



## Next Big Thing

This award explores the world of product design, which involves balancing time, cost, and quality to create something new, usually a product that will be sold to consumers or other businesses.

1. Choose A or B or C and complete ALL the requirements.
  - A. Watch not less than three hours total of shows or documentaries that involve the creation of new products. This can include entrepreneurship, innovation, new technology, and/or engineering design. You may choose to watch a live performance instead of watching a media production. Then do the following:
    1. Make a list of at least five questions or ideas from the shows you watched.
    2. Discuss two of the questions or ideas with your counselor.
  - B. Read not less than three hours total about product design. Then do the following:
    1. Make a list of at least five questions or ideas from the articles you read.
    2. Discuss two of the questions or ideas with your counselor.
  - C. Do a combination of reading and watching, not less than three hours total. Then do the following:
    1. Make a list of at least five questions or ideas from the articles you read or the shows you watched.
    2. Discuss two of the questions or ideas with your counselor.

**Some examples include—but are not limited to—shows found on PBS (“NOVA”), Discovery Channel, Science Channel, National Geographic Channel, TED Talks (online videos), and the History Channel. You may choose to watch a live performance or movie at a planetarium or science museum instead of watching a media production. You may watch online productions with your counselor’s approval and under your parent’s or guardian’s supervision.**

2. Complete ONE merit badge from the following list. (Choose one that you have not already used for another Nova award.) Discuss with your counselor how the merit badge you earned relates to product design.

American Business	Digital Technology	Engineering
Architecture	Drafting	Inventing
Composite Materials	Electronics	Model Design and Building

3. Complete four of the activities below.
  - A. Explore product innovation  
Examine one product and at least two different versions of that product. Create a list of the differences between the designs. Discuss with your counselor the differences and what you think each difference is trying to solve.

- B. Research prototyping methods  
Find and explain the differences between a “works-like” and “looks-like” prototype. Learn the reasons and applications where one method would be chosen over the other. Research different ways and costs of having a product professionally prototyped. Explore the reasons why one method would be chosen over another. Discuss and explain your findings with your counselor
  - C. Market research  
Research and understand the terms: market size, business plan, value proposition, elevator pitch, cost-effective design, and ethnographic research - specifically, in reference to product design. Discuss with your counselor what these terms mean and why they are important for a product designer to understand, and how they affect the design of a product.
  - D. Practice brainstorming  
Examine different brainstorming methods. Choose a product you have used or a situation you have experienced. Using one method you found, brainstorm various ways to improve the product or situation. You do not have to brainstorm designs, just ways to improve the design. Present your list to your counselor and discuss.
  - E. Learn about and practice “Painstorming”  
Research “painstorming”: what it is and how it is done? Choose a product you have used or a situation you have experienced and “painstorm” for at least 15 minutes. Do not think of designs to solve the pains, just list as many pains as you can. Present your list of pains to your counselor and discuss.
  - F. Inventors  
Choose a historical or modern inventor who interests you, and research them and their inventions. If possible, learn about the iterations their product went through before it became successful. Discuss with your counselor the researcher and their inventions, as well as why you chose that person.
4. Product Design - Do ALL the following requirements.
- A. Using either “painstorming” or brainstorming, design a new product. Create a 3D model of your design with modeling software or sketch your design. Some common CAD programs with free student versions include Autodesk Inventor, Catia, CREO, Google SketchUp, and Solid Works.
  - B. Discuss your design and reasons for your choices with your counselor. Explain your 3D model or sketches, and what your next steps would be to make the product a reality.
5. Do ALL the following requirements.
- A. Visit a company/school/institution where new products are being developed.
  - B. Talk to someone there about how they use product design in their work. Prepare at least five questions to ask the person you talk to and discuss their answers with your counselor.
  - C. Discuss with your counselor how products are being designed at the destination you visited.
6. Reflect on your experiences during the completion of these requirements with your counselor. Discuss with your counselor how product design affects your everyday life, and what you have learned while working on this Nova.