FUSE Challenges & NGSS Alignment

Challenge Name	Description	SEPs	DCI	CCC
Balancing Act	Use 3D design software to create increasingly complex balance toys that can be printed on a 3D printer	› Developing and using models Designing solutions › Using mathematics and computational thinking	MS-ETS1	Cause and effect
Beats Builder	Use a music mixing software to create your own custom tracks.	› Developing and using models › Using mathematics and computational thinking	MS-ETS1	Cause and effect
Coaster Boss	Design a roller coaster that can meet various design goals given material and space constraints	› Asking questions and defining problems › Analyzing and interpreting data › Designing solutions	MS-PS2	Energy and matter
Cookie Customizer	Use 3D design software to create custom keychain designs that can be printed out on a 3D printer.	› Developing and using models › Designing solutions › Using mathematics and computational thinking	MS-ETS1	Scale, proportion, and quantity
Design to Fly	Design a custom flight controller that can be used in a flight simulator.	› Asking questions and defining problems › Designing solutions	MS-ETS1	Cause and effect
Dream Home	Design a home using 3D design software that meets various design goals given space constraints	› Using mathematics and computational thinking › Designing solutions	MS-ETS1	Scale, proportion, and quantity
Dream Home 2	Design a home for a client using 3D design software that balances the competing needs of your clients and space	› Defining problems › Using mathematics and computational thinking › Designing solutions	MS-ETS1	Scale, proportion, and quantity

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Electrify It	Use e-textile components to design wearable circuits and modify a garment to be interactive and light up.	› Developing and using models › Designing solutions › Planning and carrying out investigations	MS-ETS1	Energy and matter; Structure and function
Eye Candy	Design a pair of eyeglasses frames that can be printed out on a 3D printer	› Developing and using models › Designing solutions › Using mathematics and computational thinking	MS-ETS1	Structure and function
Friend Finder	Build interactive games to play with friends, using micro:bit minicontrollers	› Asking questions and Defining problems › Analyzing and interpreting data › Using mathematics and computational thinking	MS-ETS1	Cause and effect
Game Designer	Use a game design software to create a video game that meets specified design goals.	› Asking questions and defining problems › Using mathematics and computational thinking	MS-ETS1	Cause and effect
Get in the Game	Use a Makey Makey to design and build embodied controllers for online games	› Asking questions and defining problems › Developing and using models › Designing solutions	MS-ETS1	Cause and effect
Jewelry Designer	Use 3D design software to design your own jewelry and print them out on a 3D printer.	› Developing and using models › Designing solutions › Using mathematics and computational thinking	MS-ETS1	Scale, proportion, and quantity
Keychain Customizer	Use 3D design software to create custom keychain designs that can be printed out on a 3D printer.	› Developing and using models › Designing solutions › Using mathematics and computational thinking	MS-ETS1	Scale, proportion, and quantity

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Laser Defender	User mirrors and a laser pointer to create a laser defense grid	› Developing and using models › Designing solutions › Analyzing and interpreting data	MS-PS4	Structure and function
LED Color Lights	Build a circuit capable of lighting up three LED's.	› Developing and using models › Designing solutions	MS-PS3	Energy and matter
Look No Hands	Create a series of reactions using simple machines	› Asking questions and defining problems › Designing solutions	MS-PS2	Cause and effect
Mini Jumbotron	Program an LED matrix to show and animate a message	› Developing and using models › Designing solutions	MS-PS3	Energy and matter
MiniMe Animation	Use 3D animation software to bring a CGI figure to life and meet various design goals.	› Developing and using models › Using mathematics and computational thinking	MS-ETS1	Cause and effect
Music Amplifier	Use electrical components to build a circuit capable of playing music from your phone.	› Developing and using models › Designing solutions	MS-PS4	Energy and matter
Party Lights	Use a programmable micro-controller to build and control a light display.	› Developing and using models › Designing solutions › Using mathematics and computational thinking	MS-PS3	Energy and matter
Print My Ride	Use 3D design software to build a model of your favorite car that can be printed out on a 3D printer.	› Developing and using models › Designing solutions › Using mathematics and computational thinking	MS-ETS1	Scale, proportion, and quantity
Robot Rodeo	Use block-based coding to program a robot to complete various goals.	› Asking questions and defining problems › Analyzing and interpreting data › Using mathematics and computational thinking	MS-ETS1	Cause and effect

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Sculpty Pet	Use 3D modeling software to sculpt, paint and accessorize a virtual 3D pet	› Developing and using models › Designing solutions	MS-ETS1	Scale, proportion, and quantity
Sticker Studio	Use 2D design software and a vinyl cutter to create custom multi-layer vinyl stickers.	› Developing and using models › Designing solutions	MS-ETS1	Structure and function
Slow Your Roll	Build a paper roller coaster for a marble	› Asking questions and defining problems › Designing solutions	MS-PS2	Cause and effect
Smart Castle	Wire a castle with various sensors, alerts, and remote controls	› Asking questions and defining problems › Designing solutions	MS-ETS1	Structure and function
Spaghetti Structures	Use spaghetti and marshmallows to build a tower that can pass various tests.	› Planning and carrying out investigations › Designing solutions	MS-PS2	Structure and function
Solar Roller	Design and engineer a solar powered car to meet various design goals.	› Planning and carrying out investigations › Analyzing and interpreting data › Designing solutions	MS-PS2	Cause and effect
Video Magic Tricks	Film and edit short videos that trick the eye	› Asking questions and defining problems › Designing solutions	MS-ETS1	Cause and effect
VR Escape Room	Design and code your own virtual reality escape room	› Asking questions and defining problems › Using mathematics and computational thinking	MS-ETS1	Cause and effect
Wind Commander	Design and engineer a wind turbine to achieve various design goals.	› Planning and carrying out investigations › Analyzing and interpreting data › Designing solutions	MS-PS2	Cause and effect