**What impact have advances in Materials Science had on boat design?**

**Task**

Your task is to answer the Big Question above using a wide range of information.

You may find the information available in STEM Crew’s digital resources helpful. These resources are all inspired by INEOS TEAM UK, the British challenger for sailing’s America’s Cup.

**Not heard of the America’s Cup before?**

Find out more about the America’s Cup, the formula 1 of sailing and the amazing 60mph sailing boats that race for the Cup by watching:

[INEOS TEAM UK's challenge for the America's Cup](https://benainslieracing.sharepoint.com/sites/1851/Shared%20Documents/Education%20Projects/STEM%20Crew/Resources/Distance%20Learning%20Projects/INEOS%20TEAM%20UK's%20challenge%20for%20the%20America's%20Cup)

and having a look at the information and videos on [www.stemcrew.org](http://www.stemcrew.org)

**How to begin**

1. Use the mind map sheet to plan how you will answer the Big Question
2. Watch the videos listed below and make notes about what you have learned
3. Communicate your learning by choosing your preferred presentation method

There is no single correct answer to the question. Answering the question involves research and independent learning in order to be able to present your findings to your teacher and class. You can also use information from other sources to help answer the question.

This investigation is an extended project and you should aim to spend 5-8 hours on it. Keep your **project log** up to date to make a note of all your hard work!

**Videos**

The following videos will help you answer the Big Question.

<https://www.stemcrew.org/resources/materials-and-their-uses/>

<https://www.stemcrew.org/resources/modern-materials/>

<https://www.stemcrew.org/resources/speed-distance-time/>

<https://www.stemcrew.org/resources/life-cycle-assessment/>

**Presenting your work**

Here at STEM Crew HQ we have a focus on **creativity.** So why not be creative with how you present your project? Here are some ideas to get you started;

* Create a vlog
* Use green screen app to virtually put yourself at the INEOS TEAM UK Base or on the boat itself
* Produce a Prezi <https://prezi.com/>
* Keep it formal and produce slides using PowerPoint
* Really impress your teachers and use the ExplainEverything app <https://explaineverything.com/download/>

**Mind Mapping**

Focus the question to a more specific point – for example, which materials do you want to study in more detail, or which manufacturing methods have changed in recent years? Remember you can use a combination of multiple factors.

Why have you come to this conclusion? Back up your opinions with evidence.

What impact have advances in Materials Science had on boat design?

Decide how you want to present your project. There are some ideas listed above to provide inspiration, but do not feel like you are limited to these. Be as creative as you can!

How can the team learn from previous experiences to help them when choosing materials for the yacht? Which team members may have experience in this?

How can we learn from the materials science the team uses to influence our lives?

What is the end goal of INEOS TEAM UK? Why might we want to advance our material choices? How might this influence what we do?

What are the key parts of the boat that the engineers will look at using advances in materials science to improve? Would we use the same materials for all parts of the boat?

Would all the engineers do the same job? What specialists might be needed to design a winning boat?

**Project Log**

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| Date | Research and investigation completed: | Time taken |
| **23.3.20** | **Watched video and made notes about history of America’s Cup** | **30 mins** |
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**Other information used**

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