative testing of the different materials in the products, to see how bendy/hard/strong they are. * Use the internet to investigate what common products are made from e.g. windows, window frames, cups, cutlery etc.   **Plenary**   * Discuss why different materials are used for everyday products and the options this gives to their use. | | |
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| **The Engineering Context** film |
| * Engineers need to know what the best materials are when making everyday products. Chairs, for example, can be made from a wide variety of materials. Engineers will test them for hundreds of hours to make sure the materials are safe. |

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| **Curriculum links** | |
| **England: National Curriculum**  Science  KS1 Year 1 Everyday materials   * describe the simple physical properties of a variety of everyday materials * compare and group together a variety of everyday materials on the basis of their simple physical properties. | **Northern Ireland Curriculum**  Science and Technology  KS1 Place   * why materials are chosen for their use |
| **Scotland: Curriculum for Excellence**  Sciences  Materials - properties and uses of substances   * SCN1-15a | **Wales: National Curriculum**  Science  KS2 The sustainable earth   * 3. a comparison of the features and properties of some natural and made materials * 4. the properties of materials relating to their uses |
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| **Assessment opportunities** | | |
| * Informal teacher assessment of learner explanations of the properties needed and the materials used. | | |
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