About Us

Founded in 1979, Allegheny Educational Systems provides innovative, technology-based educational systems and professional services to over 2,000 schools, colleges and universities throughout Pennsylvania, New York and New Jersey.

Through our network of manufacturing partners, we provide the most up-to-date curriculum resources, software, equipment, furniture, professional development and customer support available today, for a wide range of STEM and Career and Technical Education areas.
**WHAT IS A MAKERSPACE?**

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300-232-7600
What is a MakerSpace / Fab Lab?

MakerSpaces have spread from inner-city Boston to rural India, from South Africa to the North of Norway. Activities in MakerSpaces range from technological empowerment to peer-to-peer project-based technical training to local problem-solving to small-scale high-tech business incubation to grass-roots research. Projects being developed and produced in MakerSpaces include solar and wind-powered turbines, thin-client computers and wireless data networks, analytical instrumentation for agriculture and healthcare, custom housing, and rapid-prototyping of with the use of rapid-prototyping machines.

MakerSpaces share core capabilities, so that people and projects can be shared across them.

This currently includes:

- A computer-controlled lasercutter, for press-fit assembly of 3D structures from 2D parts
- A larger (4’x8’) numerically-controlled milling machine, for making furniture- (and house-) sized parts
- A signcutter, to produce printing masks, flexible circuits, and antennas
- A precision (micron resolution) milling machine to make three-dimensional molds and surface-mount circuit boards
- Programming tools for low-cost high-speed embedded processors

These work with components and materials optimized for use in the field, and are controlled with custom software for integrated design, manufacturing, and project management.

http://fab.cba.mit.edu

What can a Maker Space / Fab Lab do?

Here at Allegheny Educational Systems, we help organizations create educational spaces that are functional incubators for ideas, creativity, and learning. These spaces, sometimes referred to as Fab (Fabrication) Labs, Makerspaces, or Techshops, are an excellent investment that will prepare students for future STEM careers while becoming a source of revenue for schools.

PROFIT OPPORTUNITY!

Look for George and our new Profit Opportunity items throughout the following pages, then find out more information and gain inspiration for fundraising projects in our new Profit Center section on Pages 28-31.
**Layout Includes:**

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<th>MANUFACTURING</th>
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<td>4’ x 4’ CNC Plasma Cutter</td>
<td></td>
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<tr>
<td></td>
<td>Cold Saw with Stand</td>
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</tbody>
</table>
Ultimaker

Fueling innovation-driven education

Ultimaker’s products and solutions encourage students to address real-world problems, regardless of the grade level. It’s Ultimaker’s goal to set the engineers, artists and designers of the future on the right path, and to support their learning along the way. Ultimaker 3D printing solutions are the perfect accompaniment to developing key skills in science, technology, engineering, art and math (STEAM).

Design freedom with industrial-grade materials

Ultimaker’s range of materials are formulated to achieve superior results. Optimized Cura profiles offer the best print settings per material and recognize which print core and material you’re using. The open filament system lets you experiment with new materials and test the latest market developments.

Ultimaker S5 Pro Bundle

The Ultimaker S5 Pro Bundle transforms your 3D printing workflow – with automatic material handling, efficient air filtering, and filament humidity control. Ultimaker has integrated the popular Ultimaker S5 printer with the Air Manager and Material Station – boosting productivity, flexibility and the ability to handle complex applications with an extended range of materials.

The Ultimaker S5 Pro Bundle includes:

• **Ultimaker S5** – Trusted by professionals worldwide, the Ultimaker S5 is built to maximize uptime with great print results and a large build volume. The open filament system and Ultimaker Marketplace ensures you have the freedom to choose materials from leading brands. The software simplifies the 3D printing workflow and allows easy integration with leading CAD platforms and managing your printers via network or the cloud.

• **Ultimaker S5 Air Manager** – The closed, inside-out airflow filters up to 95% of all ultrafine particles (UFPs) emitted during 3D printing and forms a safe, physical barrier to the print area.

• **Ultimaker S5 Material Station** – Load up to six material spools inside the humidity-controlled chamber and the Material Station’s smart features take care of the rest.
DESKTOP 3D PRINTERS

**MakerBot Method and Method X by Stratasys**

Bridging the gap between Industrial and Desktop 3D printing.

Developed from the ground up by improving upon several patented industrial technologies from Stratasys – technologies that empowered the DNA of an industrial 3D printer from the onset. Combined with MakerBot's industry-leading accessibility and smart workflow features, Method screams past desktop 3D printers while ensuring dimensional accuracy and industrial 3D printing reliability.

**Key Features**

- **Circulating Heated Chamber** - Controls the heat of every layer
- **Dual Performance Extruders** - Maximizes material flow rate
- **Materials** - ABS, Stratasys® SR-304, PLA, TOUGH, PVA, PETG, and Nylon 12 Carbon Fiber
- **Precision Dissolving PVA Supports** - Fast and easy support removal
- **Ultra-Rigid Metal Frame Construction** - Offsets flexing for consistent parts
- **Smart Sensors & Connectivity** - Full control for print & material management
- **Dry-Sealed Material Bays** - Material is stored in its optimal environment

**PRINT REAL, PRODUCTION-GRADE ABS WITH A 100°C CHAMBER. POWERED BY STRATASYS®.**

- Capable of withstanding 15°C higher temperatures than modified desktop 3D printer ABS material formulations
- Powered by Stratasys® SR-30 soluble support material
- Superior Z-layer bonding provides higher strength and better surface finish without warping and curling

**MANUFACTURING-READY MATERIALS INCLUDING REAL ABS, PETG, TOUGH, AND MORE.**

- Finished part dimensional accuracy of ± 0.2mm (± 0.007in)
- Get unrestricted geometric freedom with the METHOD dual extrusion system
- Print complex assemblies with exact tolerances

**AN AUTOMATED, TINKER-FREE INDUSTRIAL PRINTING SYSTEM.**

- 2x times faster printing than leading desktop 3D printers.
- 300,000+ total testing hours on 150+ printers (includes full system and sub system testing).
- Seamless CAD to Part workflow with Autodesk Fusion 360, Autodesk Inventor, and SolidWorks
FULL SIZE 3D PRINTERS

The F123 Series

Precision printing. As easy as F123.

The award winning Stratasys F123 Series is easy to operate and maintain, whatever your level of experience. The F123 series combines powerful FDM technology with design-to-print GrabCAD software for the most versatile and intelligent solution available. Produce highly accurate, reliable prototypes, student projects, production parts and more. Do it all without the need for dedicated expert staffing. And share it across classrooms, campuses and a variety of your academic programs.

F123 Series features:

- **Minimal Setup** - simply plug and print. Give your entire workgroup access to professional industrial grade 3D printing.
- **Non-stop printing** - spend less time troubleshooting and more time getting results.
- **Fast and easy material swaps** - maximize your team’s productivity.
- **Smart software** - GrabCAD Print™ software simplifies the entire 3D printing process with an intuitive CAD-like application anyone can use.
- **Print up to five different materials** - The F120 supports ABS-M30 and ASA; the F170 and F270 models support PLA, ABS-M30, ASA and TPU 92A* materials; the F370 supports PLA, ABS-ESD7, ABS-M30, ASA, Diran 410MF07, FDM TPU 92A, and PC-ABS materials. (PLA uses breakaway support only.)
- **All-new fast-draft mode** - prints twice as fast as standard build mode while consuming just a third of the material on average.

TPU 92A elastomeric material available for F123 Series!

*TPU 92A is standard on F370, and as an optional upgrade on F170 and F270.

Some of the included products are exclusively represented by Allegheny Educational Systems and are on the New York State Contract.
Fortus 3D Production Systems produce accurate, durable prototypes and production-grade parts using high-performance thermoplastics. Each of our digital manufacturing solutions offers:

**Sophisticated software and technology • Production-grade materials**

**Large build capacity • Fast, accurate and repeatable parts**

Only Fortus FDM (Fused Deposition Modeling) Technology combines tough, production-grade thermoplastic materials with state-of-the-art hardware and software. Compared to other additive manufacturing systems, Fortus offers unprecedented versatility and capabilities.

Fortus 3D Production Systems use powerful Insight Software to turn CAD files into accurate, stable and durable prototypes, workholding tools or end-use parts. This advanced software automatically generates support structures and build paths. With Fortus digital manufacturing, you can create parts that are up to 300% stronger than those made with other 3D printers, even when using the same materials.

<table>
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<th>Fortus 450mc</th>
<th>Fortus 900mc</th>
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<td>Build Envelope</td>
<td>14 x 12 x 12 in (355 x 305 x 305 mm)</td>
<td>16 x 14 x 16 in (406 x 355 x 406 mm)</td>
<td>36 x 24 x 36 in (914 x 610 x 914 mm) Platen supports two build zones for either a small or large build sheet</td>
</tr>
<tr>
<td>System Size and Weight</td>
<td>50 x 35.5 x 76.5 in (1270 x 901.7 x 1943.1 mm) 1,325 lbs (601 kg)</td>
<td>50 x 35.5 x 76.5 in (1270 x 901.7 x 1943.1 mm) 1,325 lbs (601 kg)</td>
<td>109.1 x 66.3 x 79.8 in (2772 x 1683 x 2027 mm) 6,325 lbs. (2,869 kg)</td>
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<tr>
<td>Achievable Accuracy</td>
<td>Parts are produced within an accuracy of ± .005 in. (± .127 mm) or ± .005 in./in. (± .005 mm/mm), whichever is greater.*</td>
<td>Parts are produced within an accuracy of ± .005 in. (± .127 mm) or ± .0015 in./in. (± .0015 mm/mm), whichever is greater.*</td>
<td>Parts are produced within an accuracy of ± .005 in. (± .127 mm) or ± .005 in./in. (± .005 mm/mm), whichever is greater.*</td>
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<tr>
<td>Software</td>
<td>All Fortus systems include Insight™ and Control Center™ job processing and management software. Compatible with GrabCAD Print for use with job reports, scheduling and remote monitoring.</td>
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* Accuracy is geometry dependent. Achievable accuracy specification derived from statistical data at 95% dimensional yield.
Stratasys J55 3D Printer

The Stratasys J55™ 3D printer combines the quality of Stratasys PolyJet technology with a compact, office-friendly design.

The five material channel, full color printer features a rotating build platform with fixed print head for outstanding surface finish and print quality. Engineered for the office or design studio environment, it features a small footprint and ProAero™ filtration technology for odor free, silent and low power operation.

The J55 offers a streamlined design-to-print workflow powered by GrabCAD Print™. This allows users to import their designs using native CAD files or 3MF file formats. GrabCAD Print also enables Pantone® validated color matching. Remote monitoring lets you easily manage your print jobs from anywhere. Additionally, hands-free soluble support removal makes post processing simple and enables the creation of complex parts without compromising accuracy or detail.

Stratasys J8 Series 3D Printers

*Designed for designers.*

Design and creativity have no limits. Now, with the Stratasys J8 Series, the same is true for prototypes. The Stratasys J826 Prime, J850 and J850 Pro 3D printers deliver unrivaled aesthetic results with full-color capability including texture mapping and color gradients. This lets you create prototypes that look and feel like real products, and accurately show design intent in color, material and finish.

These printers are PANTONE Validated™ making the PANTONE MATCHING SYSTEM (PMS) colors available in a 3D printing solution. With expansive color combinations to choose from and multimaterial capability, the Stratasys J8 Series printers let you create the most realistic models and prototypes in the shortest time possible, without the need for painting or assembly.
Unrivaled Accuracy, Realism and Functionality

The J750™ Digital Anatomy™ printer truly brings the look and feel of medical models to life with unrivaled accuracy, realism and functionality. Whether used for surgeon training or to perform testing during device development, its models provide unmatched clinical versatility mimicking both the appearance and response of human tissue.

Create models with an incredible array of microstructures which not only look, but now feel and function like actual human tissue for true haptic feedback. All of this in a single print operation with minimal to no finishing steps like painting, sanding or assembly.

New digital anatomy materials GelMatrix™, TissueMatrix™ and BoneMatrix™ are exclusive to the J750 Digital Anatomy printer and can be combined to form hundreds of new, unique digital materials. Integrated into proprietary validated applications, they mimic human cardiac and vascular anatomy from actual patient scans. Select from a range of tissue properties to incorporate microstructures into the anatomy. Construct heart models with functioning cords, annulus, valves and calcification. Vary compliance in vascular models to replicate both healthy and diseased vessels.

Digital Anatomy Applications

The Digital Anatomy printer comes pre-programmed with a series of anatomical applications, developed in partnership with device manufacturers, world-class research institutions, hospitals and medical personnel.

Cardiac Applications

Create anatomically correct heart models that maintain compliance as well as durability and allow cutting, suturing and patching, as well as device insertion and deployment.

Vascular Applications

Realistic vascular models allow precision simulation of clinical procedures such as guide wire and catheter insertion, valve deployment, grafts, and closure devices. Simulate blood flow and practice navigating tortuous anatomy with patient-specific models. Replicate calcifications and view them under fluoroscopy.
Formlabs SLA 3D Printers
Engineered for precision. Designed for reliability.

Formlabs SLA 3D Printers are desktop stereolithography (SLA) 3D printers ideal for applications such as product design, manufacturing, dental, healthcare, education, entertainment, jewelry, and more. Formlabs printers have been engineered for precision and designed for reliability - offering industrial output at a desktop price. They are extremely versatile with a wide array of photopolymer resins for a full variety of applications and possibilities.

**Form 3**
*Flawless Prints, Every Time*

The Form 3 LFS (Low Force Stereolithography) 3D printing balances detail and speed, while the optical system maintains a precise, dense laser spot to ensure accurate, repeatable prints. Easy clean-up and smoother parts with tear-away light-touch supports.

Build Volume: 5.7 x 5.7 x 7.3 in
Laser Power: 1x 250 mW laser

**Form 3L**
*Bring Large Format 3D Printing In-House*

Blaze through large parts with two custom-designed Light Processing Units (LPUs). Two lasers simultaneously build large, dense parts fast. Use two of the same resin cartridges that are used by Form 2 and 3 to go longer without running out of resin. Switch seamlessly between 20+ general purpose and specialty resins with the cross-compatible cartridge system.

Build Volume: 13.2 x 7.9 x 11.8 in
Laser Power: 2x 250 mW laser

**Small Details, Big Results**

Eliminate the turnaround time of outsourcing of the manual work of assembly for large scale 3D prints. The Form 3L offers a massive build volume at an unprecedented value.
Formlabs SLS 3D Printers
The next generation of 3D Printing.

A new wave of independent manufacturing and prototyping starts now with the Fuse 1. Bring production-ready nylon 3D printing onto your benchtop with an affordable, compact selective laser sintering (SLS) platform.

**Fuse 1 3D Printer 120V/230V**

Bring production-ready nylon 3D printing onto your benchtop with an affordable, compact selective laser sintering (SLS) platform. The Fuse 1 delivers industrial power in a small footprint with effective powder containment and easy setup. From print setup to powder recovery, our easy-to-use hardware and software are designed to maximize your efficiency at every step of the process.

Formlabs **Nylon 12 Powder** has been specifically developed for use on the Fuse 1 and is highly capable material ideal for both functional prototyping and end-use production of complex assemblies and durable parts with high environmental stability.

**Fuse Sift 120V/320V**

The Fuse Sift is a safe, efficient powder recovery system for the Fuse 1 3D printer. This easy-to-use, all-in-one station combines part extraction, powder recovery, storage, and mixing in a single free-standing device, for the most functionality in a single device available on the SLS market.

**Industrial Vacuum 120V/320V**

The Fuse Sift powder recovery station incorporates an external vacuum, sold separately, to help you efficiently, safely maintain a clean workspace. The integrated hose and controls allow you to easily tidy up your workspace, clean off a build chamber, or remove debris from the sifter mesh.
Studio System 2
Office-friendly metal 3D printing in just 2 steps – Print. Sinter.

Making complex, high-performance metal parts has never been easier. Featuring a breakthrough two-step process, next-generation Separable Supports, and a software-controlled workflow, the Studio System 2 makes it simpler than ever to produce custom metal parts.

With a simplified, two-step process that eliminates the need for solvent debinders, The Studio System 2 packs all the benefits of the original Studio System – no hazardous metal powders or lasers, no dedicated operators, no special facility needs – into a package that’s more accessible than ever before and that produces even higher-quality parts.

Along with new material formulations developed for improved surface finish, the Studio System 2 features new print and sinter profiles that automate complicated printing and metallurgical processes. User-friendly hardware – including an easy-to-use sintering furnace, fully accessible printer and sintering volume, and a configurable furnace retort – allows teams to spend less time managing equipment and more time designing and fabricating parts.
Print
The Studio System+ printer extrudes bound metal rods, shaping the "green part" through Bound Metal Deposition™. This process is similar to the safest and most widely-used 3D printing process—Fused Deposition Modeling (FDM) and eliminates safety concerns associated with metal 3D printing.

Debind
The green part is transferred to the Studio System+ debinder where it is immersed in Desktop Metal’s proprietary debinding fluid. The primary binding material is removed in order to prepare the part for sintering. The debinder is safe for use in an office environment and does not require any external ventilation.

Sinter
The Studio System+ furnace heats parts to just below their melting point, fusing metal particles to form fully dense parts without residual stresses introduced in laser-based processes. Fully automated and sized to fit through a doorway, the furnace delivers industrial-strength sintering in an office-friendly package.

Shop System
The Shop System™ is the world’s first metal binder jetting system designed specifically for machine shops—enabling shops to easily produce parts with exceptional surface finish and resolution at scale.

With production rates up to 70kg of metal parts per day, the Shop System™ produces parts up to 10x faster than laser powder bed fusion. Employing a ~1pL droplet size and automated drop multiplexing up to 6pL, the Shop System achieves superior surface finish, bleed control and rich feature detail at high speed.

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Fiber System
Fiber™ is the only composite 3D printer to utilize Micro Automated Fiber Placement (μAFP) to produce continuous fiber-reinforced parts stronger than steel and lighter than aluminum.

Choose from a broad range of continuous fiber composites, including those with PEEK and PEKK matrices, to enable applications from consumer electronics to automotive.

With affordable entry prices, intuitive software, and an easy setup process, engineers can begin printing industrial-grade composites from the comfort of their desktop.

Applications include manufacturing jigs and fixtures, durable parts suited for extreme environments, economically replacing aluminum or steel components, and electronics manufacturing and end use parts.
ACADEMIA 3D Measurement Solutions

Discover Creaform ACADEMIA, a brand-new solution suite for teachers looking to educate and inspire using metrology. Addressing the inherent realities of the academic world, it fosters experienced-based learning and development using tools widely used in Industry 4.0, allowing you to enhance your curricula and better prepare students for their careers ahead.

The solution suite includes the Creaform professional-grade ACADEMIA 3D scanner, free application software, and complimentary add-ons tailored to get you started with industrial 3D measurement technologies. Achieve the highest level of quality teaching possible—all while taking advantage of the latest innovations on the market and not breaking the bank with Creaform ACADEMIA.

Go!SCAN3D Scanner

The Go!SCAN 3DTM is Creaform’s fastest, user-friendly handheld 3D scanner. A powerful tool during the product development phase, the Go!SCAN 3D quickly measures any complex surface making it possible to “get it right” the first time.

With its seamless integration to your 3D modelling software and your product life cycle management workflow, it will greatly improve product development, foster innovation and shorten time to market. The level of detail on the Go!SCAN 3D is simply astounding. Featuring full support of color, it provides spectacular results. Most objects can be scanned in mere minutes and quickly integrated into your preferred reverse engineering, computed aided design or 3D printing software.

Creaform HandySCAN 3D Scanner

The HandySCAN 3D™ line-up is a proven and trusted patented metrology-grade 3D scanner. Optimized to meet the needs of design, manufacturing and metrology professionals, it provides the most effective and reliable way to acquire accurate (ACCURACY OF 0.025 mm (0.0009 in))3D measurements of physical objects anywhere.

Since it performs regardless of environment changes or part movement, it represents the ideal tool for quality assurance and product development applications.
Epilog Laser Engravers/Cutters

Epilog Zing Laser Series
Epilog’s small format, high-quality engraving line. The perfect desktop laser cutter for everything from home use to starting a business, the Zing Laser provides high-quality engraving and cutting, at a low cost.

<table>
<thead>
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<th>Zing 16</th>
<th>Zing 24</th>
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</thead>
<tbody>
<tr>
<td>Work Area</td>
<td>16” x 12” x 4.5”</td>
</tr>
<tr>
<td>Laser Options</td>
<td>CO2</td>
</tr>
<tr>
<td>CO2</td>
<td>30, 40 watts</td>
</tr>
</tbody>
</table>

Epilog Fusion Edge 12 Laser
The Epilog Fusion Edge 12 takes Epilog’s highest-quality engraving technology and incorporates it into a small-format desktop system that allows you to get the latest technology in a transportable format. It’s a versatile CO2 laser machine and is utilized by customers for the highest-quality engraving and cutting of wood, acrylics, plastics, stone, and much more.

<table>
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<tr>
<th>Fusion Edge 12</th>
<th>Fusion Edge 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Area</td>
<td>24” x 12” x 7”</td>
</tr>
<tr>
<td>Laser Options</td>
<td>CO2 or Fiber</td>
</tr>
<tr>
<td>CO2</td>
<td>30, 40, 50, 60 watts</td>
</tr>
<tr>
<td>Fiber</td>
<td>30 watts</td>
</tr>
<tr>
<td>IRIS Cameras</td>
<td>1 overhead</td>
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</tbody>
</table>

Epilog Fusion Edge 24 Laser
The Epilog Fusion Edge 24 is the larger standalone system in the Edge series and includes all of the same capabilities and features as the Fusion Edge 12. The Fusion Edge 24 is available in CO2 with a 24” x 24” work area. The Fusion Edge 24 comes with an integrated stand.

<table>
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<th>Fusion Pro 32</th>
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<tr>
<td>Work Area</td>
<td>32” x 20” x 12.25”</td>
</tr>
<tr>
<td>Laser Options</td>
<td>CO2, Fiber, or Dual Source</td>
</tr>
<tr>
<td>CO2</td>
<td>50, 60, 80, or 120 watts</td>
</tr>
<tr>
<td>Fiber</td>
<td>30 or 50 watts</td>
</tr>
<tr>
<td>Dual Source</td>
<td>CO2: 50, 60, 80, or 120 watts / Fiber: 30 or 50 watts</td>
</tr>
<tr>
<td>IRIS Cameras</td>
<td>1 overhead + registration</td>
</tr>
</tbody>
</table>
Epilog 3 Jaw Chuck Rotary Attachment
When you need to mechanically clamp a cylinder or oddly-shaped item in place while engraving, the 3-Jaw Chuck Rotary Attachment is a great choice. This optional item can hold a variety of cylindrical shaped items.

Rotary Attachments
Zing 24 Rotary Attachment: Engrave wine bottles, mugs, glasses, flashlights or any other cylindrical item up to 5.25" (133.4 mm) in diameter on the Epilog Zing 24 Laser.

Fusion M2 Standard Rim-Drive Rotary Attachment: Ideal for engraving cylinder items such as glasses, mugs, wine bottles, flashlights, and more. The Rotary Attachment can quickly and easily adjust to size for a wide variety of products.

Epilog Lens Options
1.5" Lens: Highest-Resolution Engraving
Designed for the highest-resolution engraving and etching of extremely small fonts.

4.0" Lens: Cutting Thicker Materials and Inside Deep Areas.
Produces a focused beam ideal when engraving within a recessed area. Also useful for cutting through very thick materials.

Epilog Pin Table
The Pin Table incorporates moveable pins designed to raise and support material during cutting. This helps ensure you receive the cleanest laser cut edges from your laser machine.

CorelDRAW
Embrace the design power of CorelDRAW® Graphics, offering you content-rich images and fonts, professional graphic design tools, photo-editing capabilities and website design software.

PhotoLaser Plus
PhotoLaser Plus by EngraveLab is a quick and easy way to process photos for wood, acrylic, marble, and many other materials. Achieve great results when engraving photos with this powerful software package and your Epilog Laser system.
Why CO2?
Epilog's high-speed CO2 laser systems are an affordable, easy-to-use, and versatile tool that can help you begin a new startup venture or increase the profits of your well-established company. The best way to describe how Epilog's laser engraver and cutter machines work is to compare the laser systems to a desktop ink printer. Using similar motion control technology, we take the images you typically print to paper, and instead of printing dots of ink, we fire a CO2 laser beam that laser engraves, cuts, and etches your design into a wide variety of materials.

<table>
<thead>
<tr>
<th>Epilog CO2 Systems available:</th>
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<tbody>
<tr>
<td>Zing 16 - 30 or 40 watts</td>
<td>Fusion Edge 12 - 30, 40, 50, or 60 watts</td>
<td>Fusion Pro 32 - 50, 60, 80, or 120 watts*</td>
<td></td>
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<tr>
<td>Zing 24 - 30, 40, 50, or 60 watts</td>
<td>Fusion Edge 24 - 30, 40, 50, 60, or 80 watts</td>
<td>Fusion Pro 48 - 50, 60, 80, or 120 watts*</td>
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* Dual Source Available

Why Fiber?
Epilog's Fiber Laser series is your solution for etching and marking all types of bare metals and plastics. Whether you're looking to mark metal with barcodes, logos, and serial numbers, or you're personalizing metal items such as watches, jewelry, and medals, an Epilog Fiber Laser system has the features to help you accomplish your goals.

<table>
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<td>Fusion Edge 24 - n/a</td>
<td>Fusion Pro 48 - 30 or 50 watts*</td>
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</table>

* Dual Source Available
Why Epilog?

Epilog Laser is proud to be engineered, designed and manufactured in the USA. From Epilog's high-tech manufacturing facility located in the foothills of the Rocky Mountains in Golden, CO, all machines go from concept, to design, to build all in one facility. And with over 90% US manufactured parts, Epilog designs and manufactures the best laser systems on the market.

In business since 1988, Epilog continuously strives to improve their systems with the latest developments so that you get the greatest value possible. Every Epilog Laser system goes through a battery of vigorous tests before being shipped to you, so you know that the machine you receive is going to perform to Epilog's exacting standards from the first time you switch it on.

Epilog also offers a near endless stream of support - from the online technical library and virtual training suite to top-notch technical support staff and dedicated regional reseller support. It is Epilog's goal to keep customers up and running.
WATERJET CUTTERS

WAZER
The First Desktop Waterjet

Bring professional-grade fabrication to your workshop with WAZER, the first desktop waterjet. WAZER’s compact size fits into any work space and is ideal for cutting on-demand custom parts. Cut metal, glass, ceramic, composite, plastic and rubber safely and quickly. WAZER operates without heat or fumes – there’s no need for ventilation. Simply connect your WAZER to standard electricity, water source and drain and you’re ready to cut.

Go from design to cutting, fast.

WAZER’s web-based software is fast and easy. WAZER operates with an online file prep tool called WAM. Load your design file into WAM and prepare your cut in minutes.

ProtoMAX
Waterjet Cutting System

Built by OMAX, the largest waterjet manufacturer in the US, the ProtoMAX waterjet is incredibly reliable. Advanced waterjet software coupled with 30,000 psi pump pressure drives the most efficient waterjet cutting tool for its size. Metal, glass, plastic, wood and more, the ProtoMAX cuts material under 1 in. thick with a 12 in. by 12 in. cutting area. Ideal for light commercial applications, DIY makerspaces, and educational institutions where cutting time matters.

Designed To Fit In Your Space

The ProtoMAX unit integrates both the cutting components and pump into a compact footprint making it ideal for small machine shops, personal workspaces and classroom style workshops. Casters allow for easy movement. With the clamshell cover and submerged cutting, ProtoMAX is a safe and quiet (approx. 76 db) iteration of a light industrial abrasive waterjet.
Forest Scientific Corporation CNC Routers

Forest Scientific Corporation manufactures high-quality CNC Routers, Mills & Lathes, and Plasma Cutters that are the perfect choice for your school. Made right here in the USA and made to last, each machine has precision THK linear ways and bearings to ensure stability; welded steel frames and structural aluminum to ensure alignment over time; and powerful stepper & servo motors to increase reliability and high resolution on each pass.

They are designed to be updated inexpensively as technology changes and all machines use industry standard Fanuc-style G&M codes such as Mastercam, Surfcam, Edgcam, Vcarve, Fusion 360, SolidWorksCam and more.

To ensure that you have successful results, Forest Scientific offers on-site training as well as Project Based Learning curriculum and tutorials with written and video modalities for teachers and students.

Invest with confidence knowing that you have purchased a Forest Scientific CNC system that is of high quality, well supported, and ensures your success in teaching marketable skills.

Available products include:

- **FabBot Series Routers and Plasma Cutters** - Created for home shops and schools on a very limited budget
- **Convert-A-Table Plasma Cutter/Routers** - Easily changes from a CNC Router to a CNC Plasma Cutter
- **Maker-Fab Series Routers and Plasma Cutters** - Cost effective, heavy duty machines
- **HS Series Router and Plasma Cutters** - Standard model for education and small shop
- **The Michaelangelo 3D Modeler** - Innovative CNC Router designed for classroom use
- **The LuthierMax Series Guitar Making CNC Routers** - Designed in collaboration with engineers from Fender Guitars and www.guitarbuilding.org
- **The Mitey Series** - Machines for educational training, prototyping, design, and production worldwide
Forest Scientific LuthierMax Series

The LuthierMax Series of CNC routers was designed for guitar making in collaboration with engineers from Fender® Guitars (who are using this model) and www.guitarbuilding.org to make this machine student friendly and robust. Fixtures built into the table make it easy to machine your own guitar necks and bodies for both standard size and longer base guitars. Travels X49” Y20” Z8.5”

LuthierMax CNC Router Models:
- LuthierMax CNC Router 110V,20A
- LuthierMax CNC Router Hy Servo
- LuthierMax PRO with ATC CNC Router

LuthierMax CNC Options:
- Vacuum Table System
- Guitar Making Class Start-up Kit
- Guitar Making CNC Bit Kit

Forest Scientific CNC Plasmas

The Forest Scientific CNC Plasmas are cost effective heavy duty machines made of structural aluminum or welded steel. Each of the CNC Plasma cutters include a Torch Break Away system, Automatic Torch Height, integrated water table, CAD/CAM software, Hypertherm 45 Plasma system, and control computer with arm for a Turn-Key package. Just plug the system into your electric and you're ready to go.

All plasma tables have replaceable leafs that you can easily make by shearing steel so you won't need to buy expensive table parts and pay to ship them across the country.
Techno CNC Routers & Plasmas

Techno CNC Systems family of CNC routers represents 30 years of CNC research and development. Since 1986, Techno CNC Systems has been solving the toughest manufacturing challenges by helping sign makers, woodworkers, general fabricators and more with their production needs. Techno CNC equipment is designed to route, carve, drill, and engrave in wood, plastic, foam, aluminum and more for a wide range of applications.

**HD II Tabletop CNC Router**
- 20” x 34” Process area
- Precision ball screws on all three axes
- 2 HP HSD high frequency collet spindle
- Brushless micro stepper motors and controls
- Vacuum T-slot table for easy part fixturing
- Automatic tool calibration pad
- Linear rails and bearings

**BT1212 Benchtop CNC Router**
- 11.8” x 11.8” x 4.0” Process area
- Precision ball screws on all three axes
- 800 Watt (1 HP) Kress variable speed spindle (8,000-24,000 RPM)
- Brushless micro stepper motors and controls
- Aluminum T-slot table
- Compatible with G code and M code
- Heavy duty construction

**Atlas Series CNC Router**
- 4’ x 4’, 4’ x 8’ and 5’ x 10’ stock sizes
- 4 HP HSD high-frequency collet spindle
- Maintenance free brushless stepper drive motors
- Vacuum table with main control gate valve
- Easy to use hand-held controller
- Open architecture works with all industry standard CAD/CAM software
Titan Series CNC Router
- 12 HP HSD high frequency automatic tool changer spindle
- Maintenance free brushless motors and drives
- Vacuum t-slot table with main control gate valve
- Pneumatic material pop-up pins
- Automatic tool length calibration via closed loop touch pad
- Automatic z-zero via secondary touch pad
- Easy-to-use hand held controller (optional PC based system available)
- Open architecture works with all industry standard CAD/CAM software

Phoenix Series CNC Plasma Cutter
- Standard sizes: 4’ x 4’, 4’ x 8’, and 5’ x 10’
- PC based WinCNC Controller
- Unique design, easy to learn and operate
- All steel construction for rigid platform
- Precision helical rack and pinion on X and Y axes with ballscrew on the Z axis
- Electronic Torch Break away
- Brushless micro stepper motors and drives
- High-speed cutting up to 800 IPM
- Cuts up to 1.5” thick steel capacity
- Water table / Steel V-grid / Downdraft
- Automatic torch height control (THC)
- Multiple torch options available
Mastercam delivers CAD/CAM software tools for all types of programming, from the most basic to the extremely complex. 2-axis machining, multiaxis milling and turning, wire EDM, router applications, free-form artistic modeling and cutting, 3D design, drafting, surface and solid modeling – whatever your machining needs, there is a Mastercam product for your budget and application.

There are more curricula available for Mastercam than any other CAM system. The Educational Division continually provides exceptional teacher training and educator support. Years of experience in the educational market has helped Mastercam to understand the specific needs of instructors, schools, and students. Since Mastercam is the most widely used CAM software in the world, the products are industry proven. Mastercam has been designed for any level of skill or machining. From middle school exploratory classes to a university research lab making complex molds, Mastercam provides the tools to fit the application.

Certification and experience with SolidWorks is an in demand skill. Making 3D designs that can be exported to a 3D printer, gives students a glimpse into taking a product from design to testing. In today’s competitive job market, CAD professionals need every advantage they can get, and the SolidWorks Certification Program gives your students a proven edge. Solidworks offers a host of resources for education and a Solidworks Certification course that can help get your students into careers. Solidworks offers tutorials and specialized curriculum for educators (Including: robotics, STEM, medical, machinery, F1, Formula SAE, and a host of other topics!).

**Vectric** software is designed to make cutting parts on a CNC an enjoyable and productive experience, the combination of power and simplicity lets you efficiently generate or manage your design, then quickly create precise toolpaths to drive your CNC.

**Products Include:**
- **Cut2D** - Vector drawing & editing tools for CNC routing, milling & engraving
- **VCarve** - Complete software solution for cutting on a CNC Router
- **Aspire** - Draw & build 3D component models for machining
- **Cut3D** - Converts 3D models into CNC toolpaths
- **PhotoVCarve** - Converts photos and images into high quality toolpaths for CNC and engraving machines
Roland Desktop 3D Milling Machines

Widely used in the industry and recognized for ease-of-use and versatility, Roland MDX milling machines offer students a fast learning curve to get them producing finished prototypes that require little to no finishing.

Modela MDX-50 CNC Milling Machine

Precise, automated milling combined with unmatched ease-of-use on a 15.8"x12"x5.3(z) work area. An ideal solution for short-runs and prototypes, the MDX-50 reduces operation time and simplifies production so users of all abilities can mill functional parts with incredible quality on a wide range of materials. 

- Mill plastic foam, ABS, POM, modeling wax, plywood, hardwood, etc.
- 5-station Automatic Tool Changer for continuous operation
- Expanded machining area 15.8" (X) x 12" (Y) x 5.3" (Z)
- Bundled with user-friendly CAM software
- Optional rotary axis with self-centering headstock and tailstock workpiece clamps

monoFab SRM-20 CNC Milling Machine

As a small milling machine, the SRM-20 offers compact size, 8"x6"x2.38"(z), and powerful functionality at an affordable price. Production of realistic parts and prototypes is made simple and convenient with a device that fits into any office, home, or classroom environment. For users looking for advanced milling capabilities without the need for expert operating skills, the SRM-20 is the easiest and most precise CNC mill in its class.

- On demand production of parts, tools, product prototypes, etc.
- Simplified operation for users of all abilities
- Powerful spindle motor
- Improved spindle and collet system
- Reduced noise and dust prevention from fully enclosed cover
- Software suite with latest SRP Player software
Metaza MPX-95
Photo Impact Printer
Photo impact printer technology makes gift personalization and direct part marking of tools and medical instruments a clean, quiet and hassle-free experience. Affordable and effortlessly easy-to-operate, the MPX series of devices from Roland DG provide stunning results on metal materials that include titanium, platinum, silver, copper and gold. They are the perfect solution for gift personalization, industrial part marking, and ensuring UDI compliant medical instruments.

VersaSTUDIO BT-12
Direct-to-Garment Printer
Print directly onto cotton t-shirts, apparel, tote bags and other products in minutes from the comfort of your desktop. The affordable VersaStudio BT-12 printer allows you to get into the profitable world of custom apparel immediately, with a device that’s as easy-to-use as an office printer and offers stunning results.

Highlights
- With a simple 3-step process, you can automatically print your design and cure the ink in one smooth workflow.
- Brilliant inks and images provide sharp and color-brilliant results
- A clean and fully-enclosed process - safely print onto garments without coming into contact with chemicals, steam or heat.
- Includes super-easy design software for users of all abilities

Some of the included products are exclusively represented by Allegheny Educational Systems and are on the New York State Contract
Roland Printers/Cutters

Roland printers/cutters are real world devices, providing real world graphic applications for your students. These devices can print and cut an incredible variety of jobs on a full spectrum of media.

**VersaStudio BN-20 Desktop Printer/Cutter**

One compact device for apparel, packaging, posters and more - features 8-channel printheads for outstanding photographic and vector output. *Project Based Learning curriculum available.*

**TrueVIS SG2 Printer/Cutters**

Whether you’re just starting out or wanting to expand production, TrueVIS SG2 printer/cutters offer high-performance printer/cutter technology with unbeatable new color quality and cutting features at a very reasonable price. Flexfire print heads, increased print/cut accuracy, and automatic pinch rollers. 3M MCS and Avery Dennison ICS certified. Available in 64", 54" and 30" models.

**TrueVIS VG2 Series Large-Format Printer/Cutters**

Available in 64" and 54" models. TR2 Ink color modes offer detailed color reproduction and expanded gamut. 3M MCS and Avery Dennison ICS certified for added print confidence. Four FlexFire™ printheads, increased print/cut accuracy, and automatic pinch rollers. Efficient and productive TrueVIS VG2 printers enable users to produce dynamic decals, brilliant banners, striking signs, and vibrant vehicle graphics on demand.

**TrueVIS VF2-640 Large-Format Printer/Cutter**

The TrueVIS VF2-640 large format printer doesn’t just widen your color gamut, it takes your color completely off-the-chart with Roland’s richest and most vivid TrueVIS color output yet. Available in a 64" width. 3M MCS and Avery Dennison ICS certified. FlexFire™ printheads, automatic pinch rollers, smart media clamps and other enhanced print features. 4, 7 or 8-color configurations— including Green, Orange and White ink options.
Introducing the amazing LEF benchtop UV flatbed printers. Print directly on dimensional objects such as awards, giftware, packaging and products with spectacular results. Instant drying and flexible ECO-UV inks deliver high color density and a wide gamut for exceptional images print after print. Specialty inks, including white and clear, allow printing on clear, reflective and colored surfaces and finish graphics with dazzling embossing and varnishing effects. Project Based Learning curriculum available.

Roland Flatbed Printers

Offering plug-and-play ease, technological sophistication, compact convenience, and the reliability you expect from Roland, these high performance vinyl cutters accelerate your ability to create professional signs, displays, vehicle graphics, decorated apparel and window tinting. Each comes with all the hardware and software you need to get started immediately — right out of the box.

Roland Vinyl Cutters

Models Available:

- CAMM-1 GR-640, GR-540 Large Format Cutters
  Available in 42", 54" and 64" model sizes, GR cutters are powerful, easy-to-operate devices. Packed with advanced and versatile new features, they are designed for a whole new level of sign, apparel, vehicle graphics and packaging production.

- GS-24 Desktop Cutter
  Desktop cutter boasts 350g of downforce, making the cutting of magnetic materials, corrugated cardboard and other thick substrates child's play. 22.9" maximum cutting area. Project Based Learning curriculum available.

- STIKA Desktop Design Cutters
  The STIKA makes it easy to create every thing from POP displays and iron-on graphics for T-shirts to vehicle graphics. Available with 8", 12", and 15" maximum cutting areas.
Roland Project Based Learning  The Ready-to-Teach and Easy-to-Learn Solution

Project Based Learning (PBL)
Roland’s step-by-step tutorials work seamlessly with Roland software and machines, making it easy for educators to teach and for students to learn design and engineering skills.

A Simply Smart Solution
Fun, simple-to-understand, hands-on engineering, design and art projects promote intuitive learning — teaching digital fabrication to students of all skills and abilities.

Made for Teachers
PBL tutorials reduce time-consuming prep and planning. They help teachers develop lessons that support curriculums and solve issues associated with teaching digital fabrication to large classroom sizes.

Made for Students
PBL tutorials allow students to work at their own pace and without strict supervision — offering student’s fast results and an immediate sense of achievement.

Foundation For Success
Each web-based PBL package contains a series of device specific tutorials to quickly familiarize students with hardware and software — key safety and machine maintenance topics are also covered.
After you and your students feel comfortable using your digital fabrication equipment, it’s time to take it to the next level! Get the ideas flowing and start earning money for your school using your educational space!

PROFIT OPPORTUNITY
You have the equipment – now turn a profit!

- T-Shirts
- Golf Balls
- Phone Cases
- Drinkware and More!
PROFIT OPPORTUNITY
Shirts for the Big Game

Create shirts for your school’s upcoming football or basketball game against your rival team. Design and print customized shirts for the Spanish Club’s annual banquet. Make bags featuring the school logo for the Band’s fundraiser!

Your imagination is the limit for all that you can do and earn with your Roland DGA Printers and Vinyl Cutters!

Roland Vinyl Cutters
Ideal for: Simple, one or two color graphics
Find it! Page 30
Tip! Our Vinyl Starter Packs come with everything you need to get started!

Roland Print/Cutters
Ideal for: Full color graphics, light and dark colored fabrics
Find it! Page 29

Roland Direct-to-Garment Printers
Ideal for: Full color graphics, light colored fabrics
Find it! Page 28
Additional Equipment: None! The Roland BT-12 is a complete direct-to-garment printing system!
Custom, personalized phone cases, golf balls and awards will be a huge hit at your school and in your community! Sell cases with your school’s mascot at athletic events or take design requests as custom orders. Local businesses will be coming back regularly for branded golf balls and awards for the next golf outing.

Roland DGA LEF UV Printers are designed to print onto a virtually limitless choice of three-dimensional media!

Custom Digital Cases
Ideal for: Phone and small electronic device cases
Find it! Page 30
Additional Equipment: BOFA Filter, Device template
Tip! Check with us about available device templates!

Branded Golf Balls
Ideal for: School and local businesses promotional events
Find it! Page 30
Additional Equipment: BOFA Filter, Golf Ball Template
Tip! Check with us about available device templates!

Awards and Plaques
Ideal for: School Clubs and Associations
Find it! Page 30
Additional Equipment: BOFA Filter, Award template
Engrave water bottles and keytags for your hometown team and embellish luxe fleece jackets with your school mascot. Produce themed glassware for holiday sales and special events.

Engrave your custom message on a variety of materials - from glass to metal and so much more! Epilog Laser Engravers give you options when it comes to profit!

**Fabric Marking**
*Ideal for:* Fleece, Sweatshirts, Denim, and some Linens  
*Find it!* Pages 16-17  
*Additional Equipment:* BOFA Filter

**Waterbottles/Keytags**
*Ideal for:* Aluminum waterbottles and keytags  
*Find it!* Pages 17  
*Additional Equipment:* BOFA Filter, Epilog Rotary Attachment and/or tag template

**Glassware**
*Ideal for:* Glasses, mugs, cutting boards, vases, etc.  
*Find it!* Pages 17  
*Additional Equipment:* BOFA Filter, Epilog Rotary Attachment
An interactive approach to teaching STEM Education through Robotics

MINDS-i Robotics Education is designed to give students an interactive approach to applied science, technology, engineering and math (STEM). MINDS-i is rocking the Robotics Education world with a high-technology platform that is simple to use, extraordinarily durable, infinitely modifiable, and will prepare students with the skills they need to excel in the 21st century.

We inspire a rigorous college and career relevant experience through STEM Robotics in the everyday classroom in a format that can impact each and every student.

LAB Kits Include:

MINDS-i Catapult LAB

STEM Robotics DRONES LAB

STEM Robotics FOUNDATIONS LAB 4X4

STEM Robotics FOUNDATIONS LAB 6X6
With Hann Manufacturing furniture you will never say “...they don’t build them the way they used to.” Hann uses time tested methods and materials to construct furniture that will hold its own in the classroom year after year. Hallmarks of quality such as mortise and tendon joinery and dovetailing are present in every piece built.

For 40 years, Shain by Diversified Woodcrafts, Inc. has been providing quality maple furniture, built by craftspeople that take pride in building furniture used by teachers and students. In fact, many of the employees grew up using Shain products in their classrooms and that is where they learned their craft.

Today that same workforce uses cutting edge technology to produce innovative and quality products for the education, art, and technical markets. Quality maple hardwoods and veneers and fine details like fully dovetailed drawers are signature hallmarks of Shain’s product line.

Higher education is not a one size fits all approach — and neither is the furniture or design. It goes without saying that today’s students and instructors require furniture that allows collaboration and looks professional. But facilities managers want solutions that can withstand years of use, look great, and maximize space available in both old and new buildings.

Interior Concepts delivers on all counts. Furniture that meets the demands of students and staff. Specializing in educational furniture for over 20 years consistently delivering quality solutions in environments such as lecture halls, classrooms, instructor spaces, computer labs, and administrative areas — Interior Concepts furniture solutions are just plain smart.
The Stewart Storage Cart

Want a great addition to your makerspace, classroom, art class or any other area where you need mobile storage? Then the Stewart Cart is perfect! This thoughtful design was created by students with makerspace in mind! The Stewart Storage Cart comes in two different sizes; a double sided 10 bin cart or a compact single sided 5 bin cart. Either cart features a peg board side and 5” heavy duty casters. Optional lids and dividers are available for the storage bins and an additional peg board can be added to the other side.

The Multi-Maker Cart

This compact, feature-rich Multi-Maker Cart has a small footprint with a big impact. The Multi-Maker Cart can be used as a presentation cart, a great addition to your Makerspace room, or a charging and storage solution for a classroom or media center. Let the Multi-Maker Cart help you organize so you can teach and make!

The Quad Pod

The Quad Pod is a revolutionary concept in educational furniture design! Allows you to customize your table according to the storage and functionality needs that you may have in a makerspace or classroom!

Pick a Pod! Choices include:
• Basic Adjustable Shelf Storage with 2 shelves included
• Storage Bins - 3 bins with lids
• 15 Slot Device Storage & Charging
• Trash Bin (grommet hole in tabletop)
Pods are placed inside steel frame (as shown). Pods create the base which is secured by the butcher block top.
The IDEA Island

The creation of the IDEA Island was inspired by the many makers in schools, libraries and museums across the nation that are dedicated to inspiring creativity and discovery. The marriage of industrial design with warm wood, strength, and innovation, immediately inspires when you step up to the IDEA Island. It can be ordered basic as table only, or can be dressed up with technology and seating for up to 8 people.

The Ed Table

With breakthrough solutions packed into every inch, the Ed Table truly embodies a spirit of invention. The Ed Table provides the most complete maker experience available. Maximizing creative time while minimizing the amount of logistical preparation work and clean-up was the driving factor behind the design concept. For schools and teachers interested in project-based learning, the Ed Table is a natural extension and fundamental element for engaging learners.

The Butcher Block Table

The Butcher Block Table for makerspace environments allows students to design and build creative projects and empowers students to work together. By offering a hardy work surface, adjustable height legs for sitting or standing, optional power unit and monitor arm, the sky is the limit.
Explore More!

Hybrid Learning Solutions for Career and Technical Education Product Guide

Career & Technical Education Product & Certifications Guide

Transportation, Logistics & Supply Chain Management Program Guide

Visit our website or contact us for your free copies of our current product guides.

Allegheny Educational Systems, Inc.
www.alleghenyedusys.com
(800) 232-7600