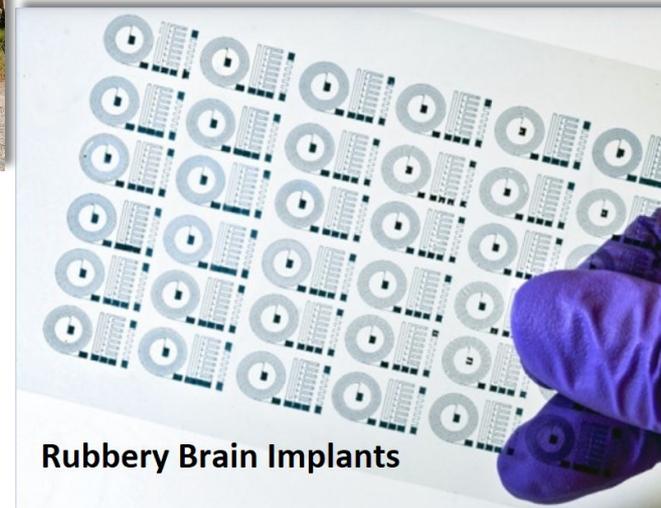
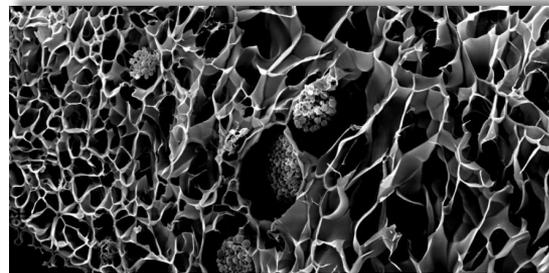




# MAKERBOT EDUCATION SOLUTIONS





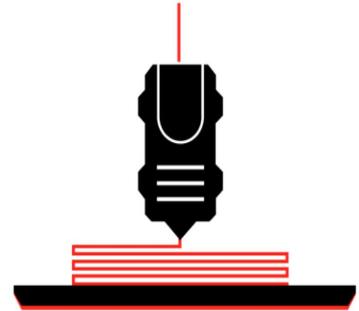
MAKERBOT PROPRIETARY AND CONFIDENTIAL

Rubbery Brain Implants



# Agenda

- Who uses 3D Printing?
- Why MakerBot for Education
- MakerBot Printers
- How to Use 3D Printing in a remote Environment



## WHAT IS 3D PRINTING?

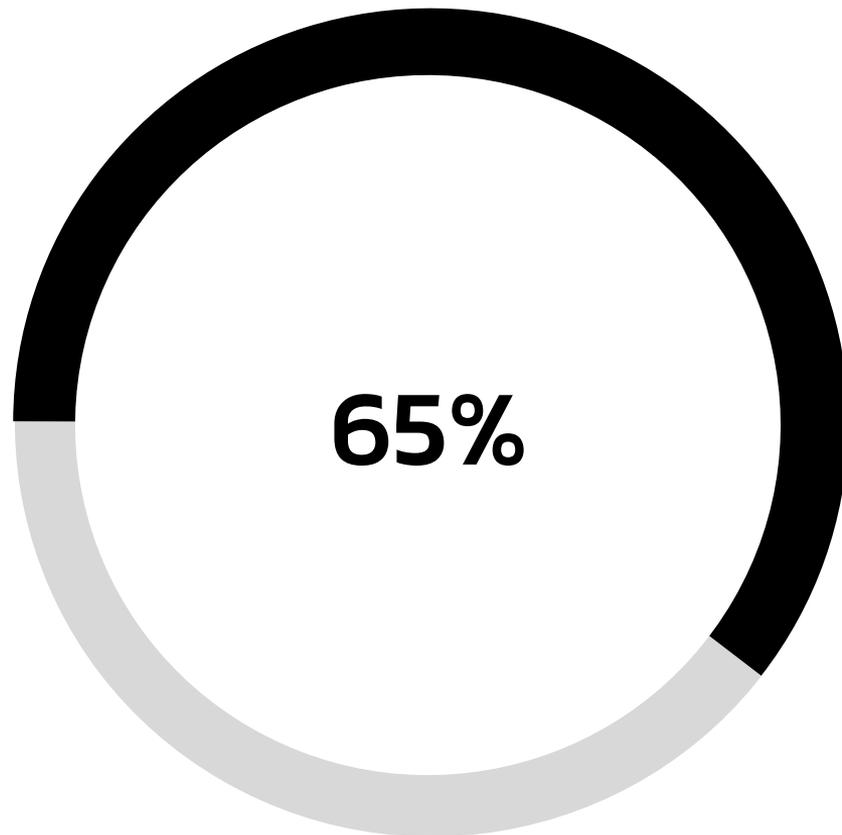
---



3D printing is the process of taking a digital model and making it a physical object.

## WHY 3D PRINTING?

**“65% OF CHILDREN ENTERING  
PRIMARY SCHOOL TODAY WILL  
ULTIMATELY END UP WORKING  
IN COMPLETELY NEW JOB TYPES  
THAT DON'T YET EXIST.”**



**SOURCE** World Economic Forum:  
<http://reports.weforum.org/future-of-jobs-2016/chapter-1-the-future-of-jobs-and-skills/>

MAKERBOT PROPRIETARY AND CONFIDENTIAL



# WHO USES 3D PRINTING?



Product Design



Engineering



Architecture



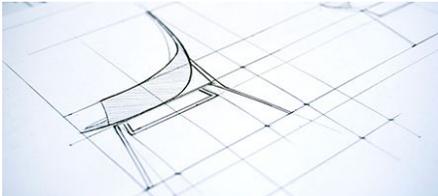
Entertainment



Manufacturing



Medical



Higher Education



Primary Education

# MakerBot – 3D Printers Designed for Classroom Success

Most Comprehensive Teacher Training



Guided learning experience for teachers focused on curriculum creation



- Over 10 Hours of ISTE-approved content for teachers

Only Student Training for 3D Printing



The only 3D printer that offers training for students in printer operation & design thinking.

- 20 Hours of interactive course content

Largest Active Educator Community



Join the largest educator community in 3D printing to support teaching in the classroom

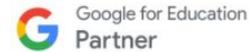
- 600+ lesson plans
- Join 7,000+ schools and 9,000+ teachers

Classroom Management Tools

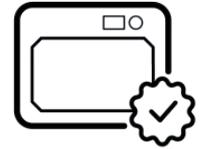


Worry-free teaching by integrating into leading education software platforms.

- Designed with the classroom in mind
- Integrated with Google\* & TinkerCad



Easy to Use and Safe Hardware



Future-proof hardware, safe for the classroom.

- Safe to use in the classroom with NIOSH testing, Sketch's enclosure, HEPA filter & UL Certified.
- Use one ecosystem from early education into your career



# MakerBot Certification Program for Students



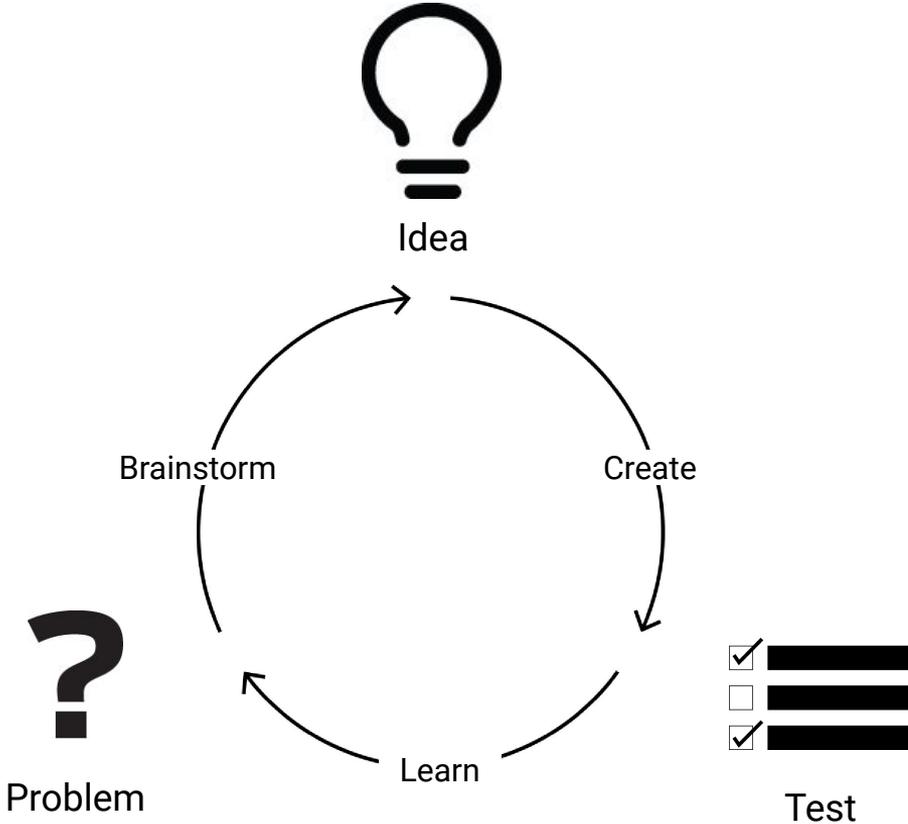
Middle and high school students gain a proven edge with design thinking skills and hands-on 3D printing training.

- Printer (setup and usage) and essential parts
- In-depth look at Design Thinking
- Build on design thinking skills through applied practice
- Prototype design for 3D printing



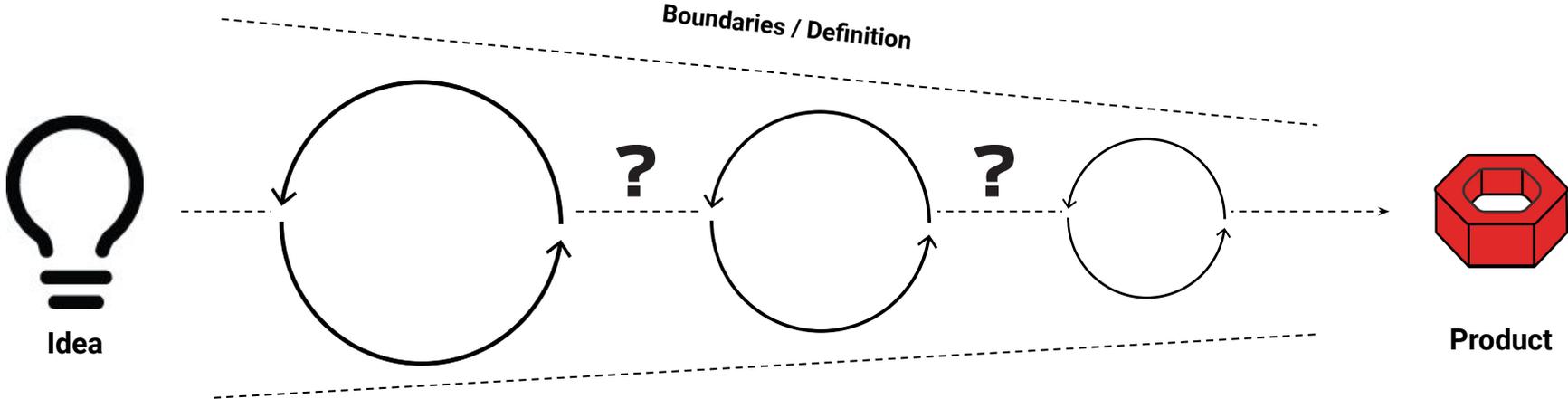
# Design Process

---



# Design Process

---



**Iteration**



**Iteration**



**Iteration**



# MakerBot Education

- Over 600 ready-to-go lesson plans
- Detailed classroom-ready STE(A)M lesson plans for K-12 students
- Aligned to NGSS & Common Core Standards
- Written with support from over 80 leading STEM educators

Filter Lessons by Subject

Filter Lessons

Art

Engineering

Geography

History

K-6  
Lesson Plans

# WHAT IS THE RETURN ON INVESTMENT?



Students at the [Whitby School](#) moved through the design process by turning a fictional city into a scale model.

## K-5

- Inspire curiosity in STEAM
- Create tactile learning models for complex concepts
- Establish spatial reasoning
- Early engineering concepts and process



Students at [MacArthur Barr Middle School](#) iterated and optimized 3D printed wheels to improve their CO2 powered cars.

## 6-8

- Develop design thinking skills
- Learn through iteration
- Hands-on engineering principles
- Deepen history lessons through recreating artifacts



Students at [Brooklyn Technical High School](#) collaborated to demonstrate complex Calculus principles with 3D printed parts.

## 9-12

- Learn professional 3D design skills
- Simulate real-world engineering problems
- Develop college-readiness through advanced design thinking
- Unlock critical thinking skills required to bring an idea to reality

# MakerBot Product Portfolio

The best product portfolio in the industry



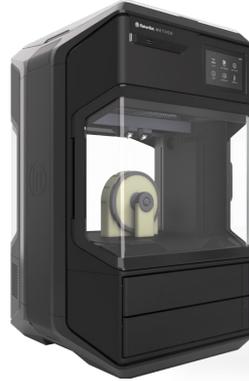
**MakerBot Sketch**  
Early Education

Get started with 3D printing including a fully enclosed printer and seamless workflow. Ideal for minimizing the number of students per printer in your classroom.



**MakerBot Replicator+**  
Early Education through  
High School

Expand into Experimentation. Add additional build volume and an easily swappable extruder to introduce students to experimentation and innovation.



**MakerBot Method**  
High School, Higher  
Ed, Professional

Performance 3D Printing. Bring industrial printing accuracy to your prototypes and concept models with a circulating heated build chamber.



**MakerBot Replicator  
Z18**  
Large Format

Large format 3D printer ideal for oversized prints with an 11.8 x 12 x 18 in build volume.



**MakerBot Method X**  
Higher Edu,  
Professional

A manufacturing workstation. Print in manufacturing grade materials, such as ABS and ASA, with repeatable dimensional accuracy.

# MakerBot Product Portfolio

The best product portfolio in the industry



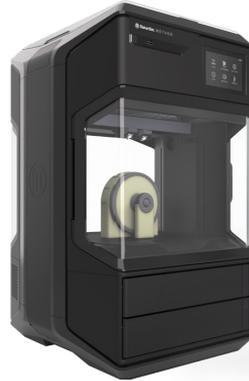
**MakerBot Sketch**  
\$1,799

Early Education



**MakerBot Replicator+**  
\$1,999

Early Education through  
High School



**MakerBot Method**  
\$4,999

High School through  
College



**MakerBot Replicator  
Z18**  
\$5,499

Large Format

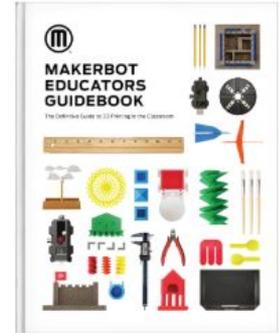


**MakerBot Method X**  
\$6,499

College through  
Professional

# Replicator+

Educators Edition



## ONE MAKERBOT CERTIFICATION™ PROGRAM FOR EDUCATORS LICENSE

- Become a MakerBot 3D printing expert with the ISTE seal of approval
- Gain confidence as a STEM leader
- Learn how to create 3D printing lesson plans

## ONE COPY OF THE MAKERBOT EDUCATORS GUIDEBOOK

- Provides a crash-course in 3D printing
- Introduction to 3D design tools
- Classroom-ready 3D printing projects



# SKETCH

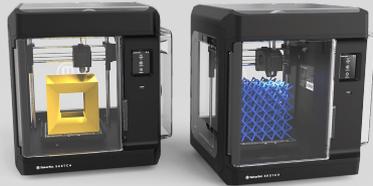
## Classroom

### THE IDEAL CLASSROOM SET-UP

The most reliable classroom 3D printing set-up, giving your students the access they need and setting you up for classroom success.



### Dual Printer Setup



### MakerBot Certification



### MakerBot Cloud



# Introducing the MakerBot SKETCH Classroom

Two printer setup starting at \$1799



## What's included?

### Hardware

- (2) Sketch Printers
- (6) Spools of PLA
- (4) Build Plates
- (2) Spatulas
- (2) Snips
- 1 year warranty

### Software and Certifications

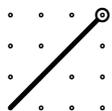
- (2) Teacher Certifications
- (10) Student Certifications
- MakerBot Cloud with Print Queuing



# METHOD

for Education

PREPARING FUTURE PROFESSIONALS WITH  
INDUSTRIAL 3D PRINTING



**Professional 3D Printing within  
Student Reach**  
Train Students on Professional  
Grade Equipment



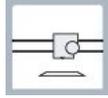
**Forward-Looking Career  
Readiness**  
Paving Career Pathways with  
Real World Exposure



**Open Materials  
Platform**  
More Materials. More  
Possibilities.



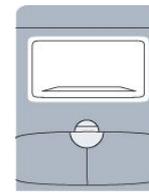
# Bridging the Gap



Desktop systems

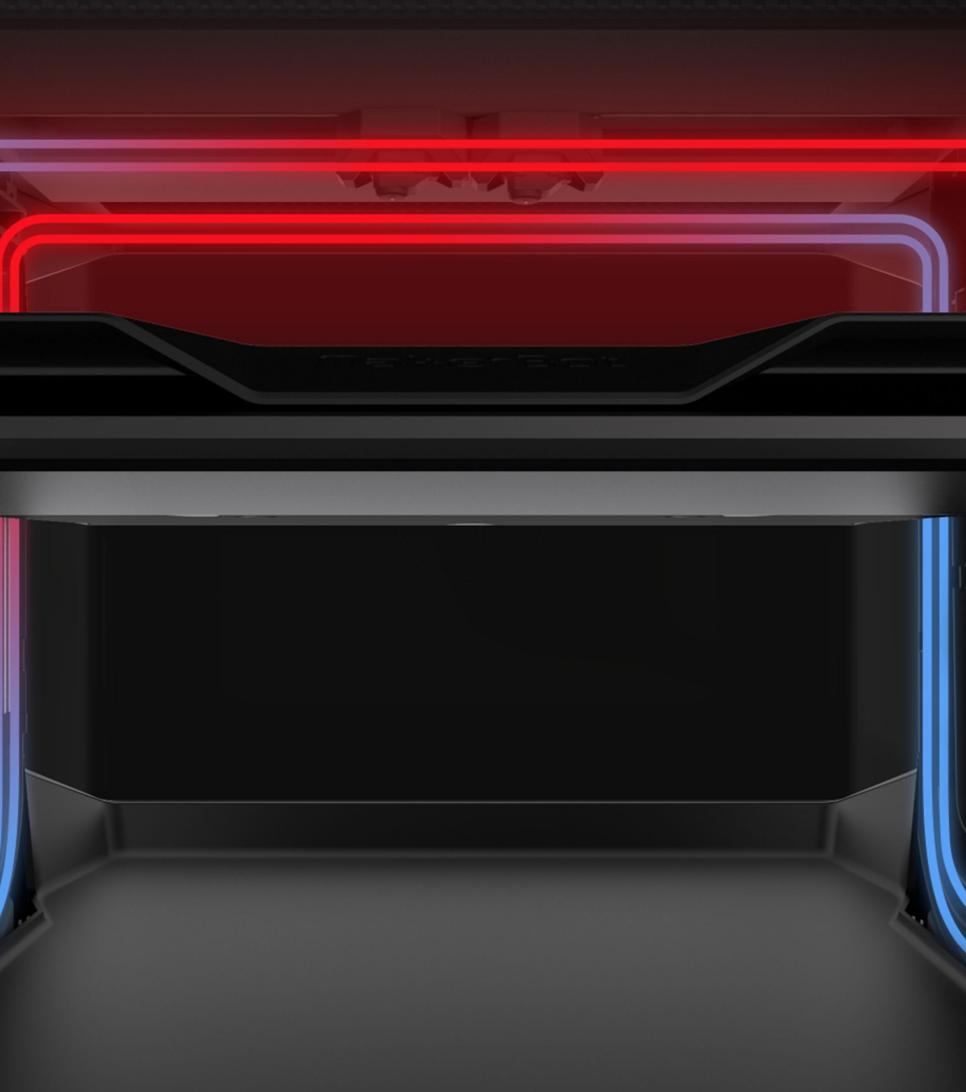


METHOD



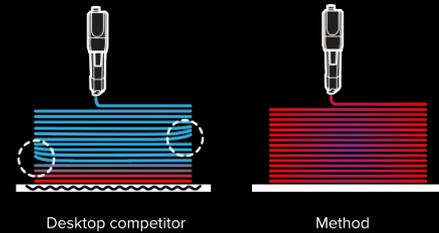
Industrial systems

<b>Complete Materials Control</b>	Sealed Material Bays		✓	✓	Consistent print results
	Precision Materials		✓	✓	
<b>Full Environment Control</b>	Heated Chamber		✓	✓	Dimensionally Accurate Parts
	Rigid Metal Frame		✓	✓	
	Factory Levelled		✓	✓	
<b>Accessibility</b>	Quick Setup	✓	✓		No technician or installation support required
	User friendly UI/UX	✓	✓		
<b>Total Cost of Ownership</b>	Low initial investment and cost per part	✓	✓		1/3 of the first year cost of an entry-level industrial 3D printer
	Minimal maintenance, service and operation costs		✓		



## Circulating Heated Chamber

- Control the temperature and quality of every layer
- Full active heat immersion during the entire duration of the print



 **MakerBot.**



**COMPETITOR  
DESKTOP 3D PRINTER**



 **METHOD.**





## Dual Performance Extruders

- Accelerated print times
- Smart sensors for material management and print protection
- Greater torque with a 19:1 dual-drive gear ratio (3x more pull force than desktop standard)
- Lengthened thermal core (3x longer than desktop standard)



# MakerBot Certification



More than just learning about printer operation.

Certify your students in real world problem solving through design thinking and 3D printing.

Get access to a full set of interactive content, projects, quizzes and exams developed by MakerBot Certified Educators.

## Results

- Students are introduced to 3D printer operation, design thinking, and problem solving in an interactive certification
- Teachers become leaders in 3D printer operation, STEAM curriculum integration, and content development
- Quickly integrate 3D Printing into the classroom with access to 600+ curated lesson plans for all grade levels and subjects



# MakerBot Cloud

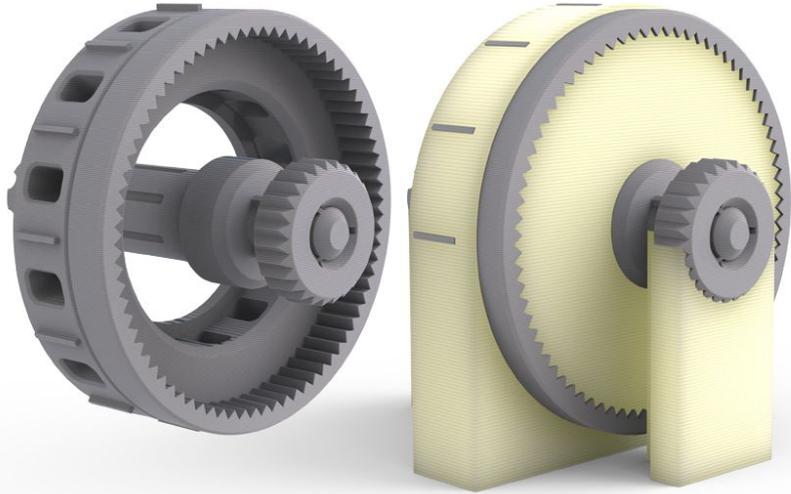


Make the classroom 3D printing experience even easier with our cloud-based, 3D printing file management software. Students submit their designs without issue, and teachers queue up their classroom's prints with ease.

## Results

- Classroom 3D printer management is easier than ever with one queue management dashboard
- Students can design a project and submit it to be printed all through their internet browser
- Teachers can focus on students learning instead of printers printing

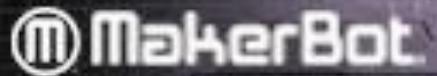




## Soluble Support Material PVA & SR30

- Unrestricted geometrical freedom
- Superior surface quality
- Fast and effortless support removal





**MECHANICAL GRIPPER:  
WATER-SOLUBLE PVA SUPPORTS**



# MakerBot Materials



METHOD X

METHOD

## Support Materials



<b>NEW</b> NYLON CARBON FIBER	TOUGH	NYLON	PETG	PVA
PLA	LABS KIMYA PETG CARBON FIBER	LABS JABIL PETG ESD	LABS JABIL SEBS 95A	
ABS	ASA	<b>NEW</b> PC-ABS	<b>NEW</b> PC-ABS FR	SR-30
LABS KIMYA ABS CARBON FIBER	LABS MITSUBISHI CHEMICAL DURABIO	LABS polymerizer POLYMAX PC		



# Student Submission

## Classroom Management for 3D Printing



### Submit Your Model For Printing

This is a link to a shared printer queue. Your model will be submitted and reviewed for printing by the person who shared this link with you.

Name

Add an .stl or .MakerBot file

<input type="text"/>	Choose File
----------------------	-------------

Submit Your Model

# Print Queue

## Classroom Management for 3D Printing



### Team Print Jobs

Create a New Print Job



### Queue

Member	Filename	Time Submitted	Status	Printer	Name	Print Time
	Handle.MakerBot	10:30am 12.23.2019	 Ready to print	Replicator+	Mr. Boblato	1D 7hr 30m ...
	Handle-version4.MakerBot	08:30am 12.30.2019	 Preparing File	Method	Method Man	7hr 30m ...
	MyFirstPrint.stl	10:30am 12.23.2019	 Ready to print	Replicator+	Mr. Boblato	1D 7hr 30m ...

Send Queue to Available Printers

### Printing Now

Member	Filename	Time Submitted	Status	Printer	Name	Time Remaining
	Big-File.MakerBot	10:30am 12.23.2019	 Printing	Replicator+	Mr. Boblato	4hr 20m ...
	Handle-version4.MakerBot	08:30am 12.30.2019	 Error	Method	Method Man	n/a ...
	MyFirstPrint.stl	10:30am 12.23.2019	 Paused	Replicator+	Mr. Boblato	1D 7hr 30m ...

### Recent History [View All](#)

Member	Filename	Time Submitted	Status	Printer	Name	Actual Print Time
	Handle.MakerBot	10:30am 12.23.2019	 Finished	Replicator+	Mr. Boblato	7hr 30m ...
	Handle-version4.MakerBot	08:30am 12.30.2019	 Failed	Method	Method Man	7hr 30m ...
	MyFirstPrint.stl	10:30am 12.23.2019	 Cancelled	Replicator+	Mr. Boblato	4hr 15m ...



# Printer Management

## Classroom Management for 3D Printing

- 
- 
- 
- 

### Team Printers Management

#### My Printers

**Idle**

-0h 1m Remaining  
/home/current\_thing/  
people.makerbot  
by printerpanel  
on Boyle's Water

Pause Cancel Material Settings

**Printing**

37h 41m Remaining  
/home/usb\_storage0/  
SEBS Box 0  
cahm.makerbot  
by printerpanel  
on Mace Windu

3%

Pause Cancel Material Settings

**Idle**

SOP3  
Method  
Total Jobs: 60

Pause Cancel Material Settings

# INDUSTRY-LEADING SUPPORT

MakerBot support delivers unrivaled, comprehensive coverage from Brooklyn-based 3D printing experts.



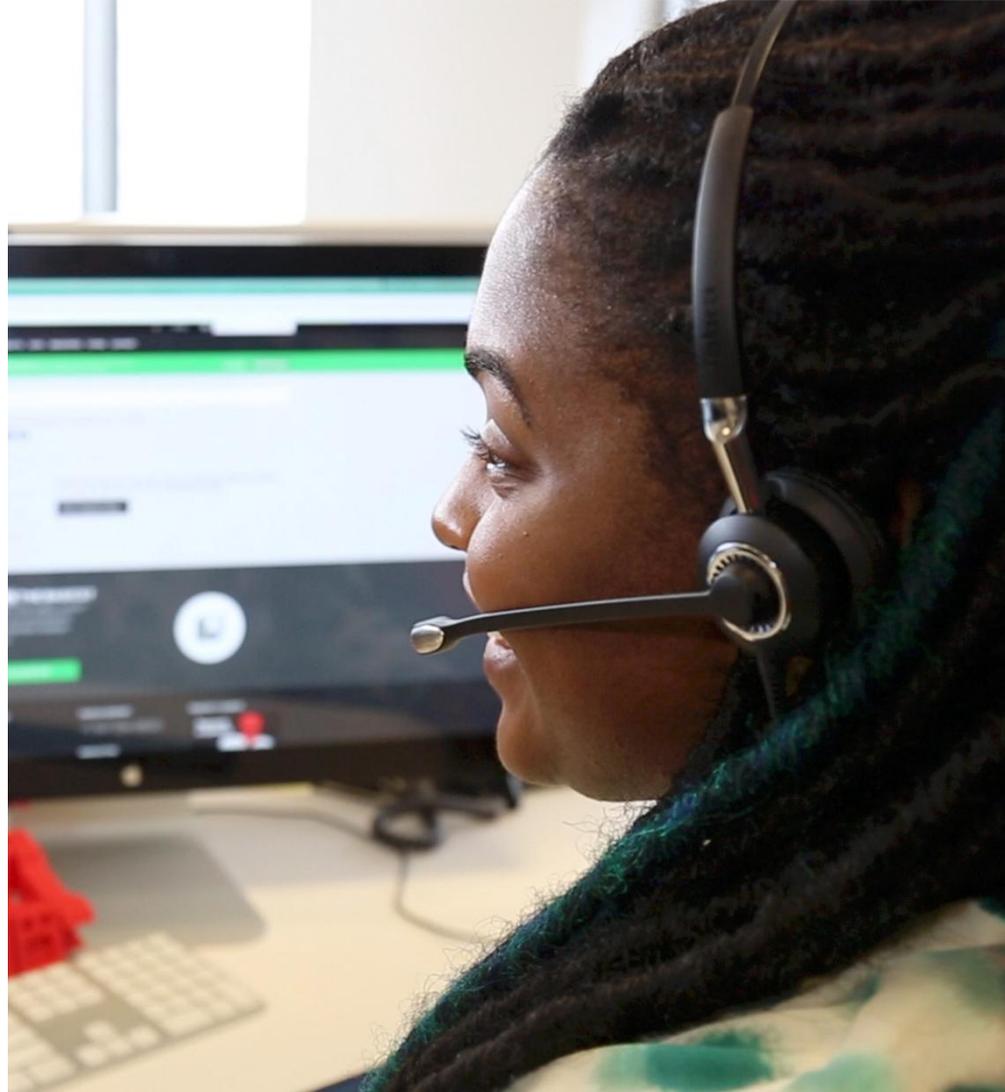
The fastest, most comprehensive level of product support—included with all MakerBot Education bundles.



Fast troubleshooting. Simplified.



Get started easily with guided unboxing and setup videos.





MakerBot.

*Thank You*