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
Crash Test Eggy	Design a car for a plastic egg that meets increasingly complex design safety goals	Asking questions and defining problems Analyzing and interpreting data Designing solutions	MS-ETS 1, 3	Energy and matter
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 interactive patches that light up, using various circuits and sensors	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 on a 3D printer	Developing and using models Designing solutions Using mathematics and computational thinking	MS-ETS1	Structure and function
Flexagami	Create and manipulate complex geometric shapes	Developing and using models Using mathematics and computational thinking	MS-ETS1	Cause and effect
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
Gel Chemistry	Create gel beads using the same technique scientists use to grow human cells	Planning and carrying out investigations Designing solutions	MS-LS1	Structure and function
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 that can be printed 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 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
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
Mystery Messages	Develop ciphers to encode and decode messages	Developing and using models Using mathematics and computational thinking	MS-ETS1	Interdependence of Science, Engineering and Technology
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 on a 3D printer	Developing and using models Designing solutions Using mathematics and computational thinking	MS-ETS1	Scale, proportion, and quantity
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
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
Slow Your Roll	Build a paper roller coaster for a marble	Asking questions and defining problems Designing solutions	MS-PS2	Cause and effect

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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
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
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