ENGINEERING GUIDANCE

THE BIG BANG COMPETITION

You should enter your project into the engineering stream if your work focuses on invention, design, programming, or manufacture.

The below guidance is to help you present your project work against the judging criteria. The questions listed under each section are simply prompts to get you thinking about each step of your project, however it is in no way a checklist!

The main advice from the judges is for competitors to do their best and provide as much relevant information as possible. They also understand that recent restrictions may impact students' ability to fully complete their projects and will of course bear this in mind when judging projects.

PROJECT OVERVIEW

A brief summary of your project.

This is the first time judges will hear or read about your project. Judges look for a brief but clear outline of your project aims, how you planned to achieve your project aims, your key results or findings and conclusions, and how your work may impact the wider community/world.

PROJECT CONCEPT

What is the aim of your project? Why did you choose this project?

This is the beginning of your project journey. Judges will look for a clear project aim(s), your reason for choosing this area to focus on, and an understanding of the wider impact your project may have on the world.

To get started, think about the following questions:

- *What is the aim(s) of your project? What are you hoping to discover and/or create?*
- *What problem are you trying to solve and how did you identify this problem?*
- *Why did you choose to work on this project? Who or what inspired you?*
- *Who will benefit from your work? What impact could your project have on your chosen industry and/or the wider community/world?*

PROJECT PROCESS

How did you set out to achieve your project aim(s)?

Next, we want to know what steps you took to achieve your project aim(s). Judges look for consideration of different designs/approaches to achieve your project aim(s) and why you chose your selected design/approach, and an understanding of how you planned and organised your time.

TO GET STARTED, THINK ABOUT THE FOLLOWING QUESTIONS:

- *Have you done any background research? If so, what did you learn, and how did this help you understand the topic your project focuses on? Do you know if anyone else tried to solve the same problem/issue your project focuses on? How are you going to do it differently, or how does your project build on their work?*

- *Who is your target audience? How did you identify this audience and how did this impact planning your design?*

- *What different designs or approaches could you use to achieve your project aim(s)?*

- *What are the benefits and negatives of the design or approach you chose?*

- *How did you plan to carry out your work? How did this plan factor in available resources/constraints?*

- *How did you plan your time and organise your work? Did your tasks have a logical order? Did you have to work towards a deadline?*

- *If working as a team, how did you delegate tasks amongst yourselves? Who was responsible for what?*

PROJECT OUTCOMES

What did you find out?

It's time to tell us what you achieved. Judges will be looking for clear communication of results, an understanding of how your results support or challenge your project aim(s), the conclusions and how your findings impact the wider community/world.

To get started, think about the following questions:

(if you were able to complete your project build, please look at this section):

- *What was your project outcome?*

- *Discuss your outcome, tell us what you found out, did the design work as expected?*

- *Did you experience any challenges during the implementation?*

- *Did you have to modify your project plan during the process?*

- *How did you test or verify your project outcome?*

- *How well does your project outcome solve the problem you set to tackle? If less well than intended, what could you have done differently?*

- *Based on your testing, what impact would your project have on your chosen industry or/and wider community/world?*

(if you were unable to carry out your project as planned, please look at this section):

- *Did you manage to do any small-scale prototyping or testing? What did this show?*

- *If you had been able to complete your project, what would you have expected to see? Why would you have expected to see these results?*

- *What difficulties might you have expected during the project process, and how would you have overcome these?*

- *How would you have tested and evaluated your outcome?*

- *What impact would your project have on your chosen industry or/and wider community/world?*

NEXT STEPS AND REFLECTIONS

What could you do to continue building on your work? What did you learn about STEM project work?

This is the time to reflect on the work you have achieved so far. Judges will be looking for ways you can continue to build on your project work, things you might have done differently, what skills you feel you have developed and what you enjoyed.

To get started, think of the following questions:

- *What did you learn whilst working on your project?*
- *What could you do to continue building on the work you have already achieved?*
- *What are the next steps to continue build on your project?*
- *Could you bring your project to the commercial or industrial market?*
- *If you could do your project again, would you change anything? If so, what?*
- *Did you learn any new skills?*
- *Were there any aspects of the project that were challenging? How did you overcome any challenges?*
- *What was the most enjoyable part of the project work, and why?*
- *What advice would you give to someone who wanted to do STEM project work in the same field?*

PERSONAL SKILLS

Throughout your entry, judges will be looking for evidence of a range of skills you demonstrate throughout your project entry, these might even be skills you didn't know you had developed!

Judges will be looking for:

- *Understanding and application of engineering method*
- *Clear communication*
- *Enthusiasm for your project*
- *Evidence of innovation and creativity*
- *Problem solving and how well you dealt with challenges*
- *Teamwork and leadership (group projects)*
- *Independence and self-motivation (individual projects)*

GOOD LUCK!

For more tips, ideas and resources, head to
www.thebigbang.org.uk/competition