

<b>Subject:</b> DT	<b>Year Group:</b> 6	<b>Unit:</b> Frozen Kingdom – Enterprise.
<b>Key Question:</b>		
<b>First- hand experience:</b>		

<b>NC Objectives to be addressed:</b>	<b>Prior Learning required:</b>
<p>Design</p> <ul style="list-style-type: none"> <li>♣ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</li> <li>♣ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> </ul> <p>Make</p> <ul style="list-style-type: none"> <li>♣ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>♣ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> </ul> <p>Evaluate</p> <ul style="list-style-type: none"> <li>♣ investigate and analyse a range of existing products</li> <li>♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> <li>♣ understand how key events and individuals in design and technology have helped shape the world</li> </ul> <p>Technical knowledge</p> <ul style="list-style-type: none"> <li>♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> </ul>	<p>Yr4 - Circuits</p>

♣ understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

### Key Vocabulary:

Tier 3 Purpose, User, Enterprise, Questionnaire, Pattern, Knot, Stitch, Profit margin, Circuit

### Sequence of learning:

#### Knowledge to be taught (Declarative):

- To know what enterprise is.
- To know what a headlamp is used for.
- To know who invented the first headlamp - Petzl in 1972.
- To know what a questionnaire is used for.
- To know what a pattern is.
- To know what a profit margin is.
- To know why a knot is needed in the thread when sewing.
- To know why back stitch is the best stitch to use when making a beanie.

**DESIGN BRIEF** – TO DESIGN AND MAKE A BEANIE WHICH INCLUDES A LIGHT.

#### 1 INVESTIGATE/TECHNICAL KNOWLEDGE

Watch the clip as an introduction - **NAO rechargeable headlamp with REACTIVE LIGHTING by Petzl**

[https://www.youtube.com/watch?v=FZb3k\\_x067w](https://www.youtube.com/watch?v=FZb3k_x067w)

Explain to the children they will be completing an enterprise experience.  
Explain what this means – see key knowledge.

#### Skills to be developed (Procedural):

- Can write a questionnaire – see example <https://www.surveymonkey.com/r/5MWT3XG>
- Can understand what a profit margin is – see key knowledge.
- Can use answers on a questionnaire to inform my design, e.g., if the customer has requested a red hat, then the material used in the design, needs to be red.
- Can measure out and make a paper template of a beanie hat – see slouchy beanie hat instructions.
- Can attach the paper template to chosen material using pins - see slouchy beanie hat instructions.
- Can thread a needle.  
<https://www.youtube.com/watch?v=RycqcXvRZvc>
- Can tie a knot - [https://www.youtube.com/watch?v=xM5n\\_gmplrY](https://www.youtube.com/watch?v=xM5n_gmplrY)
- Can use back stitch to sew material together – see [https://www.youtube.com/watch?v=rZ\\_wVC84UmM](https://www.youtube.com/watch?v=rZ_wVC84UmM)
- Can make a circuit to light a bulb – see key knowledge.
- Can attach a circuit to a beanie hat.

Introduce the brief - TO DESIGN AND MAKE A BEANIE WHICH INCLUDES A LIGHT.

*Share the saying - "When your feet are cold, cover your head" - Inuit saying.*

Explain all the activities involved in enterprise – Questionnaire, costing, design, make and evaluate/present.

Think about what the customer would want in a hat – colours, size, material. (See key knowledge for what a questionnaire is used for).

T model how to design a questionnaire – what do we want to find out? Brainstorm questions.

### **DESIGN**

**2** Look at the questionnaire responses and discuss findings. How are the answers going to inform the design process and costing?

Explain to the children the importance of costing and profit margin. Share what costing and profit margin is, (see key knowledge).

Using the information from the questionnaire, T model how this can inform the design. T draw a design of the hat/beanie with labels. Write a list of materials needed.

Children design their own hat/beanie.

Costing – research the cost of materials and light to help decide the overall cost of the hat – think about profit margin.

### **MAKE**

**3** Show children the design of the beanie template. T model how to draw out template on paper. Children draw their own.

**4** T model how to transfer the paper template to the material using pins and then cut around the template – see sewing notes.

**5** T model how to thread a needle and tie a knot in the thread. Then sew the darts, (see slouchy beanie hat instruction). Children thread needle and tie a knot ready to sew their darts.

**6** T model – fold the hat in half. Sew around the open edges, leaving an opening on the long side for turning. Demonstrate how to turn the hat through the opening. Children sew their beanie. The beanie should be complete.

**7** Discuss the next stage of beanie. Ask the question – How are we going to add the light aspect of our design? Brainstorm ideas. Children then decide how to attach the circuit, light, and battery pack – see key knowledge.

Make the link to the clip about **NAO rechargeable headlamp with**

**REACTIVE LIGHTING by Petzl**

Children attach their circuit.

### **Evaluate**

**8** Children evaluate their beanie against the original design and questionnaire.

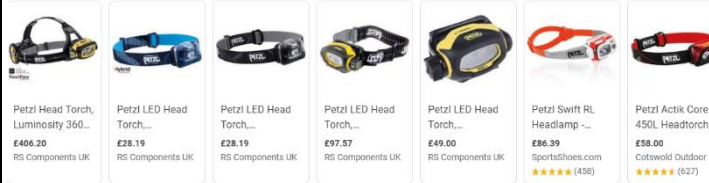
**9** Children present their beanie with light to parents.

**OPTIONAL EXTRA – Add switch to circuit.**

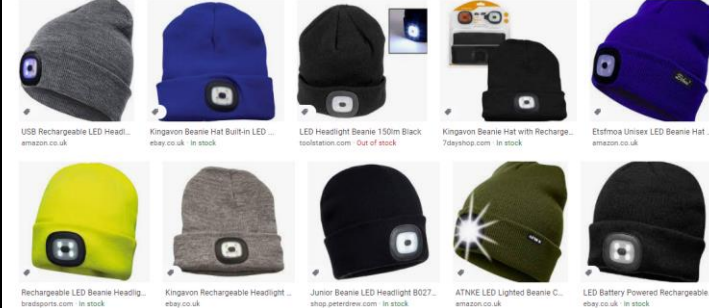
DT images



Examples of head torches



Examples of LED headlight beanies



Assessment:

Design in sketchbook

Key Knowledge:

Information about the **NAO rechargeable headlamp with REACTIVE LIGHTING by Petzl**

[https://www.ukclimbing.com/news/press/petzl\\_ao\\_a\\_new-generation\\_head\\_torch-4367](https://www.ukclimbing.com/news/press/petzl_ao_a_new-generation_head_torch-4367)

Petzl information

[https://www.petzl.com/brand/s/Family-Ownership?language=en\\_US](https://www.petzl.com/brand/s/Family-Ownership?language=en_US)

Enterprise

What is enterprise?

**Enterprise** is a skill. Put simply, enterprise is the willingness of an individual or organisation to:

- **Take risks.** Setting up a new business is risky. Even if the entrepreneur has carefully researched the market, there's always a chance that customers may reject the product and that a loss will be made.

- **Show initiative** and 'make things happen'. Successful entrepreneurs have the drive, determination and energy to overcome hurdles and launch new businesses.
- **Undertake new ventures**. An entrepreneur has to have the imagination to spot business opportunities that will fill gaps in the market.

A **questionnaire** is a research instrument consisting of a series of questions for the purpose of gathering information from respondents.

**Profit margin** - A **profit margin** is a **percentage** that represents how much revenue a business earns after all expenses are accounted for. The **profit margin** formula looks something like this: **Profit Margin** = (Total Sales – Total Expenses)

Template to make a beanie hat - <https://blog.bernina.com/en/2018/11/sew-a-beanie-hat-simple-pattern/>

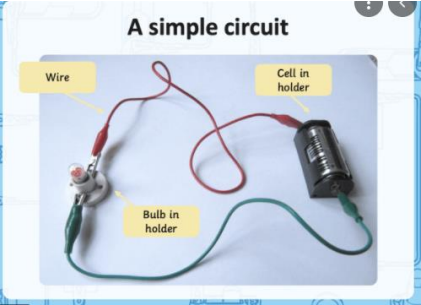
<https://www.onthecuttingfloor.com/wp-content/uploads/2017/11/HAT-PATTERN-PRINTING.jpg?x80603>

**How to make a beanie hat -**

[https://www.google.com/search?q=how+to+make+a+beanie+hat&rlz=1C1GCEU\\_enGB914GB914&oq=how+to+make+a+beanie&ags=chrome.1.69i57j0i20i263j0l8.4211j0j4&sourceid=chrome&ie=UTF-8#kpvalbx=3k3cYNSkML6KhbIPxf6h2Ao40](https://www.google.com/search?q=how+to+make+a+beanie+hat&rlz=1C1GCEU_enGB914GB914&oq=how+to+make+a+beanie&ags=chrome.1.69i57j0i20i263j0l8.4211j0j4&sourceid=chrome&ie=UTF-8#kpvalbx=3k3cYNSkML6KhbIPxf6h2Ao40)

**History of light**

<https://www.torchspot.com/history-flashlight/>

	 <p>A simple circuit diagram showing a cell in a holder, a bulb in a holder, and wires connecting them in a loop. The components are labeled: Wire, Cell in holder, and Bulb in holder.</p> <p>Circuit - Taken from twinkl.</p>
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<b>Let Knowledge drive your philosophy</b>	Knowledge is empowering and provides a foundation for achieving success, reaching deeper understanding and being creative. The more children know, the more they can learn.
<b>Consider a broad range of knowledge forms</b>	Identify the types of knowledge that are necessary for the children to know. Declarative – What are the key facts all children should know? Procedural – What are the things that all children should be able to do (skills) Experiential – What knowledge can only be gained first hand or by experiencing or doing certain activities.
<b>Specify the knowledge in detail</b>	Identify the key knowledge that you want to include and the level of detail appropriate for their stage of learning.
<b>Sequence and map the knowledge coherently</b>	Sequence the knowledge content into a coherent flow. Ensure there are deliberate step by step stages to the learning.
<b>Teach knowledge to be remembered</b>	Ensure that knowledge and learning are regularly returned to to support the accumulation of knowledge over time and not creating over-load.
<b>Identify prior-knowledge necessary</b>	Ensure that where prior-knowledge is required it has been taught and is known. Build upon this carefully.
<b>Identify next steps</b>	Identify the most basic steps first. What might pupils struggle with? This may be vocabulary or a specific operation.
<b>Design instructional input</b>	For each stage of the planning identify how the content will be explained and modelled.
<b>Design practical tasks</b>	Plan opportunities for practice and retrieval to support pupil’s fluency and understanding.
<b>Identify core concepts and key questions</b>	Express your curriculum through a set of big questions and fundamental concepts that underpin it.
<b>Map the big picture, go deeper and make authentic connections</b>	Identify the main areas of learning that will provide the structure for your knowledge, organise this into a sequence and identify areas where you can, ‘Pitch it up’ so that challenge is appropriate for all. Make links across subjects where appropriate.
<b>Consider where first hand experience is necessary</b>	Review the content of the curriculum to identify where pupils will need first-hand experiences to access the knowledge and learning more fully. This could be resources within the classroom such as cuisenaire rods, visits to specific places or practical activities.
<b>Consider where conceptual understanding is necessary</b>	This could be learning terminology, watching a televised version of a book before reading it etc.
<b>Provide opportunities for deeper learning</b>	Give pupils opportunities to explore a variety of problems within the topic <ul style="list-style-type: none"> <li>• Ask for deeper levels of analysis or more sophisticated writing</li> </ul>

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|  | <ul style="list-style-type: none"><li>• Applying knowledge to unfamiliar scenarios</li><li>• Insist upon the correct use of terminology in both oral and written outcomes</li><li>• Select more challenging texts and support access to them</li><li>• Consider always – are children having to ‘think hard’</li></ul> |
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