Design Education
Where Design Comes From?
Creating a Prosthetic Hand and Arm
Learning Intention and Success Criteria

• We are learning to design and create a plan for a solutions to complex real world problems that can be solved through engineering.

• You are successful if you can explain how you would take your plan and prototype and set the next steps for making your plan a reality.

(Working with a theme, CBCI)
A robotics graduate has won the James Dyson Award for a 3D-printed prosthetic hand that costs a fraction of current artificial limbs. Joel Gibbard, a robotics graduate from Plymouth University, has designed a prosthetic hand that can be produced in 40 hours; and with a price tag of less than £1,000, it is seen as an affordable alternative to more advanced robotic prosthetics, which can cost between £30,000 and £60,000. The 25-year-old said he was inspired by a six-year-old girl who lost all her limbs to meningitis and wasn’t using any hand prosthetics because she found them too “ugly” and “heavy”.

“The problem of current robotic prosthetics is their financial barriers. The only alternative to a robotic prosthetic is a cosmetic hand that is functionless and heavy, or an alienating hook,” said Bristol-based Mr Gibbard. “I can 3D print a robotic prosthetic hand inspired by comic books and superheros that hand amputees enjoy showing off for a fraction of the price.”
What would it look like if we could create a low cost prosthetic hand and arm for a child who is in need of one?

(Opportunity to write using an essential question)
Imagine

https://www.youtube.com/watch?v=KK25aLLhDk0

(Opportunity to research with alternative media sources, CCSS)
Plan

- **Step 1:** look at and study
  - [https://www.youtube.com/watch?v=PqOetlij6G4](https://www.youtube.com/watch?v=PqOetlij6G4)
- **Step 2:** Look at the materials provided for your use to build a prototype.
- **Step 3:** Think about how corrugation can help you in this design.
Create

• Use your templates to create.
  – 3 arms and hands
  – Brace
• Assemble the fingers
• Put you layers together
• Add string and build a bridge

Keep in mine the direction of the corrugation as this will make your hand and arm function.

(CBCI)
Improve

• Present your model and receive feedback from your peers on what would make it better.
  – What is your company name?
  – What is your moto?
  – How will your product change lives?
  – What about your product works?
  – What about your product needs to change in its next generation?
  – What would your next steps be?

(Opportunity to write based on essential question)
Planning Using A Design Loop Supports

- CCSS
- CBCI
- Disciplinary Literacy
- Close Reading and Annotation of text
- Opportunity for authentic writing