



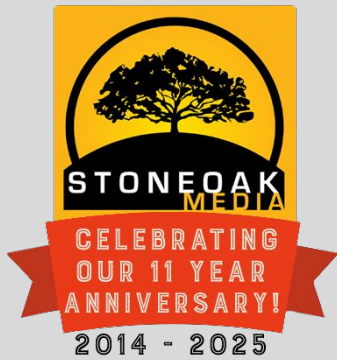
STONEOAK MEDIA

StoneOakMedia.com



STEM-focused
project based learning
aligned to curriculum standards
supercharged with cutting-edge
Augmented Reality & 3D Printing
technology

Introduction



StoneOak Media was established in 2014 with a singular focus on delivering educational solutions that make learning immersive, engaging, and fun. StoneOak Media's initial products were the first to bring project-based augmented reality enhanced STEM content into the classroom. StoneOak Media is also the first company to bring 3D Printing focused STEM lessons, centered on the Engineering Design Process, into classrooms and libraries.

StoneOak Media's products have been used by tens of thousands of students in several thousand schools across North/Central/South America, Europe, Africa, Asia, and Australia. Learn more at www.StoneOakMedia.com.

Product & Program Overview



Augmented Reality Enhanced Products & Programs

Augmented Reality STEM Adventures!

Students use their personal mobile phone/tablet to experience the immersive Augmented Reality enhanced content in these low-cost workbooks. Lessons include:

Solar System Expedition: Students explore each planet in the Solar System, take measurements of conditions there, and design a base capable of surviving and thriving on their planet of choice.

Water Cycle Engineer: Students travel to a Moon base, to learn about the water cycle in the context of its sealed ecosystems. They complete the mission by setting up a water cycle at a new underground base.

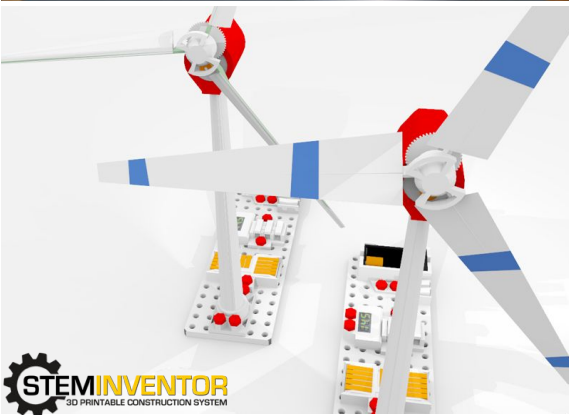
STEMInventor 3D Printable Products & Programs

Supercharging Learning with 3D Printed STEM Resources

Unlock a world of creativity with STEMinventor 3D printable STEM kits and construction system components.

Effortlessly download and 3D print as many parts as you need for these STEM-enhanced lessons, and witness the magic as students' imagination and creativity flourish.

Our catalog features over 100 easy-to-3D print construction components, STEM kits, and competitive design challenges, and educational lessons; providing everything you need to inspire and engage young innovators.



Make-Your-Own 3D Printed STEM Makerspace Resources & Programs





Hundreds of 3D Printable Construction System Parts

STEMinventor.com provides easy access to hundreds of 3D printable construction system parts. From structural beams, to axles, to screws, wheels, cams, tools, and more, STEMinventor.com provides the resources needed to supercharge your makerspace. Empower students and educators to make their own STEM inventions as they explore science and engineering!



Price Summary

Level	Program Title	Materials Used In Lesson:	Target Grade	Time (Hrs)	Hosting Class	Material Price*	Total Price
Level 0 (Easiest)	Solar System Expedition	 AR Workbook	4 - 8	1	\$150 Us \$0 DIY	\$448.87 or \$538.65 	\$598.87 / \$688.65: Us \$448.87 / \$538.65:DIY
Level 0	Water Cycle Engineer	 AR Workbook	4 - 8	1	\$150 Us \$0 DIY	\$448.87 or \$538.65 	\$598.87 / \$688.65: Us \$448.87 / \$538.65:DIY
Level 0	Intro To 3D Printing	Web Based Live Training	9 -12, Adult	1	\$150	\$0	\$150
Level 0	Intro To 3D Printing	Web Based Recorded Video	9 -12, Adult	1	\$25 /person	\$0	\$25
Level 1	Catapult Challenge	 3D Printed Parts	5 - 12	1.5	\$200 Us \$0 DIY	 \$50	\$250 Us \$50 DIY
Level 1	Simple Machines: Pulleys	 3D Printed Parts  : Parts Kit	5 - 12	1.5	\$200 Us \$0 DIY	 \$50  \$100	\$350 Us \$150 DIY
Level 1	Bridge Design Challenge	 3D Printed Parts  : Parts Kit	5 - 12	1.5	\$200 Us \$0 DIY	 \$50  \$50	\$300 Us \$100 DIY
Level 1	Crane Design Challenge	 3D Printed Parts  : Parts Kit	5 - 12	1.5	\$200 Us \$0 DIY	 \$50  \$50	\$300 Us \$100 DIY
Level 2	Pump Jack	 3D Printed Parts  : Parts Kit	6 - 12	1.5	\$200 Us \$0 DIY	 \$50  \$199	\$449 Us \$249 DIY
Level 2	Solar Power Station	 3D Printed Parts  : Parts Kit	6 - 12	1.5	\$200 Us \$0 DIY	 \$50  \$250	\$500 Us \$300 DIY
Level 3	Line Shaft Power	 3D Printed Parts  : Parts Kit	6 - 12	1.5	\$200 Us \$0 DIY	 \$50  \$199	\$449 Us \$249 DIY
Level 3	Solar House & AC	 3D Printed Parts  : Parts Kit	6 - 12	1.5	\$200 Us \$0 DIY	 \$50  \$250	\$500 Us \$300 DIY
Level 3	Wind Turbine Challenge	 3D Printed Parts  : Parts Kit	6 - 12	1.5	\$200 Us \$0 DIY	 \$50  \$250	\$500 Us \$300 DIY
Varies	All Kit Access	 3D Printed Parts  : Parts Kit	4-12	N/A	N/A	 \$239  Varies	Varies

 = Augmented Reality Enhanced Workbooks
 = Parts 3D Printed By Educator & Distributed to Students
 = Price for Lesson Related Digital (.STL) File Access.
 = 10 Parts Kits Containing Lesson Wires, Motors, and other Non-3D Printable Items
* Each Lesson's Books, Parts Kits, and 3D files can be reused.

Augmented Reality Enhanced Resources

Title: Solar System Expedition

Grades: 4-8



Title: Solar System Expedition

Type: Augmented Reality (AR) Enhanced Workbook-Based Virtual Instruction

Description: Take STEM education to the next level with this augmented reality enhanced tour of the Solar System. Participants join a Top Secret mission to establish an outpost on a planet in our Solar System. This fun-filled educational tour of the Solar System teaches students basic facts about each of the planets, and engages them to take measurements of the conditions there. The lesson wraps up by challenging students to design a base for the planet of their choice.

Duration: 1 Hour

Format: 25 or 30 Printed Workbooks

Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up books from Educator prior to virtual class, and use books at home on in their class during the program. All training materials are loanable/reusable by the educator thereafter.

Option 2: DIY. You host the lesson yourself at no incremental cost.

STEM Topics Covered: Scientific Investigation & Reasoning, Matter & Energy, Earth & Space, Organisms & Environment, Engineering Design.

Training	Reusable Training Materials	Total
\$150 We Host \$0 DIY	\$448.87: Includes 25 AR-enhanced Solar System Expedition Workbooks \$538.65: Includes 30 AR-enhanced Solar System Expedition Workbooks	\$598.87 or \$688.65: Us \$448.87 or \$538.65: DIY

THE ROCKWELL ADVENTURES SOLAR SYSTEM EXPEDITION



Try *Solar System Expedition* for yourself!

Grades: 4-8

1 Launch the Zappar App

2 Scan Planet Image

3 Explore the Planet

Works on
any iOS or
Android
Device



Title: Water Cycle Engineer

Grades: 4-8



Title: Water Cycle Engineer

Type: Augmented Reality (AR) Enhanced Workbook-Based Virtual Instruction

Description: Take STEM education to the next level with this augmented reality enhanced tour of the Water Cycle. Participants then virtually travel to colonies on the Moon to learn about the water cycle. This fun-filled educational adventure teaches students facts about each step of the water cycle and challenges them to setup a water cycle at a new Moon base under construction.

Duration: 1 Hour

Format: 25 or 30 Printed Workbooks

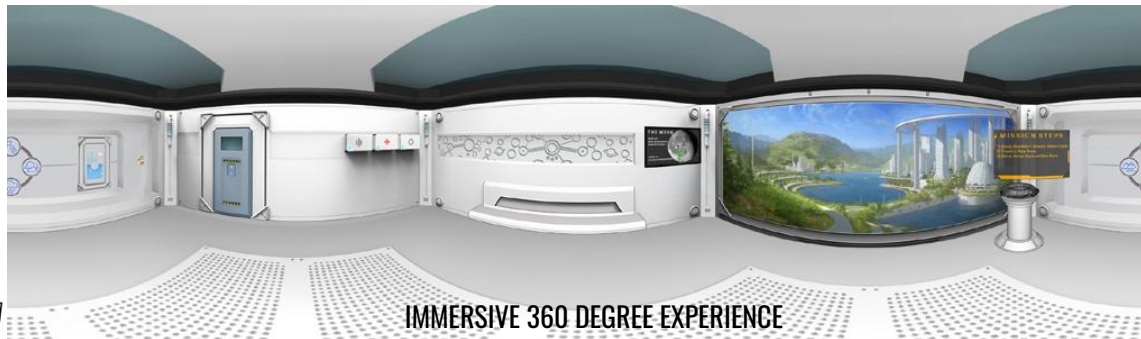
Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up books from educator prior to virtual class, and use books at home on in their class during the program. All training materials are loanable/reusable by the educator thereafter.

Option 2: DIY. You host the lesson yourself at no incremental cost.

STEM Topics Covered: Scientific Investigation & Reasoning, Matter & Energy, the Water Cycle, Engineering Design.

Training	Reusable Training Materials	Total
\$150 We Host \$0 DIY	\$448.87: Includes 25 AR-enhanced Water Cycle Engineer Workbooks \$538.65: Includes 30 AR-enhanced Water Cycle Engineer Workbooks	\$598.87 or \$688.65: Us \$448.87 or \$538.65: DIY



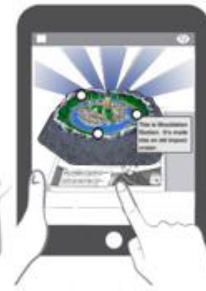
Try Water Cycle Engineer for yourself!

Grades: 4-8

1 Launch the Zappar app

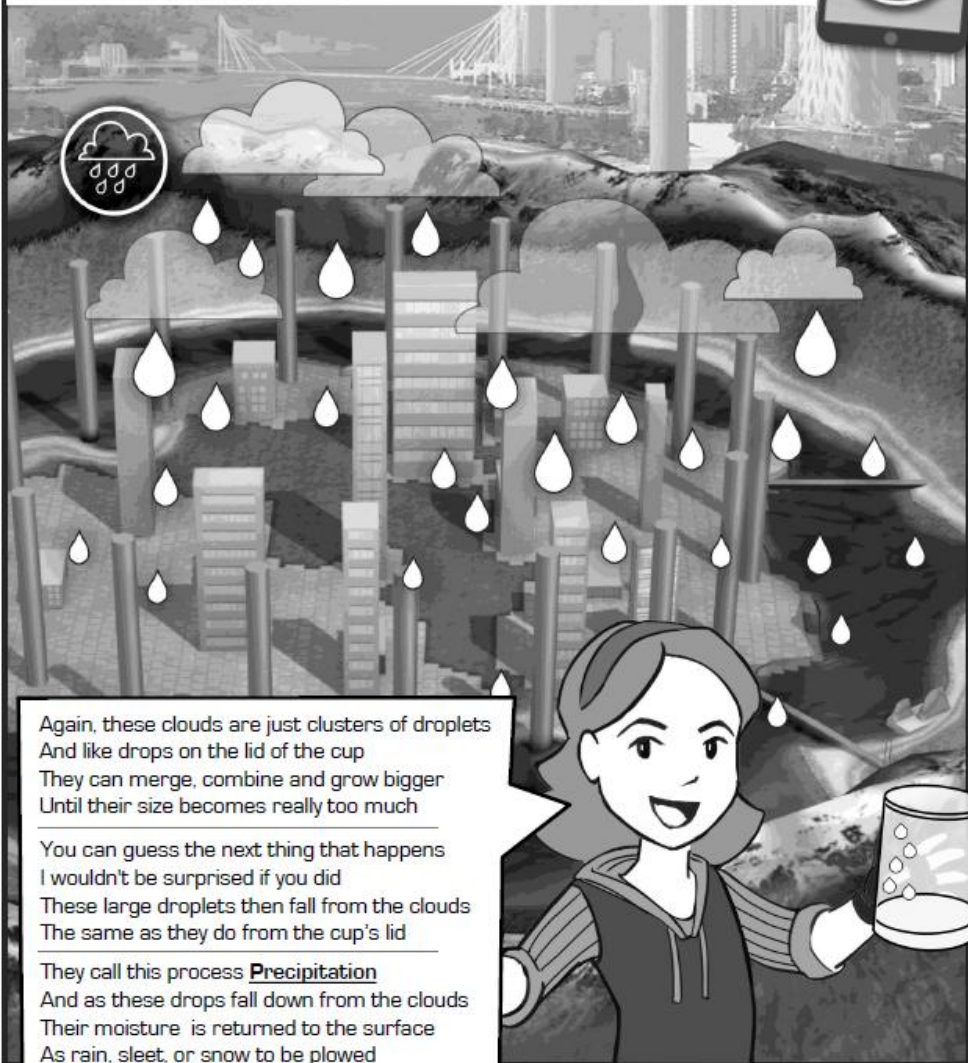
2 Scan Zapcode

3 Explore 3D Content

Works on
any iOS or
Android
Device

PRECIPITATION

SCAN THIS PAGE AND TAKE NOTES



How Augmented Reality Enhanced Lessons Work

Step 1: Augmented Reality Workbook Acquisition & Distribution



- Library Purchases Augmented Reality Enhanced Workbooks
- These Workbooks Become Library Loan Items
- Students Sign Up For Virtual Training
- Students Stop By Library and Check Out Workbooks Ahead of Virtual Training Date

Step 2: Students Load Augmented Reality App



- Workbook Brought Home
- Student Download Zappar Augmented Reality App To Their Mobile Phone or Tablet (iOS/Android)
- Student Awaits Online Training Date

Step 3: Students Assemble & Test STEM Kit During Virtual Training



- Student Logs Into Webinar At Designated Time
- Student Explores Immersive Webinar
- Student Keeps Workbook Several Days, Optimizing Their Designs
- Student Returns Workbook To Library

3D Printing Enhanced Resources

Overview: STEMInventor 3D Printed Lessons



STEMInventor Platform

Discover the STEM Inventor suite, offering easy-to-replicate 3D printable construction components and pre-designed kits for engineering challenges. With hundreds of 3D printable parts and over a dozen STEM-focused kits, the possibilities are limitless! Perfect for classrooms, libraries and makerspaces; enabling the creation of unlimited inexpensive 3D printable Erector Set like construction system parts and STEM-focused educational kits. Print components for hundreds of students/patrons for pennies a piece. Replace broken or missing parts by simply printing more. Give away parts to students/patrons that build creations at your facility, then print more as needed. Unlimited replication for a single location. Ideal for budget-friendly, hands-on STEM learning!

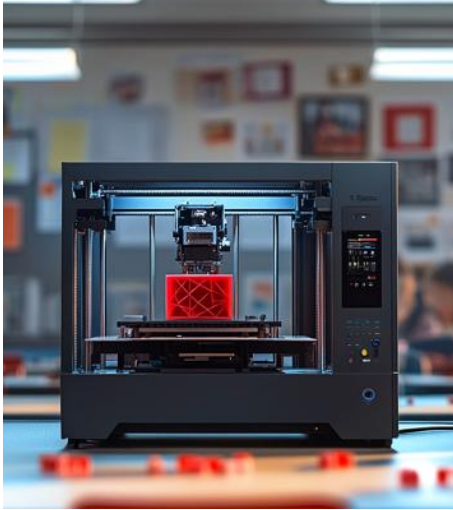
Many Lessons To Choose From

STEMINVENTOR 3D PRINTABLE WIND TURBINE CHALLENGE 3D PRINTED ENGINEERING KIT <ul style="list-style-type: none">• Students Research, Build, Test, and Complete With Custom Blade Designs• Learn the Engineering Design Process• 3D Print an Unlimited Number of Turbines• Customized for State & National Standards	STEMINVENTOR 3D PRINTABLE SOLAR HOUSE & A/C KIT 3D PRINTED ENGINEERING KIT <ul style="list-style-type: none">• Easy to Construct• 3D Printable and Other Components• Explore and Learn About Heat Transfer and Solar Power Production!	STEMINVENTOR 3D PRINTABLE DOMEHAB: TERRARIUM KIT GROW & MANAGE YOUR ECOSYSTEM <ul style="list-style-type: none">• Easy to Construct• 3D Printable & Other Components• Integrates With Other STEM Kits	STEMINVENTOR 3D PRINTABLE SOLAR POWER STATION KIT 3D PRINTED ENGINEERING KIT <ul style="list-style-type: none">• Easy to Construct• 3D Printable and Other Components• Explore and Learn About Electricity!	STEMINVENTOR 3D PRINTABLE STREET LIGHT KIT 3D PRINTED ENGINEERING KIT <ul style="list-style-type: none">• Easy to Construct• 3D Printable and Other Components• Light Your 3D Printed Creation!
STEMINVENTOR 3D PRINTABLE PUMP JACK "NODDING DONKEY" KIT 3D PRINTED ENGINEERING KIT <ul style="list-style-type: none">• Easy to Construct• 3D Printable and Other Components• Convert Electrical Energy to Rotational Mechanical Movements	STEMINVENTOR 3D PRINTABLE POWER MEASUREMENT KIT 3D PRINTED VOLT/METER HOUSING & KIT <ul style="list-style-type: none">• Easy to Construct• 3D Printable and Other Components• Measure the Voltage You Produce!	STEMINVENTOR 3D PRINTABLE POWER GRID KIT CONNECT & MANAGE POWER SOURCES <ul style="list-style-type: none">• Easy to Construct• 3D Printable & Other Components• Connects to Power Production Kits	STEMINVENTOR 3D PRINTABLE LINE SHAFT POWER 3D PRINTED ENGINEERING KIT <ul style="list-style-type: none">• Easy to Construct• 3D Print and Other Components• Explore and Learn About Simple Machines!	STEMINVENTOR 3D PRINTABLE SIMPLE MACHINES: PULLEYS 3D PRINTED ENGINEERING KIT <ul style="list-style-type: none">• Easy to Construct• 3D Print and Replicate All Materials• Explore and Learn About Simple Machines!

Title: Intro To 3D Printing

Grades: 9-12, Adults, Educators

STEMINVENTOR 3D PRINTABLE INTRO TO 3D PRINTING



Title: Intro to 3D Printing

Type: Virtual Instruction

Duration: 1 Hour

Format: Live Zoom-based Virtual Meeting

Description: This live virtual training session, designed for educators, library staff and patrons, covers the basics of what it takes to get started in 3D printing. Topics covered include: Intro to 3D Models, how 3D printing works, moving from design to print, 3D modeling software, 3D model repositories, model slicing, 3D printing.

STEM Topics Covered: 3D Design, 3D Model Repositories, 3D Printing

Pricing:

Virtual Training	Reusable Training Materials	Total
Live Zoom: \$150/Class	\$0: None needed	\$150
Pre-Recorded \$25/Person	\$0: None needed	\$25

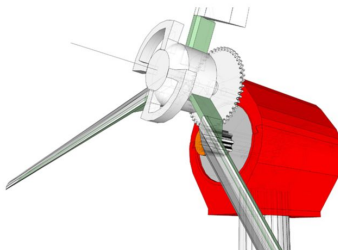
Setup: No setup is needed.

Lesson: Live Zoom participants log into class at the designated time. Questions will be taken and answered throughout the presentation. Pre-Recorded Class participants individually log into StoneOak Media's Learning Management System.

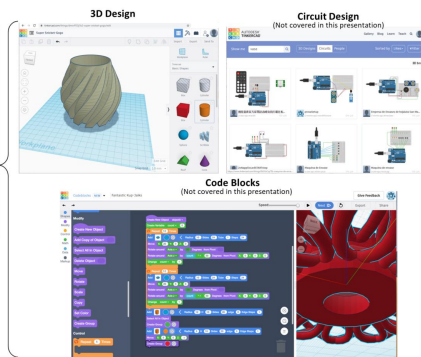
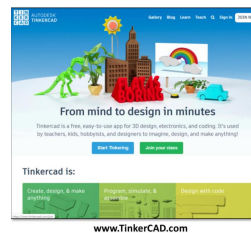
What is a 3D Model?

Definition

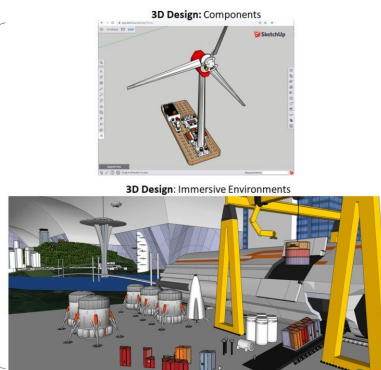
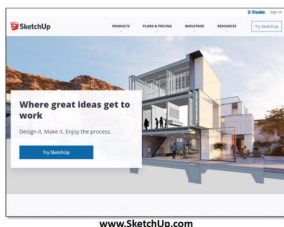
- "In 3D computer graphics, 3D modeling is the process of developing a mathematical representation of any surface of an object (either inanimate or living) in three dimensions via specialized software - Wikipedia



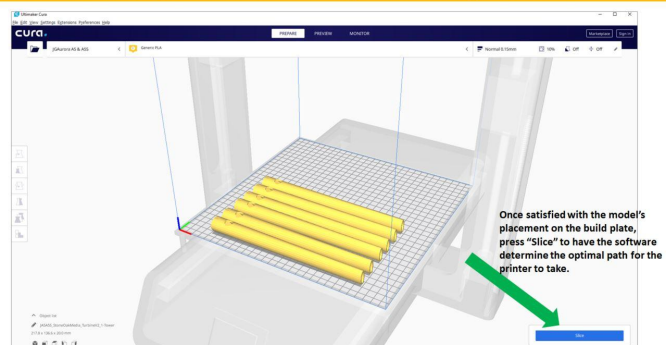
Creating 3D Designs: Tinkercad



Creating 3D Designs: SketchUp



3D Printer Slicing Software: Moving From Design to Print



Title: Machines @ Work: Catapult Design Challenge

Grades: 5-12

STEM INVENTOR 3D PRINTABLE CATAPULT DESIGN CHALLENGE



Title: Catapult Design Challenge

Type: 3D Printed Lesson

Description: Designed for upper elementary, middle, and high school students, this 3D printable lesson teaches students about the engineering design process and the basics of projectile motion as they assemble this 3D printed catapult.

Duration: 1.5 Hour

Format: 3D Printed Parts, Background Videos, Student Consumables

Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

Option 2: DIY. You host the lesson yourself at no incremental cost.

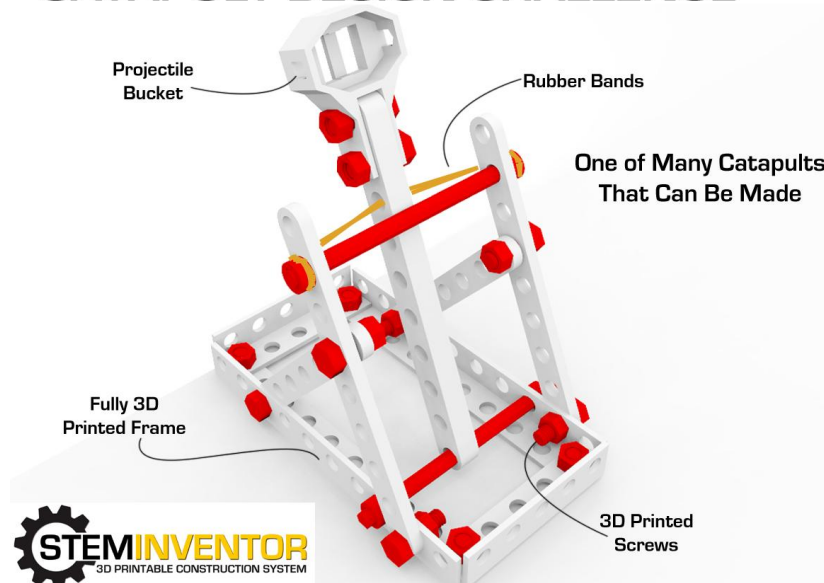
STEM Topics Covered: Physics, Scientific Investigation & Reasoning

Lesson Setup: Educators will be provided with access to the online repository of digital (.STL) files needed to 3D print the components featured in this lesson. Ahead of the date of the class, educators 3D print all of these components.

Lesson: During the lesson, attendees learn about the history and types of catapults. Basic physics behind projectile motion are also covered. An introduction is then given to the catapult they will be assembling during the class. Attendees then work to assemble the 3D printed catapults during the lesson. During and after the lesson, students can creatively explore variations on the implementation. Afterwards, they return the kit to the educator.

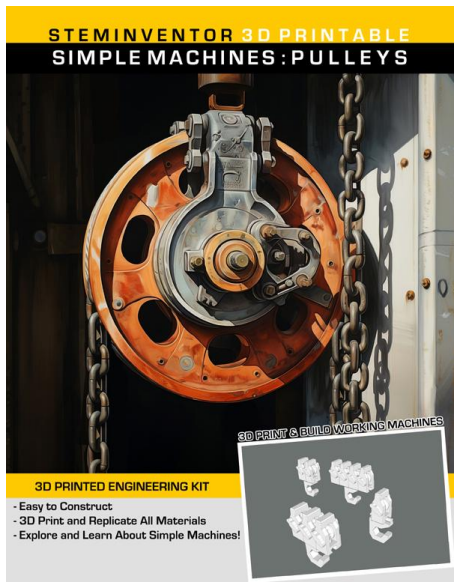
Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$50: Catapult related 3D printable .STL files	\$250 We Host \$50: DIY

CATAPULT DESIGN CHALLENGE



Title: Machines @ Work: Simple Machines - Pulleys

Grades: 5-12



Title: Simple Machines - Pulleys

Type: 3D Printed Lesson

Description: Designed for middle and high school students, this 3D printable lesson teaches students about different types of Pulleys, a type of simple machine. Students learn about mechanical advantage pulleys deliver as they assemble, single, double, triple, and quadruple wheel compound pulleys, and use these simple machines to accomplish work.

Duration: 1.5 Hour

Format: 3D Printed Parts, Background Videos, Student Consumables

Execution:

Option 1: “We Host” Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

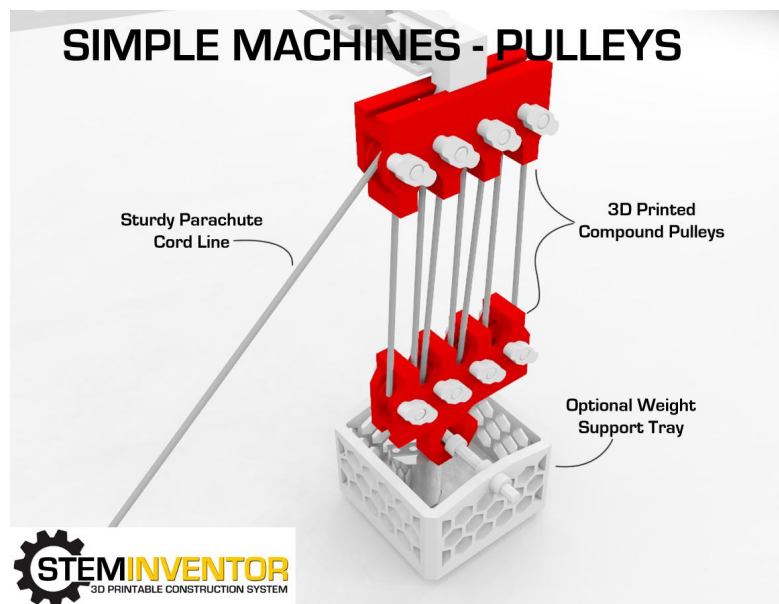
Option 2: DIY. You host the lesson yourself at no incremental cost.

STEM Topics Covered: Simple Machines, Scientific Investigation & Reasoning

Lesson Setup: Educators will be provided with 10 “Simple Machine - Pulleys” parts kits, and 1-year access to the online repository of digital (.STL) files needed to 3D print the structural components of each Pulley. Ahead of the date of the class, educators will 3D print all structural components.

Lesson: During the lesson, attendees learn about the various kinds of pulleys, and measure Mechanical Advantage, Work, and Efficiency. An overview of each kind of pulley is covered as attendees work to assemble the 3D printed pulleys during the lesson. During and after the lesson, students can creatively explore variations on the implementation. Afterwards, they return the kit.

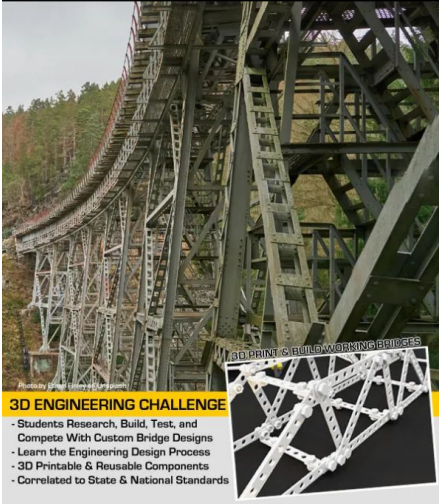
Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$100: 10 Simple Machine Reusable Parts Kits + \$50: Simple Machine 3D Printable .STL Files	\$350 We Host \$150: DIY



Title: Bridge Design Challenge

Grades: 5-12

STEM INVENTOR 3D PRINTABLE BRIDGE DESIGN CHALLENGE



Title: Bridge Design Challenge

Type: 3D Printed Lesson

Description: Designed for upper elementary, middle and high school students, this 3D printable lesson teaches students about the basics of bridge design and the common types of truss bridges, as they assemble a 3D printed Warren truss bridge.

Duration: 1.5 Hour

Format: 3D Printed Parts, Background Videos, Student Consumables

Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

Option 2: DIY. You host the lesson yourself at no incremental cost.

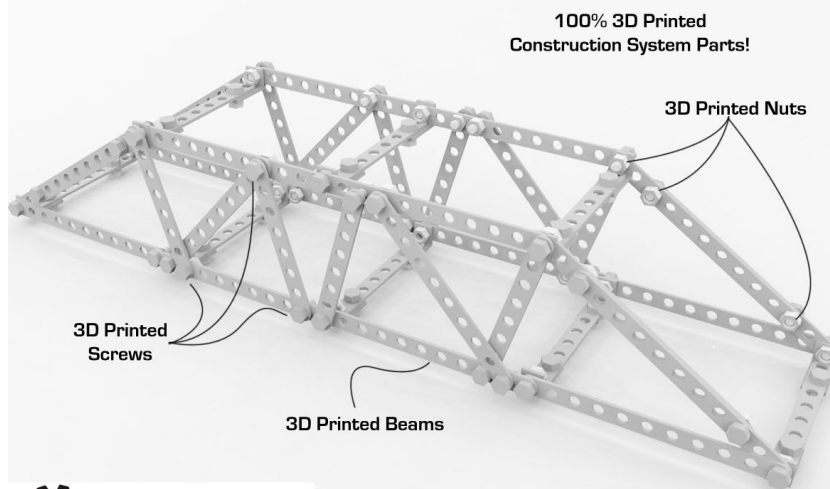
STEM Topics Covered: Scientific Investigation & Reasoning, Engineering Design

Lesson Setup: Educators will be provided with 10 Bridge Design parts kits, and 1-year access to the online repository of digital (.STL) files needed to 3D print the Bridge structural components. Prior to class, educators 3D print all structural components

Lesson: During the lesson, attendees learn about the history and types of bridges that have been developed. An overview of various kinds of truss bridges, and the pros and cons of each is covered as they work to assemble the 3D printed bridge. During and after the lesson, students can creatively explore variations on the implementation. Afterwards, they return the kit.

Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$50: 10 Reusable Bridge Parts Kits + \$50: Bridge Related 3D Printable .STL Files	\$300 We Host \$100: DIY

BRIDGE DESIGN CHALLENGE



Title: Crane Design Challenge

Grades: 5-12

STEMINVENTOR 3D PRINTABLE CRANE LIFT CHALLENGE



Title: Crane Design Challenge

Type: 3D Printed Lesson

Description: Designed for middle and high school students, this 3D printable lesson teaches students about the history of cranes, and design considerations engineers use when designing cranes. They then work to assemble a sample crane, and use it to pick up a weight.

Format: 3D Printed Parts, Background Videos, Student Consumables

Duration: 1.5 Hour

Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

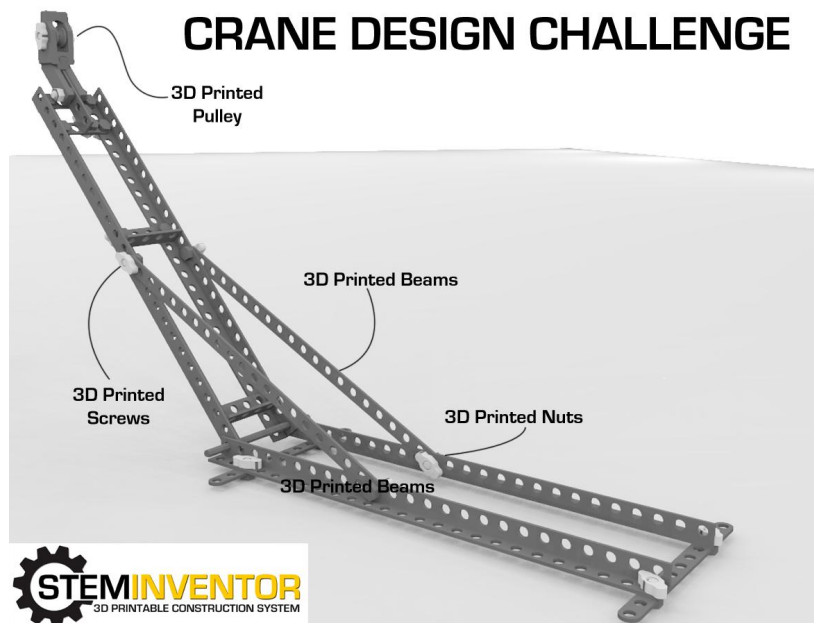
Option 2: DIY. You host the lesson yourself at no incremental cost.

STEM Topics Covered: Scientific Investigation & Reasoning, Engineering Design

Setup: Educators will be provided with 10 Crane parts kits, and 1-year access to the online repository of digital (.STL) files needed to 3D print Crane structural components. Ahead of the date of the class, educators 3D print all structural components

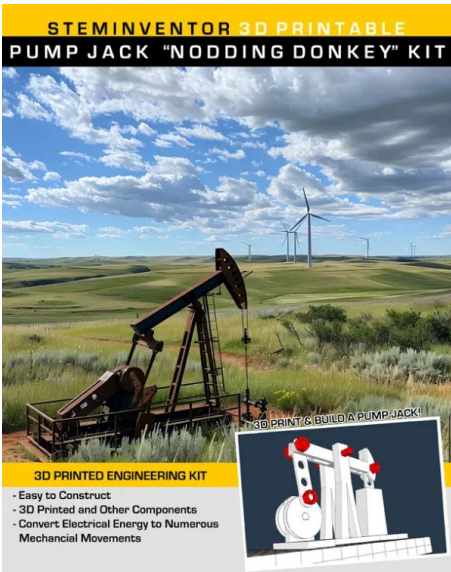
Lesson: During the lesson, attendees learn about the history and types of cranes that have been developed. The physics behind crane design are also discussed. Attendees then work to assemble the lesson's crane using educator supplied 3D printed parts. During and after the lesson, attendees creatively explore variations on the crane's implementation. Afterwards, they return the kit.

Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$50: 10 Reusable Crane Parts Kits + \$50: Crane Related 3D Printable .STL Files	\$300 We Host \$100: DIY



Title: Machines @ Work: Pump Jack

Grades: 6-12



Title: Pump Jack “Nodding Donkey” STEM Kit

Type: 3D Printed Lesson

Description: Designed for middle and high school students, this 3D printable lesson teaches students about a wide variety of energy conversions: electricity to a variety of mechanical motions (rotational, to linear, to reciprocal, to levers) as they assemble this 3D printed Pump Jack.

Duration: 1.5 Hour

Format: 3D Printed Parts, Background Videos, Student Consumables

Execution:

Option 1: “We Host” Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

Option 2: DIY. You host the lesson yourself at no incremental cost.

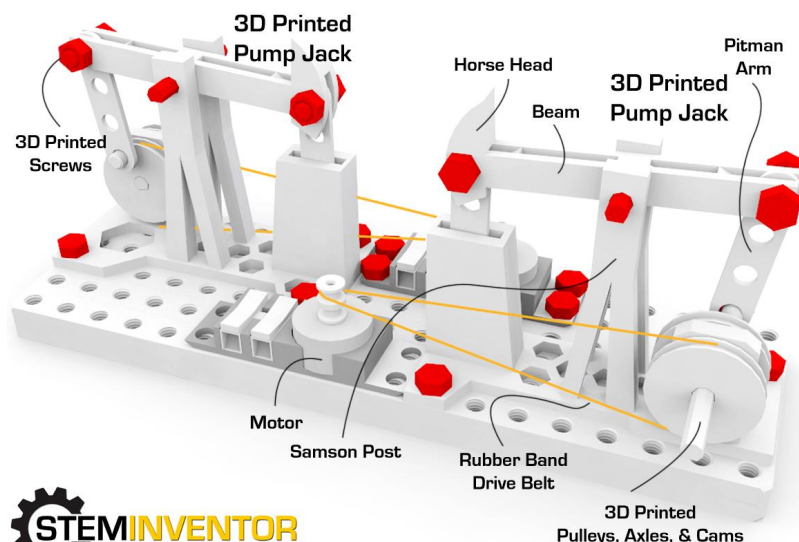
STEM Topics Covered: Electricity, Matter & Energy / Energy Conversion, Simple Machines, Scientific Investigation & Reasoning

Setup: Educators will be provided with 10 Pump Jack parts kits, and 1-year access to the online repository of digital (.STL) files needed to 3D print the structural components of each Pump Jack. Ahead of the date of the class, educators will 3D print all structural components.

Lesson: During the lesson, attendees learn about how electricity works and various forms of energy conversion. An overview of various kinds of mechanical motion is also covered as they work to assemble the 3D printed pump jack during the lesson. During and after the lesson, students can creatively explore variations on the implementation. Afterwards, they return the kit.

Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$199: 10 Pump Jack Reusable Parts Kits + \$50: Pump Jack 3D Printable .STL Files	\$449 We Host \$249: DIY

PUMP JACK “NODDING DONKEY”



Title: Solar Power Station

Grades: 6-12

STEMINVENTOR 3D PRINTABLE SOLAR POWER STATION KIT



Title: Solar Power Station STEM Kit

Type: 3D Printed Lesson

Description: Designed for middle and high school students, this 3D printable lesson teaches students about a wide variety of STEM topics as they assemble a 3D printed solar power station. Participants assemble and link solar panels, and power projects under different lighting conditions.

Duration: 1.5 Hour

Format: 3D Printed Parts, Background Videos, Student Consumables

Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

Option 2: DIY. You host the lesson yourself at no incremental cost.

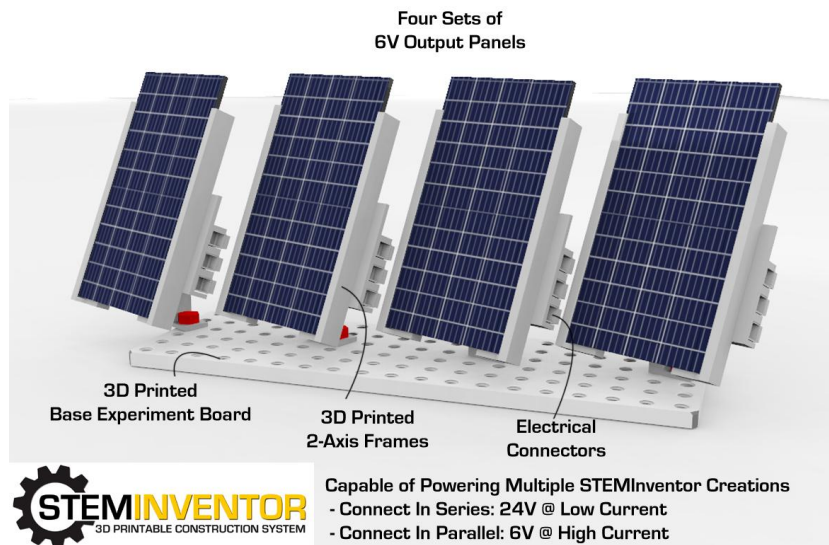
STEM Topics Covered: Environmental Sustainability, Renewable Energy, Electricity, Scientific Investigation & Reasoning

Setup: Educators will be provided with 10 Solar Power Station parts kits, and 1-year access to the online repository of digital (.STL) files needed to 3D print the structural components of each Solar Power Station. Ahead of the date of the class, educators 3D print all structural components. These become loan-able items, and are then lent out to each class attendee.

Lesson: During the lesson, attendees learn about real-life solar power stations, renewable energy, environmental sustainability, and how electricity works, as they work to assemble the 3D printed power station during the lesson. During and after the lesson, students use the engineering design process to improve their production of electricity. Afterwards, they return the kit.

Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$250: 10 Solar Power Reusable Parts Kits + \$50: Power Station 3D Printable .STL Files	\$500 We Host \$300: DIY

SOLAR POWER STATION



Title: Solar House & Air Conditioning

Grades: 6-12

STEMINVENTOR 3D PRINTABLE SOLAR HOUSE & A/C KIT



Title: Solar House & AC STEM Kit

Type: 3D Printed Lesson

Description: Designed for middle and high school students, this 3D printable lesson teaches students about a wide variety of STEM topics as they assemble this solar powered 3D printed house, with an attached evaporation cooling system capable of reducing its interior temperature by $> 10^{\circ}\text{F}$.

Duration: 1.5 Hours

Format: 3D Printed Parts, Background Videos, Student Consumables

Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

Option 2: DIY. You host the lesson yourself at no incremental cost.

STEM Topics Covered: Environmental Sustainability, Renewable Energy, Electricity, Heat Transfer, Additive Mfg, Scientific Investigation & Reasoning

Setup: Educators will be provided with 10 Solar Home & AC parts kits, and 1-year access to the online repository of digital (.STL) files needed to 3D print the structural components of each Solar Home. Ahead of the date of the class, educators will 3D print all structural components. These become loan-able items, and are then lent out to each subsequent class attendee.

Lesson: During the lesson, attendees learn about real-life 3D printed homes, renewable energy, environmental sustainability, the different types of heat transfer (conduction, convection, radiation), electricity, and how evaporative coolers work, as they work to assemble the 3D printed house during the lesson. During and after the lesson, students use the engineering design process to improve their home setup to produce the biggest temp. difference. Afterwards, they return the kit.

Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$250: 10 Solar House Reusable Parts Kits + \$50: Solar House 3D Printable .STL Files	\$500 We Host \$300: DIY

SOLAR HOME & AC



Off-Grid Sustainable Energy

Four Solar Panels Provide
All The Power This
Off-Grid Home Needs
And More

Active Cooling ($> 10^{\circ}\text{F}$)

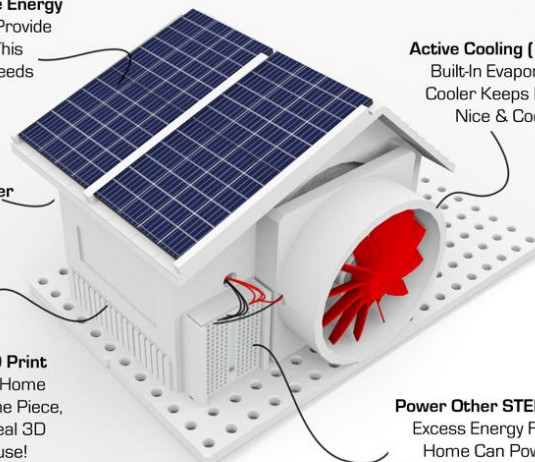
Built-In Evaporative
Cooler Keeps Home
Nice & Cool!

Study Heat Transfer

-Conduction
-Convection
-Radiation

One Piece 3D Print
Main Body of Home
3D Prints As One Piece,
Just Like A Real 3D
Printed House!

Power Other STEM Kits
Excess Energy From
Home Can Power
Other STEMInventor Kits



Title: Machines @ Work: Line Shaft Power

Grades: 6-12

STEMINVENTOR 3D PRINTABLE LINE SHAFT POWER



Title: Line Shaft Power

Type: 3D Printed Lesson

Description: Designed for middle and high school students, this 3D printable lesson teaches students about a wide variety of energy conversions: electricity to a variety of mechanical motions (rotational, to linear, to reciprocal, to levers) as they assemble this engaging 3D printed lesson.

Duration: 1.5 Hours

Format: 3D Printed Parts, Background Videos, Student Consumables

Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

Option 2: DIY. You host the lesson yourself at no incremental cost.

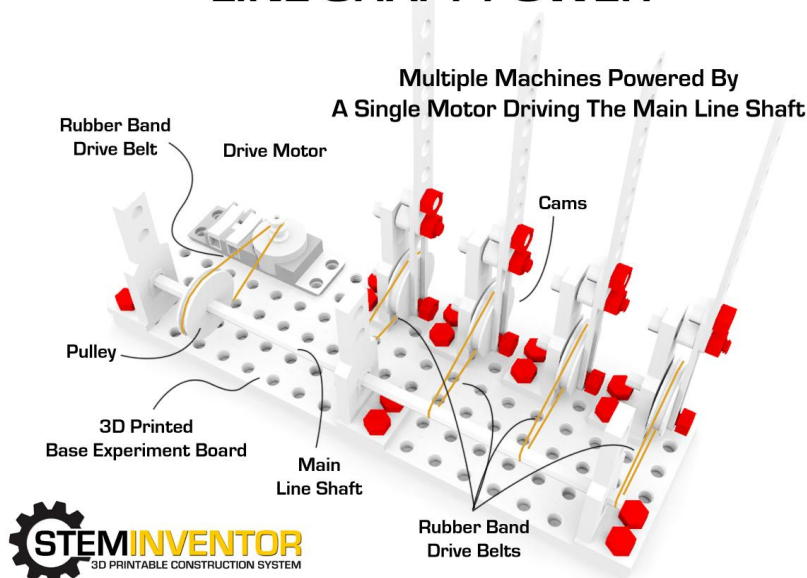
STEM Topics Covered: Electricity, Simple Machines, Scientific Investigation & Reasoning, Engineering Design

Setup: Educators will be provided with 10 Line Shaft Power parts kits, and 1-year access to the online repository of digital (.STL) files needed to 3D print the structural components of each Line Shaft Power kit. Ahead of the date of the class, educators 3D print all structural components. These become loan-able items, and are then lent out to each class attendee.

Lesson: During the lesson, attendees learn about how electricity works and various forms of energy. An overview of various kinds of mechanical motion is also covered as they work to assemble the 3D printed line shaft power kit during the lesson. During and after the lesson, students can creatively explore variations on the implementation. Afterwards, they return the kit.

Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$199: 10 Line Shaft Reusable Parts Kits + \$50: Line Shaft 3D Printable .STL Files	\$449 We Host \$249: DIY

LINE SHAFT POWER



Title: Wind Turbine Challenge

Grades: 6-12



Title: Wind Turbine Challenge

Type: 3D Printed Lesson

Description: Designed for middle and high school students, this 3D printable lesson empowers students to use the Engineering Design Process as they learn about forces, motion, energy, and electricity; and experiment to produce the most power from their turbines.

Duration: 1.5 Hours

Format: 3D Printed Parts, Background Videos, Student Consumables

Execution:

Option 1: "We Host" Training includes virtual instruction by one of our trainers. Participants pick up parts from educator prior to virtual class, and use during the program. All training materials are loanable/reusable by the educator thereafter.

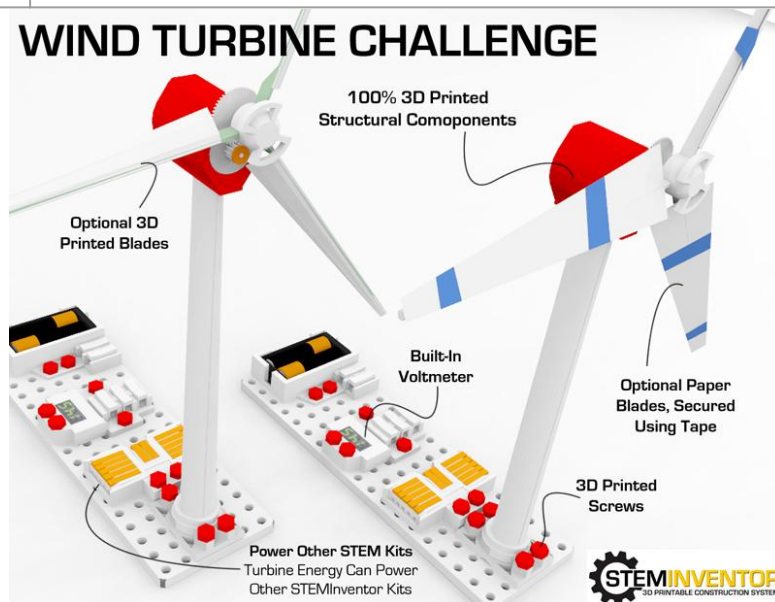
Option 2: DIY. You host the lesson yourself at no incremental cost.

STEM Topics Covered: Scientific Investigation & Reasoning, Matter & Energy, Engineering Design. Electricity, Renewable Energy, Power Systems

Setup: Educators will be provided with 10 Wind Turbine Challenge parts kits, and 1-year access to the online repository of digital (.STL) files needed to 3D print the structural components of each Wind Turbine. Ahead of the date of the class, educators 3D print all structural components. These become loan-able items.

Lesson: During the lesson, attendees learn about renewable energy, the inner workings of wind turbines, how turbines integrate with city power grids, turbine blade design considerations, electricity, the engineering design process and more, as they work to assemble the 3D printed turbine during the lesson. During and after the lesson, students use the engineering design process to improve their blade designs. Afterwards, they return the kit.

Training	Reusable Training Materials	Total
\$200: We Host \$0: DIY	\$250: 10 Wind Turbine Reusable Parts Kits + \$50: Wind Turbine 3D Printable .STL Files	\$500 We Host \$300: DIY



How STEMinventor 3D Printed Lessons Work

Step 1: STEMinventor Access & 3D Printing



- Library Accesses STEMinventor STEM Kit Digital Library
- Library 3D Prints Unlimited* Replicate STEM Kits
- These STEM Kits Become Library Loan Items

Step 2: Students Check Out 3D Printed STEM Kits



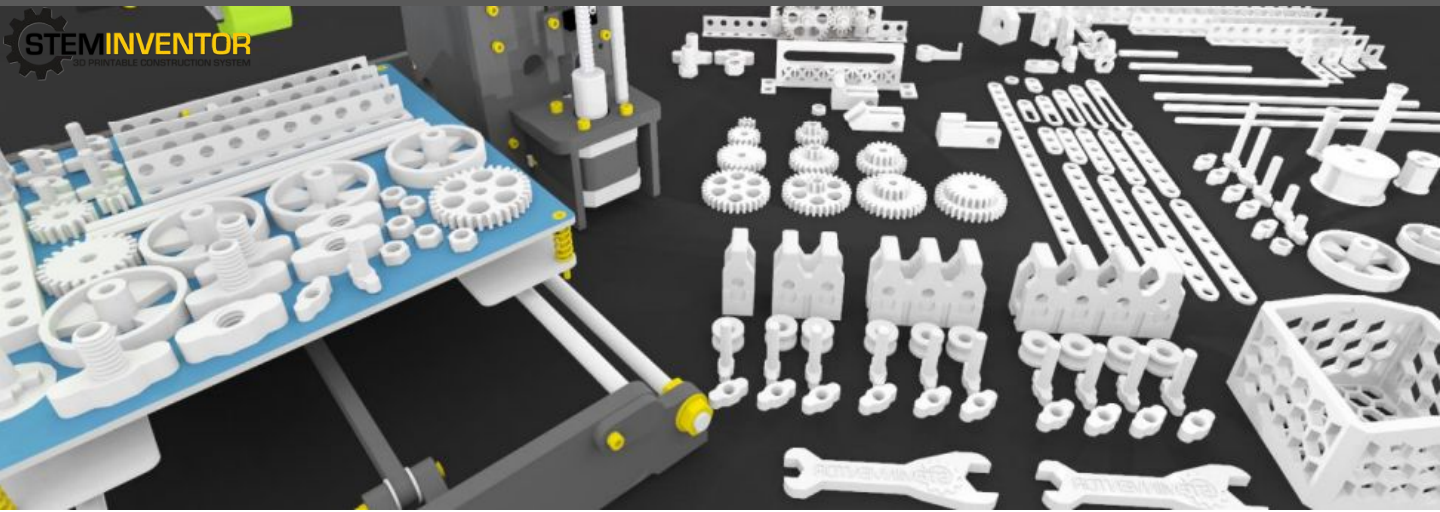
- Unassembled STEM Kit Brought Home
- Broken/Missing Parts? Not a Problem. Library Simply Prints More
- Student Awaits Online Training Date

Step 3: Students Assemble & Test STEM Kit During Virtual Training



- Student Logs Into Webinar At Designated Time
- Students Assemble and Test STEM Kit During Webinar
- Student Keeps Kit for Next Several Days, Optimizing Design Challenge
- Student Returns Kit To Library
- Broken/Missing Parts? Not a Problem. Library Simply Prints More

Make-Your-Own 3D Printed STEM Programs & Makerspace Resources



Turn Your Makerspace Into a Low-Cost High-Impact STEM Education Hub!

Title: STEMinventor Single Site Access

Type: 3D Printed Makerspace Resources

Description: The **STEMInventor Platform** suite offers a wide variety of easy-to-replicate 3D printable construction components: from wheels, to axles, to gears, pulleys, cams, structural beams, cranks, screws, and more. With hundreds of 3D printed parts to choose from, the possibilities are limitless! Print components for hundreds of patrons/students effortlessly. Replace broken or missing parts by simply printing more. Give away parts to patrons/students that build creations at your facility, then print more for mere pennies. Educators can also use these components to construct their own programs on a variety of STEM-focused topics. Ideal for budget-friendly, hands-on STEM learning

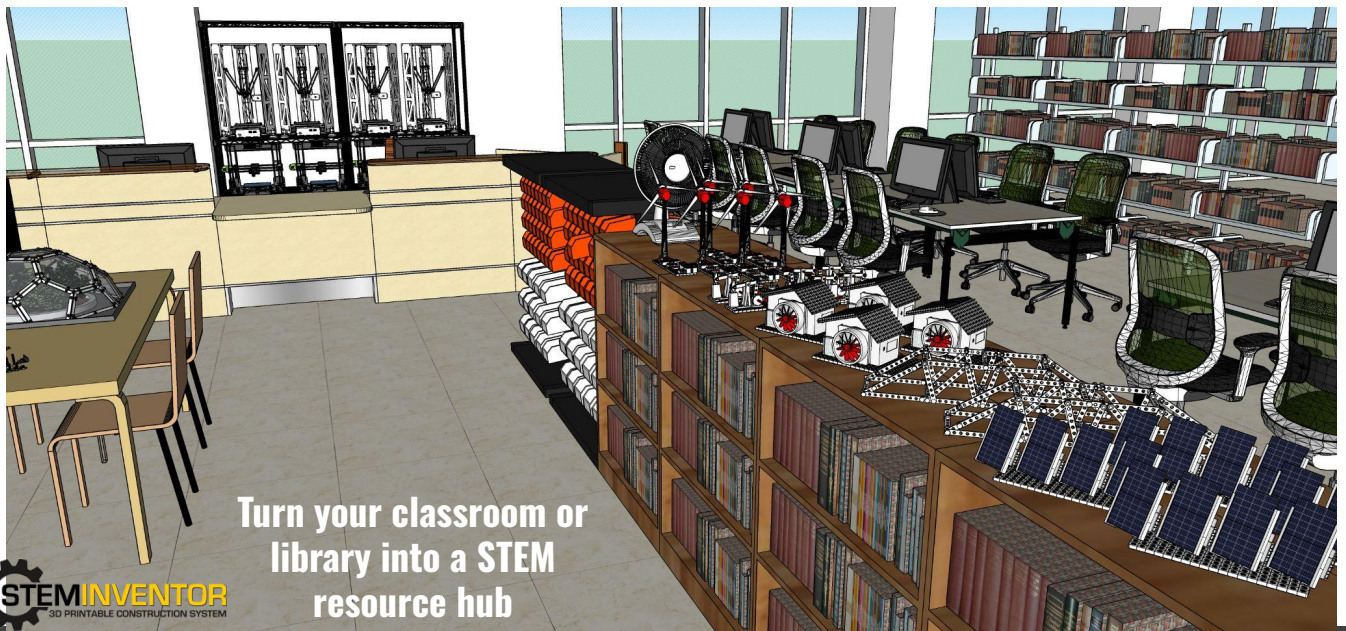
Duration: Self Paced

Format: Students, Educators, & Library Staff build their own STEM inventions, at their convenience

Price:

STEMInventor.com Single Site Access: \$239/yr. for access to all digital 3D printable (.STL) files

Parts Kits: Prices Vary. See "Materials Price" column on Page 3 for more details



Turn your classroom or
library into a STEM
resource hub



STONEOAK MEDIA



Augmented Reality & 3D Printing Focused Products and Programs



STONEOAK MEDIA

StoneOakMedia.com | STEMInventor.com

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Austin, TX 78731