|  |  |  |  |
| --- | --- | --- | --- |
| **Niceometer** | | | |
|  |  | |  |
| A graphics project making a nice or naughty gauge | | | |
| **Subject(s):** Design & Technology, Mathematics  **Approx time:** 45 - 60 minutes |  | | **Key words / Topics:**   * Christmas * Fold * Gauge * Measure * Naughty * Net * Nice |
|  |  | |  |
| **Suggested Learning Outcomes** |  | |  |
| * To understand that gauges are used to measure things * To be able to make a graphic product by cutting and folding a net | | | |
| **Introduction** |  | |  |
| This is one of a series of resources designed to allow learners to use Christmas themes to support the teaching of the primary National Curriculum. They are designed to support the delivery of key topics within design & technology and maths.  This resource involves making a graphic product from a net. Nets are important as they allow 3D objects to made when folded. | | | |
| **Purpose of this activity**  In this activity learners will use a net to make a gauge, customised to their own design.  This activity could be used as a main lesson activity to teach learners how to use nets to make useable objects. It could also be used as one of several activities within a wider scheme of learning focussing on the use of maths to understand the use of nets. | | | |
|  |  | |  |
| **Activity** |  | | **Teacher notes** |
| **Introduction (5 minutes)**  Teacher to use the presentation to explain what a gauge is, asking learners to give examples from their own experience.  Teacher to explain that learners are going to use a net to make a Niceometer, so they can show whether they have been nice or naughty, then hand out the equipment needed for the task to learners.  **Making the Niceometer (35-45 minutes)**  Teacher to demonstrate the steps shown in the teacher presentation and listed below.   * Step 1 - Add graphics and colour to both the gauge and the arrow. * Step 2 - Cut around the gauge using scissors. * Step 3 - Cut out the ‘V’ for the stand. * Step 4 - Put a piece of sticky tack behind the hole in the middle of the gauge. Push the sharp point of a pencil through to make the hole. * Step 5 - Cut out the arrow using scissors. * Step 6 - Put a piece of sticky tack behind the hole at the bottom of the arrow. Push the sharp point of a pencil through to make the hole. * Step 7 - Attach the arrow to the gauge by putting a split pin through the two holes. * Step 8 - Fold the gauge along the dotted line so it forms an L- or V- shape when looked at from the side. * Step 9 - Fold up the V stand. Use some sticky tape if needed to attach it to the back of the gauge to help it stay up.   Learners to complete each step to conduct the activity for themselves. The teacher presentation could be left on the whiteboard as a supporting guide as they do this.  **Discussing the results of the activity (5-10 minutes)**  Three kisses and a wish. Learners show their Niceometer to a peer, who must identify three good things about it and one thing that could be improved. |  | | This activity demonstrates how nets are used to make graphic products.  If available, the handout should be printed on thin card as the greater rigidity improves performance.  The printing on the front of the handout is for guidance. Learners can place their designs on what is currently the back if they prefer a blank surface. This allows the potential for more creative designs but may require the sequence to be changed if applying artwork by hand, with the cutting out done before the graphics are applied.  The graphics could be added by hand or using IT. The examples at the end of the presentation were made by learners using computers at home, during a lesson delivered using conferencing software.  At step 3, the V for the stand should be cut out by an appropriate adult using a craft knife. |
|  |  | |  |
| **Differentiation** |  | |  |
| **Basic** |  | | **Extension** |
| Pre-prepare the holes in the nets (these could be drilled through a stacked set of handouts).  Provide learners with pre-cut nets of the Niceometer gauge and/or arrow.  Allow graphics to be applied from a pre-sourced library of images. |  | | Learners could add additional graphics and detail, for example quantifying the scale. They could also draw up a list of actions or events and quantify how each would affect their gauge!  Learners could design gauges for other applications. |
|  |  | |  |
| **Resources** |  | | icon-doc**Required files** icon-pdficon-ppt |
| * A4 paper or thin card for handouts * Scissors * Rulers * Brass split pin fasteners * Drawing and colouring equipment |  | | Teacher presentation – Niceometer  icon-pdf Adorable Advent – Niceometer |
|  |  | |  |
| **Additional websites** |  | |  |
| * **Bitesize** – What are nets? - <https://www.bbc.co.uk/bitesize/topics/zt7xk2p/articles/z247tv4> | | | |
|  |  | |  |
| **Related activities (to build a full lesson)** |  | |  |
| **Starters** (Options)   * Show some images of different gauges, asking learners what they are used for and why they are important. * Show some examples of products made from nets, such as boxes or packaging. Ask learners to describe how they think these were made. * Watch the Bitesize video on nets | | **Extension** (Options)   * Learners could add additional graphics and detail, for example quantifying the scale. They could also draw up a list of actions or events and quantify how each would affect their gauge! * Learners could design gauges for other applications.   **Plenary**   * Three kisses and a wish. Learners show their calendar to a peer, who must identify three good things about it and one thing that could be improved. | |
|  |  | |  |

|  |
| --- |
| **The Engineering Context** film |
| * Engineers use gauges to give visual displays of the amounts or levels of things. This can range from the volume control on a television to the fuel tank on a car to a temperature gauge on a machine. |

|  |  |  |
| --- | --- | --- |
|  |  |  |

|  |  |
| --- | --- |
| **Curriculum links** | |
| **England: National Curriculum**  Mathematics  KS2 Geometry   * recognise, describe and build simple 3-D shapes, including making nets. | **Northern Ireland Curriculum**  KS2 – Mathematics and Numeracy  Shape and Space   * build and make models with 3D shapes; create pictures and patterns with 2D shapes |
| **Scotland: Curriculum for Excellence**  Shape, position and movement  MTH 2-16   * Through practical activities, I can show my understanding of the relationship between 3D objects and their nets. | **Wales: National Curriculum**  Mathematics  KS2 – Using geometry skills   * construct solids from given nets |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Assessment opportunities** | | |
| * Informal teacher assessment of practical skills while making the gauge. * Formal teacher assessment of the completed gauges. | | |
|  |  |  |