

# Equipment and Software

## Abstract

Chapter 2 of *Library Technology Reports* (vol. 50, no. 6) “*Digital Media Labs in Libraries*” will help readers plan a digital media lab. The author describes the planning spreadsheet she used at Darien Public Library and that she shared with others. She offers specifics on space, furniture, window treatments, air circulation, noise prevention, and floor plans. She lists resources to help in the configuration of workstations, selection of software, and photography, video, and audio recording equipment.

Which activities are supported by your DML depends upon the type of equipment that is available for use. Standard equipment includes a computer, DSLR camera, camcorder, tripods, and scanner. These items can then be used in a variety of ways and for different purposes outside the obvious. For example, a microphone can be used for capturing an oral history, creating a podcast, or recording audio for a video or animation reel—and even for a job or college application. The key is to get your basic equipment, then market the many ways the items can be used. A successful DML does not need all the equipment listed in this chapter. A few simple, common pieces will give your patrons lots of options to get started in creating digital media.

As a library, you may not be able to purchase or support professional-level equipment, but in my experience, public library patrons are impressed with small things! Remember, professional equipment is geared to professionals, and most of your patrons will be amateurs.

If you want to give your community a place to share their work, you can look at an example such as LibraryYOU of Escondido Public Library.<sup>1</sup> Other DMLs, such as Vitale DML, maintain a blog listing equipment purchased, new project ideas, and staff changes.<sup>2</sup>

There is overlap in both hardware and software in many of these categories. For example, a microphone can be used for an audio-only project or for video.

*Chart listing equipment in library digital media labs*

[www.amandagoodman.com/dml](http://www.amandagoodman.com/dml)

## Tracking Your Project

Your stakeholders will want to know where money is being spent as you secure equipment and software for your DML. You will also want to track your workflow, such as where items are purchased, because creating a DML is a big project that requires months of work to make happen.

I created a spreadsheet in Google Drive and shared it with my boss as the primary project management software. The following eleven columns answered all my questions about what I needed to buy and its cost and arrival.

- item
- quantity
- price estimate
- notes
- where to purchase
- priority
- renewable item (Does this item need to be replaced?)
- comments
- actual price paid
- paid
- arrived

Some items I proposed were later removed from

consideration. Instead of deleting them, I simply struck them out. When items arrived at the library, I highlighted the row in the spreadsheet.

Since the launch of the DML, I have shared a simplified version of my spreadsheet with multiple other DMLs. During the implementation phase of our project, I contacted North Carolina State University Library, Skokie Public Library, and Topeka and Shawnee County Public Library for advice. The lesson here is that no one needs to work alone while researching how to put together your DML. Other librarians are eager to help.

## The Room

Aside from all the fun, creative equipment, you will also need the boring stuff such as tables, chairs, etc. Though some libraries have a mobile DML, you may need to plan for a room.

### Tables or Desks

Your patrons will need a desk that can accommodate a variety of activities. There should be ample space to spread out materials, perhaps a slide-out table or shelf for a little more elbow room. Space can also be found by setting the monitors on wall-mounted arms and placing other equipment on shelves, ready to be moved to the table as needed. Set your computer tower on the floor or bolt it under the table.

### Chairs or Stools

As for most equipment in the DML, think about ergonomics for seating. The chair you choose should support the user's back and be able to be raised or lowered as needed so the patron's feet can rest flat on the floor. Another consideration is, if the chair has arms, will they fit under the table? Users should not have to lean forward just to maintain contact with the equipment. Also, since chairs and stools can take a beating, purchase durable furniture that is resistant to wearing out. Stools are a nice choice for video interviews.

### Storage

To protect your equipment and keep the room tidy, you will need storage space. Cubed shelves are a good option for flat objects, manuals, and boxes to hold extra cords. A locked cabinet can be used to secure extra pieces (e.g., extra plastic for your 3-D printer) or store a patron's equipment between visits. If you decide to store items for patrons, make sure that you have a liability policy in place (see chapter 3). Also make multiple copies of any keys and keep them outside the room.

## Internet Connectivity and WiFi

If at all possible, make sure desktop computers are physically wired into your network. Your patron will expect your DML computers to be fast, and that includes how long it takes to load websites. If you worry that patrons may just browse the web instead of working on projects, remember that an Internet connection is essential for uploading videos or sending a copy of their work to themselves. Set expectations that the Internet in your DML is only for projects, not for general web browsing.

WiFi is great for patrons who bring in their own laptops, tablets, and smartphones. Be aware, though, that glass windows may interfere with a WiFi signal that originates outside the room.

### Power Outlets and Power Strips

Your DML can never have enough power outlets. Depending on the complexity of your DML setup, you may have computers, monitors, lights, 3-D printers, and more all vying for power. Be sure your room can support all the power that will be required. Also, purchase surge-protected power strips to protect your electronics.

### Temperature and Air Circulation

If your room was converted from an old study room, you may think it will be fine for a DML. However, with the amount of electrical equipment that is likely to be in the space, the room can heat up quickly. Also, photography lightbulbs may burn at hundreds of degrees. Add fans, or think about placing your DML in a room with an openable window. However, if you have a south- or west-facing window, be aware of afternoon sunshine also heating up the space.

If 3-D printers are part of your setup, chemical smells may fill the air. Broken compact fluorescent bulbs contain mercury, which you should handle with care. While researchers have found that you are exposed to no more mercury from a broken compact bulb than from a can of tuna, you can limit exposure by vacating the room for an hour.<sup>3</sup>

### Noise Prevention

If you are adding a new wing to your library or can afford major reconstruction, soundproof your DML. Depending on the activities you want to support, you could have a band recording its new album, which would definitely disturb other patrons if you didn't have soundproof walls and windows! On the other hand, a patron recording an oral history does not want noises outside the room interfering.

If you cannot afford to soundproof the room, you can purchase some acoustical foam. While this will not prevent all noises from entering or leaving the room, it

will help. The foam can also enhance the acoustics of the room, especially if the room has an echo. The foam comes in various depths and textures. Check your vendor's website carefully for full descriptions of which foam is best for your space.

## Window Treatment

Patrons may get injured in the DML when using equipment improperly. To keep an eye on the space, you may want windows to see into your DML. Be aware that flashing bulbs or bright lights could bother people outside the room or even trigger seizures. In that case, you can consider adding blinds or tinting the glass. In my experience, I was very concerned about light from outside the room interfering with photo shoots and patrons outside the room being bothered by flashing lights. So I spent a lot of time researching tinting, which is very expensive when professionally installed. We decided to take a wait-and-see approach. After two years, I can report that there have been zero complaints.

## Green Screen

Just because patrons are located in your library does not mean their imagination should be limited to the DML. If you purchase a green or blue screen, users can then edit their photos or pictures to appear to be anywhere. The solid color will make it easy for editing software to replace the background with an image or video of the user's choice.

Green or blue screens come in three types: paint, curtain, and screen. The paint version is the most permanent and requires perhaps the biggest structural change to the room. In my experience, three coats of paint are required for the most even and rich look. Curtains and screens may be movable. A curtain is usually suspended from a rod (which may be on wheels like a portable clothing rack) with several feet of material on the floor. The standing room on the curtain provides a seamless backdrop which is perfect for photography. A screen is a piece of fabric attached to a frame. The screen may be held up from behind by another person or attached to a portable rack. Screens can often be folded and stored to save space.

## Floor Plans

Another task that needs to be done before you order your furniture is to create a floor plan. You will be able to check that your table and chairs will fit within the space. This is also the first time you can really start to share with others your vision of how the space will ultimately look.

There are free online tools to help you design your space. I use Floorplanner.com both personally and professionally. You can simply draw a room to fit the

size of your DML and then start adding sample furnishings. However, if you have already created a drawing of the space, you can import that to the website, which will let you lay out your room in the software quickly. Then you can switch from 2-D to 3-D mode to impress your stakeholders because 3-D mode allows them to navigate around the room.

### *Floorplanner*

[www.floorplanner.com](http://www.floorplanner.com)

In addition to the Darien Library floor plan in chapter 1, two libraries have been kind enough to share the floor plans of their DMLs for this report. You will find them in chapter 4. Use these sample floor plans to discover how others have arranged their space.

## Computer

A computer is a core component of your DML. Most of the work produced via other means will eventually be brought to the computer to be edited, remixed, and shared with others. While most DMLs sport Mac products, from MacBooks to Mac Pros, you can also run a successful lab relying on Windows or even Linux (although Linux is not covered in this report). The cost difference between the two platforms may be very different, with a Mac costing more, so consider your budget with care. There is also the option to build your own high-powered PC for a lower cost, but that will require a knowledgeable staff member to plan and build the machine. If you go this route, the machine as a whole will not have a warranty; instead, individual components will.

## Mouse

Out of thirty DMLs studied whose equipment lists were posted on their websites, none of them specify a particular mouse kind or brand. The website Lifehacker offers a great visual breakdown on how people use mice with suggestions for purchasing (though mice are a very personal aspect of computing).<sup>4</sup> I have added my own notes next to each of Lifehacker's criteria.

- *Size and Ergonomics.* Consider the size of the mouse relative to the size of users' hands. If your DML is for children or teens, buy smaller mice. If it is for older adults, buy a bigger mouse.
- *Wired vs. Wireless.* The main differences between wired and wireless mice are how often you need to change the batteries in a wireless mouse versus the potential annoyance of a cord. I recommend using rechargeable batteries if you go the wireless route.

- *Extra Buttons.* If your DML will be aimed at a particular tech-savvy patron group, extra buttons on the mouse may be useful. You can program the buttons for specific tasks. Some users will map the buttons themselves. In my experience, a mouse that lacks clearly distinguished left and right buttons tends to confuse patrons who use computers in a more limited capacity.
- *Sensitivity.* Be sure to consider how sensitive your mouse is to clicks, how much movement it requires to move your cursor, etc.

If you are concerned about patrons with carpal tunnel syndrome, you may purchase a cheap graphics tablet to take the stress off their wrists.

## Keyboard

Similar to the situation with mice, none of the libraries researched specified the type of keyboard they use in their DML. Once again, I will refer to Lifehacker's purchasing criteria and add my own commentary:<sup>5</sup>

- *Ergonomics.* Most of us are used to typing with a traditional straight-edged keyboard. However, an ergonomic keyboard will prevent strain on your patrons' wrists. Another tip is that it is better if a keyboard is not tilted up on its back legs as that position causes the wrists to work at a sharper angle and opens them up for injury.
- *Wired vs. Wireless.* Please see the comments in the Mouse section above.
- *Extra Function Keys.* Most power users will enjoy having access to function keys. Also helpful are keys for turning sound up and down, for changing the brightness of the screen, and for putting the computer to sleep.
- *Other Considerations.* Having a number keypad on the right side of your keyboard is helpful for those who may be doing calculations.

## Monitor

Three libraries listed information about their monitors on their websites.

- Dell 27-inch monitor at UPenn's Vitale DML<sup>6</sup>
- 22-inch monitor at Colby College's Bixler Library Media Lab<sup>7</sup>
- Dual 24-inch LED flat panel monitors at Barrington Area Library Media Lab<sup>8</sup>

Of the three, only one library provides dual monitors. The purpose of two (or more) monitors is an increase in productivity for the user. The patron can have notes, a reference photo, or video or audio

monitoring on one screen while the work area is on the other monitor. It is also not necessary to purchase a monitor that matches your computer type. For example, if you have an Apple computer, your monitors can be from Dell, Acer, etc., to save money.

## Optical Drives

A newer computer may not come with a CD or DVD drive. To support the creation of discs and for analog-to-digital conversion, you will need an optical drive. You can purchase one and attach it to your computer via USB or buy an internal one to install in your computer's tower. If Blu-ray is important, you may want to purchase that drive and check its compatibility with CDs and DVDs.

## External Storage

Will you allow patrons to store their projects on your computer? If yes, you will need to make sure you have enough storage space to accommodate them. If you check out external hard drives so patrons can move their projects to another computer, buy drives that are at least 1 terabyte in size. I have found this amount of storage is enough for my patrons' projects.

## Speakers

Is your DML soundproof? If not, consider whether or not you need speakers. You should perhaps rely on headphones so as not to disturb patrons and staff outside of the room. If you do have speakers, have your staff make it clear to patrons that they may need to turn the sound down if it gets too loud.

## Browsers

Three of the libraries said they had Firefox and Safari installed on their DML computers. No other libraries mentioned browsers. At my library, we have Chrome, Firefox, Opera, and Safari installed. It is a better user experience to install multiple browsers because your patrons may be doing coding or may be more comfortable using a particular browser. My recommendations for setting up a browser:

- Set it to delete or not remember history, cookies, and passwords.
- Set a specific home site, such as your library's website (especially one for the DML!).
- Install useful plugins or extensions, such as ad blockers. There is some controversy over using ad blockers because sites rely on ads for revenue. However, a 2011 study by Solve Media determined that you are 475 times more likely to survive a plane crash than click a banner ad.<sup>9</sup>

- Unless the browser, such as Chrome, can auto-update, you will need to set an update schedule. This issue is also mentioned in the Maintenance section below.

## Audio

Sound production is one of the staples of a DML. On the cheaper end of the scale, you can start very small with a couple of microphones and with free audio software like Audacity. Or, for a more professional touch, you can set up a sound booth. Think about what you know about your community and what patrons are likely to use before you invest too much money in one area. Remember, you can always apply for a grant or have a fundraiser to purchase better equipment later. You can find a discussion on soundproofing and acoustical foam in the section The Room (above).

The following list of equipment was compiled with the guidance of Patrick Wohlmüt of Washington State University Vancouver Library and Cannell Library at Clark College. Wohlmüt's formula for setting up your audio tools is "Usually a mic connects to a mixer via a XLR cable. The mixer is then linked to your computer via USB or a mic input jack."<sup>10</sup>

Note: If a program is available for only PC or Mac, it will be noted in parentheses.

## Hardware

- *Microphones.* The audio capture on your camera may be enough, but depending on how sophisticated you want to get, you can purchase a variety of mics, including boom, lavalier, and condenser. Yeti mics are a favorite among libraries.
- *Mixer.* This device allows the user to control the volume of all the tracks so they do not overwhelm each other.
- *Equalizer.* This device allows the user to control the volume of different pitch levels in the track.
- *Preamps.* These devices "boost signal, reduce noise, and affect sound (i.e., make it warmer, change the quality, etc.)," writes Wohlmüt.<sup>11</sup>
- *Headphones.* These are used not only to listen to the audio but also to monitor the quality of the sound.
- *XLR cable.* This cable connects your microphone to your mixer.
- *Musical instruments.* You can provide instruments to support musical education.

## Software

The audio software listed below will let you record audio as well as edit audio files.

### Audio Software: Free

*Audacity*

<http://audacity.sourceforge.net>

*GarageBand (Mac)*

<https://www.apple.com/mac/garageband>

### Audio Software: Paid

*Pro Tools by Avid*

[www.avid.com/us/products/family/pro-tools](http://www.avid.com/us/products/family/pro-tools)

*REAPER*

[www.reaper.fm](http://www.reaper.fm)

### Audio Websites

*SoundCloud*

<https://soundcloud.com>

*YouTube*

<https://www.youtube.com>

## Websites

The audio websites listed above are places for your patrons to share their recordings. Note that YouTube does not support the upload of audio only, so a visual element, even just a still image, is needed.

## Types of Activities

- recording an oral history project
- podcasting
- recording music
- creating soundtrack for video

## Converting Analog to Digital

Your patrons have an abundance of old media that they can no longer access. The Hi8 tape recorders and Betamax players have long since disappeared from their homes. Sending videos to be converted to DVD is still expensive. On the other hand, it is fairly cheap to send your photos off to be bulk scanned, but are your patrons comfortable with sending their unique photos through the mail? A DML becomes a real community resource when you provide facilities to transform old media formats into digital ones.

Reasons to digitize:

- You can save content from being destroyed or becoming completely inaccessible.

- You can share copies of irreplaceable materials with the entire family.

Reasons not to digitize:

- The process is time-consuming.
- You have nothing you want to share or pass along.

## Hardware

This list is not exhaustive but covers some of the hardware for analog formats that users at my library most commonly want to convert. *Wikipedia* offers a timeline of audio formats that's helpful.<sup>12</sup>

- VCR to DVD
- cassette player
- Betamax player
- Hi8 player
- record player
- reel-to-reel player
- 8-track
- scanner
  - microfilm scanner
  - negative scanner
  - slide scanner
- video-capturing hardware

## Software

It is difficult to list every piece of software that would be useful for converting analog to digital formats. The Videography and Audio sections in this chapter also offer recommendations that could be helpful.

### FREE

- *CutePDF*. To make PDF documents.
- *Pixlr Editor*. A browser-based image editor.

### PAID

- *Adobe Acrobat Pro*. The industry standard PDF creator.
- *Photoshop*. The industry standard image editor.

### RECOMMENDED FOR HOME

These suggestions are meant for a private user, so unless your computer supports multiple patron profiles, you can recommend this software to the patron to use at home.

- *Evernote*. To recognize text within images and to organize photos.
- *Picasa*. To recognize text within images and to organize photos.

## Hardware for Capturing Video

*Blackmagic Intensity (Mac)*  
[www.blackmagicdesign.com/products/intensity](http://www.blackmagicdesign.com/products/intensity)

*Roxio Video Capture USB*  
[www.roxio.com/enu/products/creator/device/overview.html](http://www.roxio.com/enu/products/creator/device/overview.html)

## Analog to Digital Software: Free

*CutePDF*  
[www.cutepdf.com](http://www.cutepdf.com)

*Pixlr Editor*  
<http://pixlr.com/editor>

## Analog to Digital Software: Paid

*Adobe Acrobat Pro*  
[www.adobe.com/products/acrobatpro.html](http://www.adobe.com/products/acrobatpro.html)

*Photoshop*  
[www.photoshop.com](http://www.photoshop.com)

## Analog to Digital Software for Home

*Evernote*  
<https://evernote.com>

*Picasa*  
<http://picasa.google.com>

## Analog to Digital Website

*Library of Congress info on PDA*  
<http://digitalpreservation.gov/personalarchiving>

## Websites

As librarians we can assist patrons in this conversion process by teaching them the basics of personal digital archiving (PDA) methods—for example, deciding what is worth scanning and the best digital formats for saving your content in. More information on PDA is available on the Library of Congress website.

## Types of Activities

- converting VHS to DVD
- converting Hi8 to DVD
- converting Betamax to DVD

- converting LP records to MP3
- converting other formats
- scanning photographs, slides, and negatives
- scanning drawings and documents
- personal digital archiving

## Coding

In 2012, the free online coding tutorial site Codecademy kicked off Code Year. The purpose of the program was to teach aspiring website and app builders the computer programming they needed to make their dreams a reality. Then New York City mayor Michael Bloomberg drew widespread attention to Code Year by tweeting that he would be participating.<sup>13</sup> Bloomberg's endorsement caught the mainstream media's attention. Since then, Alex Hope, who co-authored the report *Next Gen*, "told the BBC that coding should be 'the New Latin.'"<sup>14</sup> A cursory Google search brings back thousands of arguments for and against children learning to code. Whether or not Hope is right, coding is hot right now in educational circles. Your DML can easily accommodate this push for coding without spending a dime.

Note: If a program is available for only PC or Mac, it will be noted in parentheses.

### Software

Your computer will have a free text editor on it. (Do not use Word because of the extra formatting it adds to documents. Use Notepad instead.) But you can provide a better experience by installing any of the software programs listed below.

### Websites

Each of the tutorial websites listed below has been used by the author. Each one has its strengths and weaknesses. The paid websites include video lessons. Each site embraces a gamification system where badges are awarded. The game aspect is meant to encourage coders to keep going and compete with each other to see who can become the best coder.

For more patron educational options, see chapter 3's section on MOOCs under Patron Education.

### Types of Activities

- building a website
- building an app
- building special projects such as databases
- completing school projects
- building resume skills

### Coding Software: Free (for writing code)

*Notepad++ (PC)*

<http://notepad-plus-plus.org>

*TextWrangler (Mac)*

[www.barebones.com/products/textwrangler](http://www.barebones.com/products/textwrangler)

### Coding Software: Free (browser code editors and platforms for sharing code)

*CodePen*

<http://codepen.io>

*JSFiddle*

<http://jsfiddle.net>

### Coding Software: Paid (for writing code)

*Coda (Mac)*

<https://panic.com/coda>

*Dreamweaver*

[www.adobe.com/products/dreamweaver.html](http://www.adobe.com/products/dreamweaver.html)

*Sublime Text*

[www.sublimetext.com](http://www.sublimetext.com)

### Coding Tutorial Websites: Free

*Codecademy*

[www.codecademy.com](http://www.codecademy.com)

*W3Schools*

[www.w3schools.com](http://www.w3schools.com)

### Coding Tutorial Websites: Paid

*Code School*

<https://www.codeschool.com>

*Treehouse*

<http://teamtreehouse.com>

## Graphic Design and Animation

Creativity really starts to show when patrons are doing graphic design and animation work at the library. The DML can support these artists by providing some basic

## Graphics Software: Free

*Animatron*  
[www.animatron.com](http://www.animatron.com)

*Blender*  
[www.blender.org](http://www.blender.org)

*GIMP*  
[www.gimp.org](http://www.gimp.org)

*Inkscape*  
[www.inkscape.org/en](http://www.inkscape.org/en)

*Krita*  
<http://krita.org>

*Pixlr Editor*  
<http://pixlr.com/editor>

*SAI*  
<http://painttool-sai.en.softonic.com>

## Graphics Software: Paid

*Photoshop*  
[www.photoshop.com](http://www.photoshop.com)

*InDesign*  
[www.adobe.com/products/indesign.html](http://www.adobe.com/products/indesign.html)

*Illustrator*  
[www.adobe.com/products/illustrator.html](http://www.adobe.com/products/illustrator.html)

*Flash*  
[www.adobe.com/products/flash.html](http://www.adobe.com/products/flash.html)

*Maya*  
[www.autodesk.com/products/autodesk-maya/overview](http://www.autodesk.com/products/autodesk-maya/overview)

*3D Studio Max*  
[www.autodesk.com/products/autodesk-3ds-max/overview](http://www.autodesk.com/products/autodesk-3ds-max/overview)

tools and software. You can provide guidance on copyright and how to save the art in formats that will be accessible later. You can also explain Creative Commons and advise artists on how to freely share their work.<sup>15</sup>

## Hardware

Any artist with a bit of determination can use a mouse for digital art. However, it does not need to be hard. By providing a graphic tablet, you can let the patron

## Stock Image Websites

*Creative Commons's Search*  
<http://search.creativecommons.org>

*Deviantart*  
[www.deviantart.com](http://www.deviantart.com)

*Flickr's Creative Commons*  
<https://www.flickr.com/creativecommons>

## Graphics Websites to Share Work

*Deviantart*  
[www.deviantart.com](http://www.deviantart.com)

*Tumblr*  
<https://www.tumblr.com>

*Pinterest*  
<https://www.pinterest.com>

draw or paint with a stylus, which is easier to use than a mouse in artwork. Bonus: a stylus also provides better accessibility for people who suffer from carpal tunnel syndrome.

- *Graphics tablet.* Wacom is the industry standard, but cheaper versions are available.
- *Scanner.* For converting paper drawings to digital formats.
- *Printer.* For printing out the final product.
- *Screen calibration tool.* To ensure that the colors of a digital scan match the physical item.

## Software

To do your artwork on a computer, you need a program to create the art. You can use Paint in Windows, but there are much better options out there.

### FREE

- *Animatron.* A browser-based animation creator.
- *Blender.* For creating 3-D graphics and animation.
- *GIMP.* For creating artwork.
- *Inkscape.* For creating vector-based drawings.
- *Krita.* For painting.
- *Pixlr Editor.* A browser-based image editor.
- *SAI.* For creating artwork.

### PAID

- *Photoshop.* The industry standard image editor.
- *InDesign.* For laying out publication pages.
- *Illustrator.* For creating vector-based drawings.
- *Flash.* For creating 2-D animation.



- *Maya*. For creating 3-D animation.
- *3D Studio Max*. For creating 3-D animation.

## Websites

Stock image sites (listed above) have images that artists may use as reference or to remix for their own art projects. The patron should pay attention to the usage terms of the stock images. In addition, some popular sites where artists can share their work are also listed above.

## Types of Activities

- designing logos
- building websites
- creating illustrations
- creating animations
- creating infographics

## Photography

It's possible to provide a usable photography setup without spending a lot of money. However, you can also spend a small fortune to build a truly professional studio for your patrons. Whichever road you take, your patrons will appreciate any high-powered lighting and blank background that your DML can provide.

## Hardware

- *Lighting equipment*
  - light stand
  - lightbulbs
  - umbrellas
  - reflectors
- *Lightbox*. For taking high-quality photos of small items for sites such as Etsy and eBay. Also useful for filming tutorial videos on how to use a vendor's app.
- *Camera*. Many people's smartphones are probably great to use as the camera.
- *Card reader*. Once the photos are shot, you will need a way to get them off the camera. A good multi-card reader works best and is cheap.
- *Printer*. A photo printer or a banner printer can be useful depending on the types of projects your DML will support.
- *Tripod*. A stable, smooth-moving tripod will support those who may not have a steady hand or want a long-exposure shot.
- *Fabric backgrounds*. If you have a serious photography community, a variety of fabric backgrounds will be useful for taking portrait shots.

## Software

Since your patrons will be capturing images, they can also use any of the image software listed in the Graphic Design and Animation section above. Image editing software can be used not only to crop and alter images, but also to remix them with other mediums (to turn a photo into a collage, for example).

### RECOMMENDED FOR HOME

These suggestions are meant for a private user, so unless your computer supports multiple patron profiles, this software can be recommended to patrons to use at home for managing their photos.

- *Adobe Bridge*. For managing photos and digital files.
- *Adobe Photoshop Lightroom*. A paid program for organizing photos.
- *Picasa*. For editing images and sharing them to the web.

## Types of Activities

- taking headshots
- having fashion shoots
- taking playful, fun pictures of staff
- using a lightbox for selling items and creating tutorials

## Photography Software: Free

*Pixlr Editor*  
<http://pixlr.com/editor>

## Photography Software: Paid

*Photoshop*  
[www.photoshop.com](http://www.photoshop.com)

## Photography Software for Home

*Adobe Bridge*  
[www.adobe.com/products/bridge.html](http://www.adobe.com/products/bridge.html)

*Adobe Photoshop Lightroom*  
[www.adobe.com/products/photoshop-lightroom.html](http://www.adobe.com/products/photoshop-lightroom.html)

*Picasa*  
<http://picasa.google.com>

## 2-D Printing

Once your artist or photographer has created their work, they may want to print it. You can provide

access to your library's usual public printers or add a DML-only printer. Either way, make sure to choose a high-quality color printer. The best color mode for prints is RGB, which is a setting that you can help the patron find in their image editing software.

## Hardware

Which supplies you will need depends upon the types of activities supported by your DML. You can allow people to print just a page or go all the way and provide access to professional matting supplies and equipment such as paper tubes. If you allow scissors, X-Acto knives, or other blades, be sure to have a first aid kit on hand for accidents.

- printer
  - photo printer
  - banner printer
- paper
- ink
- matting board
- rubber bands
- paper tubes
- paper cutter
- X-Acto knife
- adhesives

## Software

No special software is needed for printing because your printer will tell you which driver it needs to download. However, you can see the Graphic Design and Animation section earlier in this chapter for a list of image editing tools.

## Websites

Again, there is no specific website for 2-D printing. The websites below are tools to help patrons think about how the image they see on the screen may look different from the one that prints out. Terms you may encounter are *dots per inch* (DPI), *resolution*, *print image*, and *web image*.<sup>16</sup>

## Types of Activities

- printing banners
- printing posters
- printing photographs
- screen printing

## 3-D Printing

One of the most expensive items you can add to your DML is a 3-D printer. Since this technology is still in its

## 2-D Printing Websites

### *Image Size Calculator*

<http://auctionrepair.com/pixels.html>

### *Wikipedia: DPI Measurement in Printing*

[https://en.wikipedia.org/wiki/Dots\\_per\\_inch#DPI\\_measurement\\_in\\_printing](https://en.wikipedia.org/wiki/Dots_per_inch#DPI_measurement_in_printing)

infancy, even consumer models can cost hundreds or thousands of dollars. The most common reason cited by libraries for why they offer 3-D printing is the same as for the DML: to give the community access to technology they may not encounter otherwise. My library owns three 3-D printers, and they are very popular with teens and professionals.

In the medical field, 3-D printers are being used to print organs, skin, and prosthetics.<sup>17</sup> 3-D printers are also part of the maker movement, which is about encouraging people to make do-it-yourself objects, projects, and crafts. A 3-D printer usually belongs in a makerspace, but it is included here since the prints start out as digital files on a computer.

Several companies build 3-D printers; a few are listed below.

## Hardware

The tools you will need will depend upon the type of 3-D printer:

- 3-D printer
- ABS or resin plastic
- alcohol for cleaning the resin in a resin printer
- gloves for cleaning the resin in a resin printer
- spatula or paint scraper to help in removing prints from the build plate

## Software

The programs listed below can be used to design your own 3-D objects. Tinkercad is described as being very easy to use, while the paid programs have a bit more of a learning curve.

## Websites

What if no one on staff has time to learn how to design 3-D printed objects? Then use Thingiverse to provide you with 3-D designs you can print for free. Thousands of designs have been submitted by the 3-D community.

## Types of Activities

- designing toys

### 3-D Printer Companies

*MakerBot*  
<https://www.makerbot.com>

*FormLabs*  
<http://formlabs.com>

*3D Systems*  
[www.3dsystems.com](http://www.3dsystems.com)

### 3-D Printing Software: Free

*Tinkercad*  
<https://tinkercad.com>

*OpenSCAD*  
[www.openscad.org](http://www.openscad.org)

### 3-D Printing Software: Paid

*AutoCAD*  
[www.autodesk.com/products/autodesk-autocad/overview](http://www.autodesk.com/products/autodesk-autocad/overview)

*SketchUp*  
[www.sketchup.com](http://www.sketchup.com)

### Website: Objects for 3-D Printing

*Thingiverse*  
[www.thingiverse.com](http://www.thingiverse.com)

- doing architectural work
- printing prosthetics

### Screen Capture

Screen captures come in two flavors: video and still images. This technique is used to share what is on your screen or to create tutorial videos showing how to do something on the computer. Screen capturing can also include the term *screencasting*, which refers to video. An educational use of screen captures is teaching someone how to code, navigate a website, color, etc.

#### Hardware

- *Microphone*. For voice capture during screencasts.
- *Webcam*. For video capture of a presenter during screencasts.

### Screen Capture Software: Free

*Evernote Web Clipper*  
<http://evernote.com/webclipper>

*Google Hangouts*  
[www.google.com/+/learnmore/hangouts](http://www.google.com/+/learnmore/hangouts)

*Jing*  
[www.techsmith.com/jing.html](http://www.techsmith.com/jing.html)

*Livestream*  
<http://new.livestream.com>

### Screen Capture Software: Paid

*Camtasia Studio*  
[www.techsmith.com/camtasia.html](http://www.techsmith.com/camtasia.html)

*Snagit*  
[www.techsmith.com/snagit.html](http://www.techsmith.com/snagit.html)

#### Software

##### FREE

- *Evernote Web Clipper*. For image and text capture.
- *Google Hangouts*. For live screensharing and video capture.
- *Jing*. For image capture.
- *Livestream*. For video capture.

##### PAID

- *Camtasia Studio*. For video capture.
- *Snagit*. For image capture.

#### Types of Activities

- creating tutorials
- creating school projects

### Videography

The first activity ever done in my library's DML was one that I had not even considered: filming a job application. My expectation had been that parents would film their kids for school projects, but not a job application! The equipment listed in this section will overlap with the Photography section earlier in this chapter.

Note: If a program is available for only PC or Mac, it will be noted in parentheses.

## Hardware

- *Lighting equipment*
  - light stand
  - lightbulbs
  - umbrellas
  - reflectors
- *Lightbox*. For taking high-quality photos of small items for sites such as Etsy and eBay. Also useful for filming tutorial videos on how to use a vendor's app.
- *Camera*. Many people's smartphones are probably great to use as the camera.
- *Card reader*. Once the photos are shot, you will need a way to get them off the camera. A good multi-card reader works best and is cheap.
- *Tripod*. A stable, smooth-moving tripod will support those who may not have a steady hand or want a long-exposure shot.
- *Fabric backgrounds*. If you have a serious photography community, a variety of fabric backgrounds will be useful for taking portrait shots.
- *Microphones*. The audio capture on your camera may be enough, but depending on how sophisticated you want to get, you can purchase a variety of mics, including boom, lavalier, and condenser.
- *Webcam*. For quick and dirty style video capture.
- *CD or DVD burner*. In case patrons want to share their hard work.

## Software

### FREE

- *Lightworks* (PC and Linux). An open-source video editor.
- *Windows Movie Maker* (PC). A popular and simple video editor.
- *YouTube Editor*. A browser-based, very simple video editor.

### PAID

- *Final Cut Pro* (Mac). Professional video editing software.
- *Adobe Premiere*. For video editing.
- *iMovie* (Mac). Basic video editing software.
- *Toast Titanium*. For burning DVD player-compatible discs.

## Websites

As broadband has gotten more accessible, it is easier to create and share video online. The sites listed below are free options (although some have premium services for a price) that get your patrons' video out of the library and onto the web.

## Types of Activities

- practicing for a job interview or presentation
- creating school reports
- recording media for personal video channel
- making commercials
- editing wedding videos

## Video Software: Free

*Lightworks* (PC and Linux)  
[www.lwks.com](http://www.lwks.com)

*Windows Movie Maker* (PC)  
<http://windows.microsoft.com/en-us/windows-live/movie-maker#t1=overview>

*YouTube Editor*  
<https://www.youtube.com/editor>

## Video Software: Paid

*Final Cut Pro* (Mac)  
[www.apple.com/final-cut-pro](http://www.apple.com/final-cut-pro)

*Adobe Premiere*  
[www.adobe.com/products/premiere.html](http://www.adobe.com/products/premiere.html)

*iMovie* (Mac)  
<https://www.apple.com/mac/imovie>

*Toast Titanium*  
[www.roxio.com/enu/products/toast/titanium/overview.html](http://www.roxio.com/enu/products/toast/titanium/overview.html)

## Websites for Creating Videos

*Google Hangouts*  
[www.google.com/+learnmore/hangouts](http://www.google.com/+learnmore/hangouts)

*Livestream*  
<http://new.livestream.com>

## Websites for Sharing Videos

*Vimeo*  
<https://vimeo.com>

*YouTube*  
<https://www.youtube.com>

## Maintenance

With so much equipment and software, you will also have the challenge of maintaining the space. Equipment needs to be updated, and physical items in the room will wear down. Your budget should take into account the need for replacing small items, such as lightbulbs, as well as aging equipment. The suggestions below are some items to keep in mind while caring for your DML over time.

### Computer

- Run antivirus checks.
- If possible, deep freeze your computer so it resets on reboot.
- Before updating, check for compatibility issues between software programs.
- Update software on a regular schedule for security releases.
- Train staff and patrons on new software.
- Establish a plan for left-behind computer files.
- Keep Internet policies up-to-date with the latest technologies.

### Room

- Check for missing items.
- Look for broken equipment.
- Inspect for sharp edges on damaged items.
- Reapply paint to green screen wall (if applicable).
- Schedule regular inspections from maintenance and cleaning staff.

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