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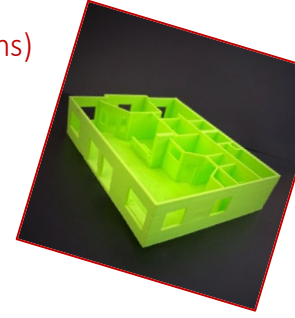
Get Started with Additive!

Curious? Read on.

Are your students tinkerers, makers, artists, explorers, inventors, engineers? All these things at once? Are you? You don't need a specific type of printer, expensive software or even hardware to start with 3D Design! What you need are resources and tools. Tools that you – **and your students** - can easily access. Get started with design thinking, digitizing ideas, modeling, printing, Design for Additive Manufacturing (DfAM) and more with the following resources.

Education Resources (projects, lesson plans, classroom integration, curriculum ideas, introductions)

- <http://www.instructables.com/id/3D-Printing-1/>
 - A free simple introduction to 3D Printing from the folks at Instructables
- <https://www.instructables.com/teachers/>
 - Instructables Free Teacher resources collection
- <https://isam2022.hemi-makers.org/program/>
 - International Symposium on Academic Makerspaces program and papers
- <https://www.linkedin.com/learning/learning-3d-printing-8992447/how-3d-printing-works>
 - Basic Intro to 3D Printing (paid subscription but possible to access institutionally / library)
- <https://3dprint.nih.gov/>
 - The NIH 3D Print Exchange provides models. Offers tools to create and share models related to biomedical science.
- <http://spolearninglab.com/curriculum/lessonPlans/index.html>
 - STEAM orientated Grades 3-8 3D Lesson Plans (good for all ages) uses open source / accessible software
- <https://pages.makerbot.com/EducatorsGuidebook21.html>
 - Downloadable PDF – Educators Guidebook (from Makerbot)
- <https://www.makerbot.com/media-center/2016/06/03/lesson-plans-steam-learning>
 - 3D Printing Lesson Plans (from Makerbot but can also be adapted for other printers/software)
- <https://designmaketeach.com/>
 - Tips, Techniques, Tutorials & Lessons for Integrating Digital Fabrication technologies in the Classroom
- <https://edtechmagazine.com/k12/article/2019/06/resurgence-3d-printers-modern-learning-environments-perfcon>
 - The resurgence and use of 3D printers in Modern Learning Environments
- https://www.stratasys.com/en/resources/?filter=RR_Case_study+RI_Education
 - Education Case Studies and Papers (from Stratasys)
- <https://3duniverse.org/2021/08/05/educational-resources-for-digital-fabrication-in-the-classroom-and-home/>
 - Updated EDU Resources from 3D Universe
- <https://3dprintingindustry.com/3d-printing-basics-free-beginners-guide/>
 - 3DP Free Beginners Guide to 3D Printing.
- <http://www.schrockguide.net/3d-printing.html>
 - Really big resource collection around 3D printing and design from Kathy Schrock.
- <http://enablingthefuture.org/>
 - Global community using their 3D printers to create free upper limb assistive devices.
- <https://www.allevi3d.com/bioprinting-101/>
 - Introduction to BioPrinting from Allevi Bioprinters
- <https://all3dp.com/basics/>
 - Great starter resources, from in depth 101 on materials, to troubleshooting print failures, to understanding supports.
- <https://www.thingiverse.com/>
 - A free for noncommercial use 3D repository with a vast array of files
- <https://www.myminifactory.com/scantheworld/full-collection>
 - Scan the World – Objects from our shared human rich cultural heritage



Books and Print (through our affiliate links)

- [Getting Started with 3D Printing: \[...\] 2nd Edition](#)
- [The Zombie Apocalypse Guide to 3D printing: Designing and printing practical objects](#)
- [3D Printing for Dummies 2nd Edition](#)
- [3D Printing Failures: 2022 Edition: How to Diagnose and Repair ALL Desktop 3D Printing Issues](#)
- [3D Printing 101: The Ultimate Beginners Guide](#)
- [3D Printing \(The MIT Press Essential Knowledge series\)](#)
- [The 3D Printing Cookbook: Tinkercad Edition: 3D Design Lessons for 3D Printing Classes](#)
- [Functional Design for 3D Printing 3rd edition: Designing 3D printed things for everyday use](#)
- [Invent to Learn: Making, Tinkering, and Engineering in the Classroom 2nd Edition](#)
- [Worlds of Making: Best Practices for Establishing a Makerspace for Your School - Re-making the Library Makerspace: Critical Theories, Reflections, & Practice](#)



Design Software (Free, Open Source, or Education Pricing and access)

- **Autodesk** - <https://www.autodesk.com/education/edu-software/>
 - Software for the Education Community (from Autodesk) – free, education pricing - select products
- **Tinkercad** - <https://www.tinkercad.com/>
 - Tinkercad is a great free browser-based app for 3D modeling (from Autodesk)
- **Doodle 3D** - <https://www.doodle3d.com/>
 - Create and convert 2D Doodles into 3D objects, browser based, free
- **Sketchup** - <https://www.sketchup.com/>
 - Sketchup comes in free, paid, and educational downloadable and web versions.
- **Spaceclaim** - <https://www.ansys.com/academic>
 - Ansys (Spaceclaim) Educational Licensing available
- **Blender** - <https://www.blender.org/>
 - Open source 3D modeling and sculpting.
- **CAD Assistant** - <https://www.opencascade.com/products/cad-assistant/>
 - CAD Viewer and Converter (desktop and ios)
- **freeCAD** - <https://www.freecadweb.org/>
 - Open Source CAD software
- **LibreCAD** - <https://librecad.org/>
 - Open Source 2D CAD Software
- **Meshroom** - <https://alicevision.org/#meshroom>
 - Open source Photogrammetry software
- **Meshlab** - <https://www.meshlab.net/>
 - Free processing and editing 3D triangular meshes
- **ZBrush Core Mini** - <https://www.maxon.net/en/zbrushcoremini>
 - Free for noncommercial use 3D sculpting software / light version of ZBrush
- **Pepekura** - <https://tamasoft.co.jp/pepakura-en/>
 - Free Windows application which makes unfolded patterns from 3D data for paper crafts and more
- **CloudCompare** - <https://www.danielgm.net/cc/>
 - 3D point cloud and mesh processing software – Free Open-Source Project
- **Sweet Home 3D** - <http://www.sweethome3d.com/>
 - Perfect for architecture students and turning floor plans into 3D models



Slicer Software (Free, Open Source, or Education Pricing and access)

- Ultimaker Cura - <https://ultimaker.com/software/ultimaker-cura> (free)
- PrusaSlicer - <https://www.prusa3d.com/prusaslicer/> (free)
- KISSlicer - <https://www.kisslicer.com/> (free)
- Simplify3D - <https://www.simplify3d.com/> (25% with educational pricing)
- Slic3er - <https://slic3r.org/> (free)
- Repetier-Host - <https://www.repetier.com/> (free)



Please note: We provide these 3rd party links and resources as references based on feedback from educators and parents alike. We do not own the linked content and content owners can change their resources at any time. We do not guarantee suitability or appropriateness for age or skill level. Please use at your own discretion. 2021