



Sustainable Solutions

CREST Discovery Day

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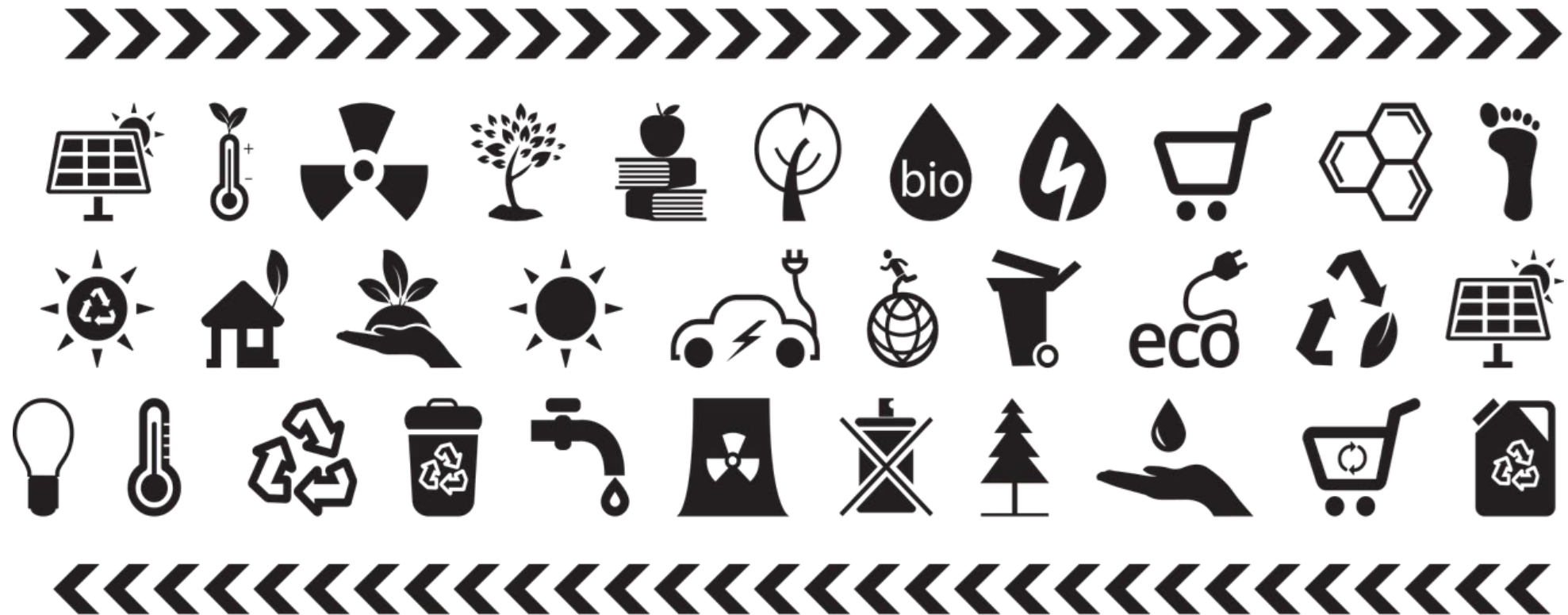
Llywodraeth Cynulliad Cymru
Welsh Assembly Government

To download this presentation in PowerPoint format visit this link:
<https://crestawards.squarespace.com/s/Sustainable-Solutions-PowerPoint.pptx>

Industry and the environment



Sustainable industrial development



Challenges



Your task:

Come up with an idea for a sustainable start-up business linked to your local community



CREST Discovery Award



Name

School

Your challenge



Use this CREST Discovery Award Passport to think about your work today.

Be honest about what you did well and where you could improve.

Have fun and make sure you contribute as much as you can to your team's effort to achieve your Discovery Award.



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| |
|---|
| 1. Your role What was your role in the team? |
| Did you manage your time well? |
| Were you fully involved in the challenge? (circle one) Some of the time All day |

| |
|--|
| 2. Team working What was your best contribution to the team? |
| How did you support other team members? |

| |
|---|
| 3. Problem solving Did your team achieve everything you were asked to do? (circle one) Yes Mostly No |
| Explain your answer: |

| |
|---|
| What was the biggest challenge to you personally? |
|---|

| |
|---|
| 4. Research How did you find out information to help you with the challenge? |
| Could you have done more research to help your team? (circle one) No Maybe Yes |
| Explain why you think this: |

| |
|---|
| 5. Knowledge Do you know more about the topic of the challenge that when you started the day? (circle one) Lots A bit No |
| How did what you learned help you with the challenge? |
| What is the most interesting or surprising fact that you learned today? |

| |
|---|
| 6. Skills What would you say are the three main skills that you have learned or improved today? |
| 1. |
| 2. |
| 3. |

| |
|--|
| 7. Communication How well did you listen to the views of other team members? |
| How did your team decide what to include in your presentation? |
| What was your contribution to the presentation? |
| Overall, how do you rate your performance today? (circle one) Brilliant OK |
| Please explain why: |

Have a look at the next step CREST Bronze Awards to do more projects like this!

British Science Association www.britishschools.org Registered Charity No. 212479 and SC039236

Fill out your **CREST Discovery Passport** throughout the day to document your learning and earn your CREST Award.

Team roles

Project Manager

Makes sure the whole team and the project is on track.

Research Manager

Helps other members of the team to gather examples and evidence using various resources, including the workshops, and reports back on this as part of the presentation.

Communications Manager

Responsible for ensuring that the team communicates its ideas effectively when presenting to the other teams, and responsible for coordinating the presentation.

Engineer

Ensures that the implications of the design ideas are thought through. Responsible for researching the materials and technology required to make the design ideas work.

Design Lead

Responsible for the physical design of the product.

Marketing Lead

Responsible for developing a marketing plan and thinking about who this tool would be useful for, how and why.



Starter activity: Industry in Wales – timeline challenge

1760 – 1820/40

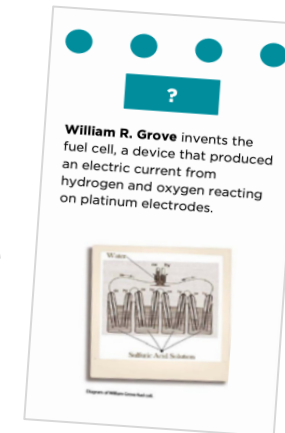
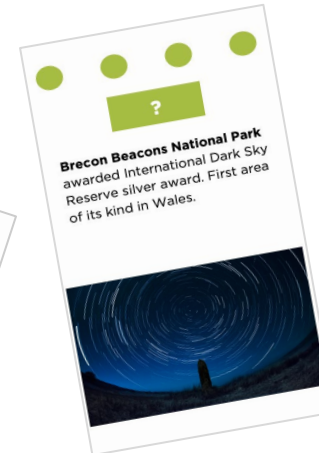
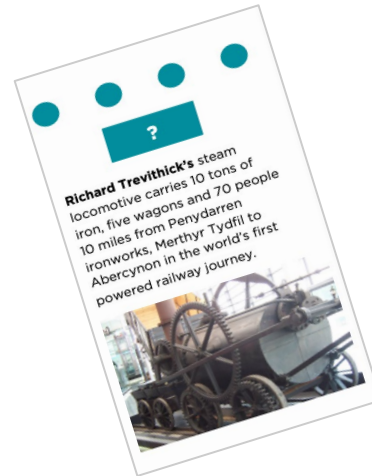
Industrial Revolution

1820

Antarctica discovered

1840s

Coal mining begins in the
South Wales valleys



Put the cards in the right order on the timeline to discover how Welsh industry has changed over the last 200 years.

Answers:

Industry in Wales – timeline challenge

1760 – 1820/40

Industrial Revolution

1804

Richard Trevithick's steam locomotive

1820

Antarctica discovered

1839

William R. Grove invents the fuel cell

1840s

Coal mining begins in the South Wales valleys

1852

Brunel's Chepstow Bridge opened

1887

Sherlock Holmes makes his debut

1890s

Cardiff becomes the busiest port in the world

1909

First million-pound cheque

1914 – 1918

First World War

1920s

271,000 working in Welsh coal mines

1926

TV invented

1939 – 1945

Second World War

1948

NHS founded

1948

Hoover opens in Merthyr Tydfil

1951

Abbey Works steelworks opens

1958

Donald Davis devises information packet switching

1969

First moon landing

Answers:

Industry in Wales – timeline challenge

1984

Dinorwig Hydroelectric Power Station commissioned

1988

Intergovernmental Panel on Climate Change (IPCC) established

1989

Internet invented by Tim Berners-Lee

1992

Kyoto Protocol – international treaty committed to reducing greenhouse gases signed by 192 countries

2000

Human Genome deciphered

2007

Sir Martin Evans wins Nobel Prize

2007

Apple iPhone launch

2008

Bloodhound SSC partnership with Swansea University

2008

Last deep mine in Wales closed

2009

Dr Lyn Evans at CERN

2012

Brecon Beacons awarded International Dark Sky silver award

2012

Sony begins production of Raspberry Pi

2013

Biopharm becomes Europe's leading supplier of medical grade leeches

2013

Alzheimer's breakthrough jointly led by Cardiff University

2014

Wales' largest Energy Recovery Facility opens in Cardiff

2015

Paris Agreement international accord to address climate change signed by 195 countries

2015

Gwynt y Mor wind farm opens

Your task:

Come up with an idea for a sustainable start-up business linked to your local community





RAPID Design Thinking process

Reveal

At its most basic, design is a solution to a problem. So, where do we find problems worth solving? We must reveal them! **Research and decide on a problem that you will focus on.**

Alternatives

Now that you have a question as your goal, you need to come up with a solution to answer it. In fact, you need to come up with many alternative solutions. **Brainstorm possible solutions and decide which idea to take forward.**

Prototype

Create a model or diagram of your device.

Iterate

Remember to **get feedback others** to help **improve your design!** What went well? What didn't? What changes can you make to the prototype?

Develop

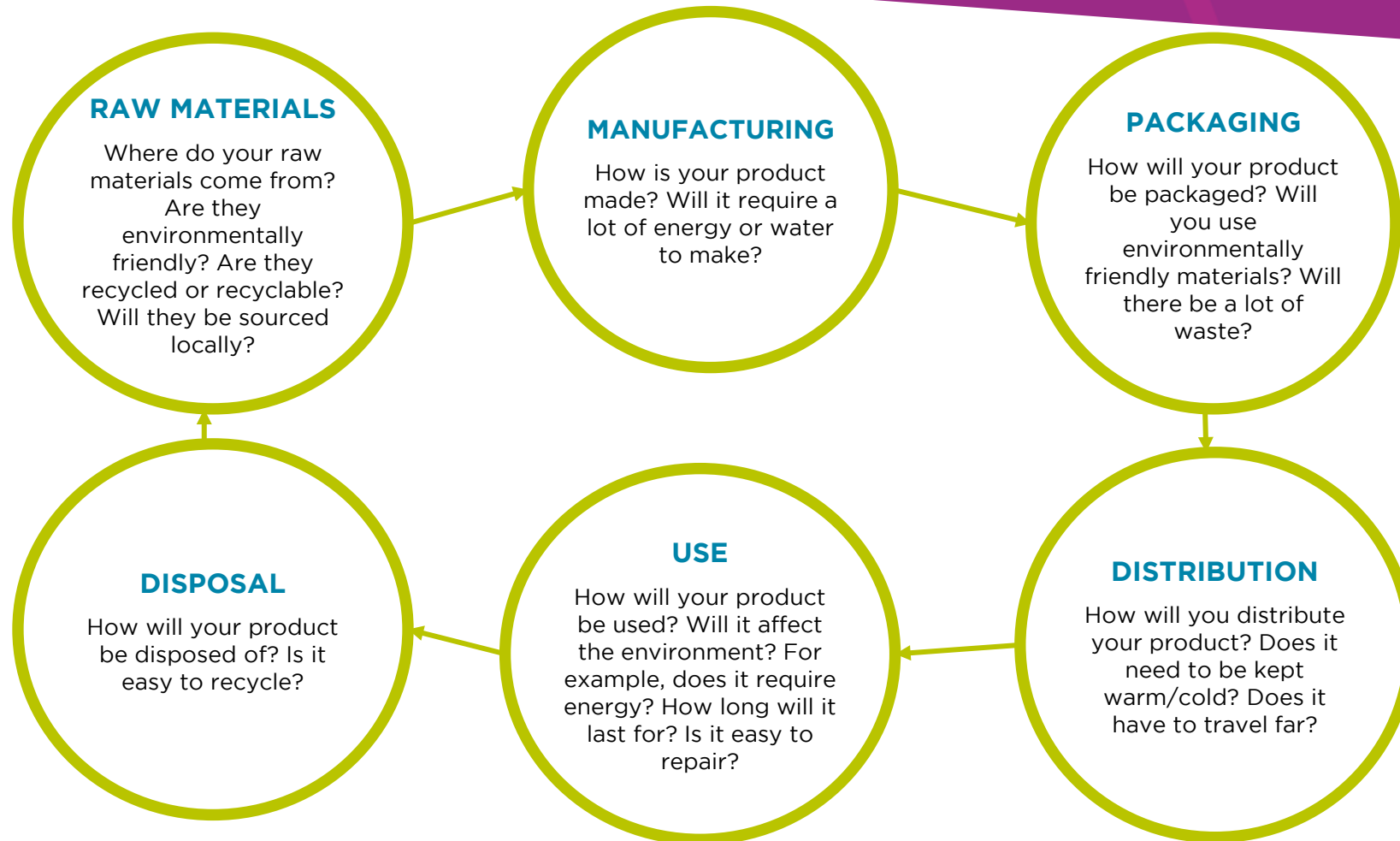
Create a plan to define each team member's role and work out the resources you will need to complete your project.

Target audience



- Who is it for?
- What is their age, sex, job, salary?
- Where do they live? What type of home do they have, and what is their family life like?
- What education have they had?
- How much free time do they have? What are their interests?
- What kinds of products do they already use?
- What do they want from our invention/product? How will it help them to achieve their goals/needs?

Life cycle analysis



Sustainability analysis

Procurement

What things will you need for your business? Make a list. Where will you buy these from? Can you source them sustainably by buying things that are made from recycled or environmentally friendly materials, by buying less, by buying things that come with minimal or no packaging, etc.?

Water

How much water will it take to provide your service? Will the water be polluted/contaminated? What will happen to this water after your business has used it?

Energy

How much energy will it take to provide your service and where will this energy come from?

Waste

How much waste will your business create? What steps will you take to minimise waste? Can your waste be recycled?

Transport

The transportation involved in your business may relate to the other elements on this sheet. What will you do to reduce the amount of transportation required?

Positive change

Will your business do anything to actively improve the environment by contributing to biodiversity, educating others about environmental issues, etc.?

Plenary

Reflect on your project and fill out any gaps in your **CREST Discovery Passport** in order to earn your CREST Award.

