Title	Cutting Edge Hardware
**Unit Topic	Significant Idea**	Exploring form and interaction
Class Duration	1hr 15minutes
Age	11+

Learning Object

Process Documentation

Students worked collaboratively in pairs to design and construct their prototypes.

Finished Works

Overview
Students were asked to consider how we interact with forms when we are using computers and gaming systems. Can forms be intuitive? Intimidating? How are forms conventional? Unconventional? From there, they collaboratively prototyped new gaming consoles from cardboard, tin foil, and a MakeyMakey external keyboard.

Essential Question
How does form inform interaction?

Learning Objective
Students will learn that they can explore form and interaction through building with cardboard.

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Linked Assessment Outcomes
Students will recognize how forms invite or negate interaction.
Students will construct alternative structures for computer game interfaces.
Students will assemble cardboard into 3-dimensional forms.
Students will assess how users will interact with their forms to manipulate game interface.
Students will test their forms for interface usability.
Students will identify the limitations and conventions of their forms.

Content Standard Connections
VA:Cr2.1.6 – collaboratively exchange concepts and different points of view to generate innovative ideas for creating art.
VA:Cn11.2.8 – Identify and explore careers in which innovation and creative problem-solving skills are fundamental to success.

Vocabulary
Structure –the 3-dimensional shape.
Interface – the device/program/ or design of a system with which a user interacts.
User – the customer/client/participant
Cardboard – pasteboard or layered paper to form stiff surface
Device – a thing made or adapted for a particular purpose, especially mechanical or electronic.
Makey Makey – an external computer controller.
Arduino – an open source electronics platform
Open-Source – software or hardware that is made freely available for distribution or modification.
Hardware – physical electronic component
Software – programming system
Prototype – sample form of the final project
Console – gaming unit for interactive play

Developmental References
Lubinski, D. (2010) Spatial ability and STEM: A sleeping giant for talent identification and development. *Personality and Individual Difference*. Vol. 49. Issue 4. September 2010. 344-351
Subrahmanyam, K. & Greenfield, P. (1994) Effect of Video Game Practice on Spatial Skills in Girls and Boys. *Journal of Applied Developmental Psychology*. 15, 13-32

Guided Discussion Questions
How does form inform interaction?
What is the experience of gaming for different users?
What if the game required a different kind of sense than touch or sight?
How does the form of the console effect our experience of using it?
Could a form be non-inviting for playing with?
How could the console inform the user about the experience of the game?

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