Chapter 2: Room Arrangement and Hardware Selection

"Take any cutting edge, state of the art piece of technology and add five short years, and you have a free, powerful workstation. It may not be sexy, but it works, and it's very affordable. You just need to know what you want, and how to put it to work." (Carol and Warren)

INSIDE THIS CHAPTER
- How we helped the library "recycle" two rooms in our library.
- Starting from scratch, with an extremely small budget.
- Political homework
- The basics: plugs, lights, tables, chairs, routers, Wi-Fi, burglar alarms and web cams.
- Three group dynamics, and what each means when setting up a room.
- Computers: Configuring computers for cloud computing, desktop necessities, privacy, security and tech support.
- Getting ready for a flood of kids, bicycles and backpacks; and the dirt and noise that comes with them.
- Case study: Adopting a big library program to a small library budget
- Case study: How to create an HD "mini-jumbotron" for less than $1000

CHAPTER GOALS
This chapter covers room setup, how to setup game stations, tablets, playing games or getting online. We'll discuss how to choose and maintain hardware on a shoestring so that there is something for each age, and talk about how to set up and maintain Internet terminals.

INTRODUCTION
It started with some musty old rooms.

In 1999, the Flemington Free Public Library had two -- each about 800 square feet on the second floor. They were available by way of either the elevator or stairway.

Room number one was old and cold, in part due to the tile floor and radiators that had fallen into disrepair. Once upon a time, it been used as the children's librarian to show movies, but lately it has been used for storage, keeping such things as an overhead projector and some burly oak card catalogs that seemed too good to put by the curb.

Room number 2, toward the front of the library, had been locked for decades, was used by the Hunterdon County Historical Society to store newspaper archives and Native American artifacts, each carefully arranged in beautiful long wooden displace cases that were designed for the 1893 World's Columbian Exposition in 1893 by Hiram Deats, a major benefactor of the Flemington Free Public Library.

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Caption: The "before" image of what is now the community room. This was the space that initially inspired the Mediatech concept, although we ended up using Room number 1, turning this room into the community meeting space. Before 2002, this room was used by the historical society for storage and had been locked for over 30 years. Among the contents: a boxes of newspapers awaiting archiving, and a rare collection of Native American artifacts collected by Hirum Deats, who had donated the land and money to start the library. According to the Deats will, the library must provide space for the Historical Society.

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Both of these spaces had become time capsules, housing items from the past that were no longer of use. In room #2, and all but one of the light bulbs had burned out, so it was hard to see the contents. The roof had leaked and the bathroom plumbing had clogged plumbing, resulting with a strong musty smell. But you can sniff something far stronger in both rooms. Potential.

Both rooms had high ceilings and historic features, that included solid oak floors and large windows that looked out onto leafy green trees. There was a separate stairway that leads down to street level, giving the space it's own entrance and exit, independent of the library.

The library trustees decided that it was time to figure out how to transform the rooms from a celebration of the past, to an instrument for our town's future, while honoring the Deats requests. But as we quickly learned, change and library culture don't always play well.

POLITICAL HOMEWORK

The first step was to have clear vision, and present this to the Library Trustees, especially the Library director and staff, to control and own the idea. After all, this was their building, and any change to our library would need their blessing. Renovation costs a lot of money. In our case, the Library Trustees voted to use $110,000 (in 1999 dollars) that was kept in a trust by Jean Nevos (SP) a former patron, for the purpose. This allowed us to hire an architect and draft the plans. But a second challenge was ahead.

We had to move the artifacts to another space; a big job that wasn't a popular topic for the Historic Society. After a presentation of the concept to their board, we invited a Historical Society member to become a voting member of our board. In addition, Anne Thomas, who served as President of the Library Board, was also a long time member of

this historical society. Anne was instrumental in making the changes happen, and it was Anne that suggested that we put Mediatech closer to the elevator, and use the front from as a community room so that some of storage cases could remain undisturbed.

We pledged to honor the will of Hirum Deats, keeping the Indian artifacts in place and to make the room available for historical society meetings. We also promised to support the history and culture of our county, by way of video documentaries, historical simulations and so on.

After a year (2001-2) of negotiations that involved many monthly board meetings and persistent nudging, the historical society found a new home for the artifacts and the contents were moved.

The process "reset" both rooms, which included rewiring, air conditioning, fixing the bathroom and putting in a small kitchen.

THE BASICS
Some requests to the architect:
- Give us plenty of power outlets.
- Save at last one empty wall space for projected images.
- Provide a secure storage closet that could be locked.

The architect designed a plan that put a pillar in the center of the room with hollow base and an access door, so we could easily provide power and a router. We placed a wireless router in the base of this column so that the signal was unobstructed, and would also cover much of the room directly below.

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Caption: the blueprints for the remodeling included a larger space for Mediatech, secure storage, dimmable lights and plenty of power outlets.

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Caption: The remodeling in progress.

THREE TYPES OF GROUP DYNAMICS
In planning our space, we started by thinking about how it could best support three social types of socialization patterns that we observed across a diverse development levels. This roughly boiled down to three basic play or work needs: 1) the need to work alone, 2) the need to work in a small group, 3) the need to meet in a large group.

1. Individual. This is the most common type of interaction, where a child or an adult wants to play or study alone, perhaps using headphones for absolute privacy. Said

another way, nothing says "leave me alone" like a pair of large headphones. This might be checking in on social media, silent reading from a tablet, listening to a YouTube video, or playing a casual game, or doing homework.

2. Small group. The most common social pattern among middle school age children, small group interactions occur when two to five people to share the same game console, screen or tablet. We supported this social interaction by providing chairs that could easily move, open space around a single monitor. In our fifth year, we received a donation of durable rolling office chairs, which were a big hit with our patrons.

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Caption: During the flight simulation project, 20 ft. VGA graphics cables were used to mirror the pilot screen, making it possible to expand a the small group interaction, so that a larger group could share the flight progress.

3. Large group. We were fortunate to have an open community room available for large group lectures or presentations, for up to 80 people. In addition, we went to extra efforts to design Mediatech so the screens could be shared and/or plugged into a projector. Having electrical access in the center of the room made it possible to plug any of the computers into a projector, which was useful during our Scratch programming class, when one child wanted to share an idea with the others.

THE BASICS: Assuming you have a good roof, heating and cooling, plus handicapped access and you can pass your fire and occupancy inspections. You'll also want to work security into your plan. For us it involved installing some new locks, and creating a separate burglar alarm zone. Here are some other factors to keep in mind as you plan for your Mediatech space.

• The Bathroom. We all have to go, and as any teacher or librarian knows, free, public bathroom access can be the starting point for trouble, so plan carefully. Ideally the door is within site of the supervisor station (ours isn't) so you know who is where and when. Make sure the basics are covered -- soap and water, hand towels (and a plunger) trash and a light switch within reach of young children (ours isn't). If your bathroom is completely dark when the lights are off, consider installing a motion-sensitive LED night light just in case. Make sure door is well labeled with a "bathroom" sign, so a family in distress can tend to a diaper situation.

• Secure storage. We created a closet with a locking door for game cartridges, batteries, petty cash, stationary and bookkeeping materials. This also might be a good place to store your wireless router and other sensitive equipment that you wanted to keep away from the patrons.

• Alarm system. Our center contains thousands of dollars of extremely desirable gadgets, video games that are easy to resell for cash. Good supervision, and after-hours security is crucial. You many need to budget for additional locks, and/or an alarm system. We were lacking in funds, so we took an old camera and created a fake webcam, accompanied by a public notice that says this area may be videotaped.

• A place to project images. We replaced our aging screen with a white wall, to be used in lieu of a projector screen, or to supplement a presentation with a second (or third) screen. We have also used a white sheet hanging from a length of twine. Because the sheet is translucent, projection from the rear is possible, providing you adjust your projector for rear projection. This was especially useful during our Spirit of St. Louis flights.

• Carpeting. We selected soundproof, commercial grade, highly stain resistant carpet.

• Lighting. Lights that can be dimmed are best, to make screens look brighter, and so that digital projectors don't have to work so hard when used with a large group.

• Electrical outlets. You can never have enough. These include long power strips mounted on the walls, on the sides of cabinets, and under tables. Besides using the power strips for the computers and video game consoles, your patrons may want to charge their cell phones and gadgets. Have adapters and cables available for popular mobile systems, including iPods, iPhones, iPads and Nintendo 3DS and DS.

• Eyes in back of your head. A security camera or mirror is essential to watch troublesome areas. We installed a camera so that the supervisor could see who was coming up the stairs. The camera is on all the time, viewable through a public LCD screen. While the video feed is not captured, we don't make this information public. We also have a notice that says very specifically, "This is a public space. By entering this space you waive your privacy. We may observe any screen, and you may be videotaped without your knowledge." We hope to install a much better security camera system, along with signage that such a system is in place.

ROOM LAYOUT

Here are some things we kept in mind as we planned the room space. Some of these were ideas adapted for library spaces, from the High/Scope Foundation, where I worked for ten years, helping to design early childhood learning spaces.

A) Modifiable vs. Non-modifiable elements. First consider the elements of your room that you can't change. You can put tables and chairs anywhere, but you can't change the location of your front door, phone/cable line and electrical outlets. Put the supervisor's desk by the main entrance and position the screens so that as many as possible are in

the line-of-site of the supervisor desk. If there are areas that are blocked from view, consider using a video camera or fish-eye mirror to monitor the space. It is very important that you can see what being displayed on every screen, at any time. (An occasional walk around the room by the supervisor can also be effective.)

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Caption: A view of the room layout during our first year, with the tables set up in a large cross, so that the supervisor can see every screen, and so that small groups can gather around the ends of the table.

C) Include developmentally appropriate options for babies and toddlers, who bring an entirely new set of challenges.

• Is your space stroller friendly? Can you accommodate a stroller -- perhaps even a double stroller -- into your center?
• Can your bathroom handle a diaper changing session?
• Is there a place for young children to crawl, toddle, and roll around? Fortunately our community room (located next to Mediatech) is furnished with a large colorful area rug and dozens of huge stuffed animals, creating a safe, cozy place for children to exercise their gross motor skills, aka run around.
• Are there developmentally appropriate technology options for young children? Put electronic toys on a low shelf and make sure they contain fully charged batteries so that the child has a successful experience. Busy box technology toys work extremely well. Another question to ask: is your space stroller friendly? Is there a place to change a diaper, with a lined trash bag?

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Caption: We put one computer system on a low table for preschool-age children. The keyboard

D) A ficus tree with white Christmas lights and/or an Elvis statuette*.
* elements of irreverence can help, for sanity purposes.

COMPUTERS
The paragraph you are now reading was created using Google docs, typed on a 1995-ish Dell QWERTY keyboard plugged into a Hewlett-Packard computer with a surprisingly clear no-name cathode-ray tube (CRT) screen. The mouse is a wired Logitech laser model. (Update 2014: all our CRT screens have now been retired).

If computers were people, this one would a Frankenstein. When it is first turned on, the cooling fan sounds like it is an icemaker for about 15 seconds before it gets up to speed,

and purrs quietly. The speakers and the standard two-button laser mouse are no-names, and the computer starts up in the Windows XP operating system.

INSERT chap2image8.jpg
Caption: A row of donated PCs, ready for the day.

I've wedged myself between two Facebook-browsing middle-schoolers school students, in part because I want to understand exactly what it is like to write on one of the stations I am writing about.

When we started thinking about creating a children's technology center in our library, our budget led us toward begging and borrowing, made easier by a plentiful supply of obsolete free and equipment. Take any cutting edge, state of the art piece of technology and add five short years, and you have a free, powerful workstation. It may not be sexy, but it works, and it's very affordable. You just need to know what you want, and how to put it to work. You also get tried-and-true equipment, as long as you know what you're looking for.

For the past ten years, these computers have served our town well, providing reliable Internet access. We proved we could do it, but we learned some lessons along the way.

Let's explore these computing workhorses, to see how you can exploit their ability to keep things working smoothly. We'll also discuss making a master plan, thinking about Internet accessibility, wires vs. wireless and so on. After we talk about computer terminals, we'll discuss cover game consoles, tablets and handheld game consoles.

A CAUTION ABOUT ACCEPTING FREE AND DONATED COMPUTERS

Ask and you shall receive. For us, collecting aged computer systems and components was easy – too easy, in fact. We learned that lots of people have old computer systems in their attic.

Our local newspaper ran an article that we were collecting hardware, and people started leaving old CPUs with bags of wires, disks and parts by the front steps. A team of volunteers checked the computers, combined RAM, installed Clean Slate and put the computers into operation when possible, but the scraps were bulky and messy, soon occupying an entire section of the library basement.

We worried about finding environmentally safe places to discard old parts. In addition, we found ourselves in a situation where we were becoming a computer exchange and repair shop, matching local families with computers.

We quickly become selective -- only accepting newer, working laser printers, LCD screens and CPUs from known sources.

Before you accept a computer:
___ Make sure it has an Ethernet port or a reliable wireless port.
___ Make sure you are clear of any liability. Remember that hard disks might contain personal information such as tax records or browser histories. See the Equipment Donation Waiver (Appendix 2).
___ Think twice before you erase that copy of Microsoft Office. Don't erase valuable software. Sometimes a computer might have dated but fully functional software. Especially useful are working copies of Microsoft Office or Adobe Photoshop.
___ Acknowledge contributions with a timely thank-you letter. Consider putting the donor name directly on the device.

MONITORS
Originally, Mediatech used CRT (cathode ray tupe) monitors, which were bulky and generated unwelcome summertime heat. Over the years, all the CRT monitors have been replaced by donated flat screens that are interchangeable; and there are enough for one or two spares. Our next project is to replace the old TVs with reduced cost LDC flat screens, which are required for late model video games that use HDMI cables and HD (high definition) graphics.

INPUT DEVICES
MOUSE A standard two button laser mouse with a scroll wheel costs about $20. You can tie the wire around part of the table to reduce theft. Attributes of a good mouse:
___ Standard size, shape and features
___ Avoid older mice with roller balls on the bottom or any other mechanical parts that get dirty and clogged up with grime.
___We prefer wired mice to wireless mice. The cable makes theft less likely and there are no batteries and USB dongles to worry about.

KEYBOARD Keyboards come in all shapes, sizes and qualities. Because they are so frequently donated, most end up being recycled. Here are the attributes of the keyboards we like to keep.
___ Wired not wireless keyboards because of theft.
___ USB plugs (that can work with either Macintosh or Windows).

SPEAKERS
In the past, noisy speakers and libraries were not good bedfellows. Not anymore. Sound is an essential part computing experience. Make sure the speakers have a volume control and a headphone jack. Using a Sharpie, you can mark the maximum

recommended volume setting, along with a reminder that "speakers are for personal use." Most speakers require an AC outlet. There are many brands in the $15 range.
— Headphone jack
— Independent volume control
__ Good quality sound

EARPHONES
Earphones can seriously reduce the noise level in a technology room as well as increase the privacy of your Internet users. Many children bring their own ear buds, but we keep several over the ear models available, especially useful for smaller children. They are brightly colored with characters like Dora the Explorer; which is a successful way to discourage theft.

USING YOUR SCREEN BACKGROUND GRAPHIC AS A MARKETING VEHICLE
Remember that you can set the computer desktop to display any image. Here are some ideas that can help you market your services:
___ use a screensaver comprised of people using the computers.
___ choose a static desktop image that highlights one of the programs on the computer. For example, for our dedicated flight simulator, we have a photo of the Spirit of St. Louis, hanging in the Smithsonian.
___ Make the default homepage your own.

GETTING READY FOR A FLOOD OF KIDS
If you build it, will they come? For years 1 through 5, they certainly did. We succeeded in creating a popular destination for many children; but unfortunately We'd have a line of children waiting for the doors to open. They'd often go home around dinner time, and some would return in the evening, with adults.

We learned the hard way, through thefts and misbehavior, that we needed to increase structure and supervision.

Other lessons:
• A bike rack was a necessity. After several bike thefts, we wanted to make it easy to lock a bike. We even circulated bike locks at one point.
• Cleaning supplies were in high demand. We added a daily cleaning and wipe-down of the game controllers, keyboards and door knobs to the job of the supervisor.
• Snacks and food were OK, at first. But they dramatically increase the mess. They were banned in the latter years.
• Supervision extended to the outside. We received complaints about children loitering and littering in the street as they waited for Mediatech to open. Several smokers also would gather on the front steps; creating a less then healthy first impression (especially

when the smoke would blow up the stairs). We asked student volunteers to pick up litter, sweep the stairs and would keep an eye on the front door with a remote camera.

CASE STUDY: ADAPTING BIG LIBRARY PROGRAM TO A SMALL LIBRARY BUDGET

On a frigidly windy day in January 2012, I had the pleasure of visiting the Chicago Public Library's YOUMedia center, and after school program designed high school age children, located in a beautifuful street level 5500 square foot room in the Harold Washington Public Library. This was the flagship location of YOUMedia in the street-level annex of the Harold Washington Public Library.

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Caption: The Chicago Public Library's YOUMedia center.

Could we do the something similar in a 145 square foot annex on a shoestring?

The center I visited was one of several that had the financial support of the MacArthur Foundation and The Pearson Foundation. It was implemented by the Chicago Public Library and DePaul's Digital Youth Network. The first center opened in 2009 and has since been expanded to five centers; with budget in the millions of dollars. We have the support of our local supermarket and a budget of less than $10,000 per year.

Our objectives were more similar than different. According to the YOUMedia site (at http://youmediactc.weebly.com/history.html) The MacArthur foundation wanted to create a digital library space for middle school students and approached the Library with this idea. The Library wanted something slightly different -- to make a high school space because there was no space in the public library where high school students could be kids. So they moved their teen books into the first floor room and mixed the traditional print materials with noisy video games.

Compared to Mediatech, YOUMedia is massive. The 5500 square feet could easily hold 10 Mediatech rooms placed end-to-end. But the intention is equal in size, to provide children with access to technology that is normally out of reach, and let them informally interact with experts who know how to use those materials.

The design YOUMedia room was outsourced to a team from Carnegie Melon University. The layout was roughly carved into three color-themed regions designed to facilitate Hanging Out, Messing Around, and Geeking Out, HOMAGO, an acronym that came out some ethnographic work by Stanford professor Mimi Ito.

While I loved what I saw, it made it hard to go home to a minimally funded library. The cost of just one of the YOUMedia professional DJ stations could have funded our center

for an entire summer. At YOUMedia felt like a starving person at a gourmet New York City deli. There was another significant difference. YOUMedia was specifically designed and staffed for one age group -- high school age students. So there were no grandparents, toddlers, or moms with strollers. Our approach would be called "USmedia," sans the high budget trappings. We would replace the paid librarians with parents and volunteers where possible, use donated technology and recycled furniture, using the SOTAFYA (State of the Art Five Years Ago) principle.

CASE STUDY: HOW TO SET UP A LARGE SCREEN BULLITEN BOARD FOR LESS THAN $1000
Flemington Free Public Library Director Shawn Armington wanted an affordable, powerful, multi-purpose digital bulletin board for less than $1000. I was able to do it with $975, not counting taxes, shipping and installation.

Ingredients:
- One HD (High Definition) large screen display ($420)
- One articulating wall mounting kit ($50)
- One Apple TV ($100)
- One 16 GB iPad 2 ($350)
- Foam case for iPad ($40)
- Cables, HDMI for $5.79 and surge protector for $9.

Not included -- Taxes and shipping, Wi-Fi, adhesive-backed Velcro and electricity.
TOTAL: $969.74

NOTES: Shop around for TVs and read on-site reviews from different sources. We found a Sceptre 50" 1080p HDTV at www.walmart. com for $419 that had everything we needed. It has three HDMI inputs including VGA in for input. We wanted LCD (not Plasma) and 1080 pixel resolution (not 720p). Velcro the remotes (both for the TV and the Apple TV) on the side or top so it is easy find. The VGA graphics port is useful for people who want to connect computers, but note that VGA is only graphics and not sound. Also note that getting to ports can be tricky, which is why you might want to keep a VGA extension cable plugged in all the time, hanging below the screen. It's handy to have an separate set of self powered portable speakers for this type of use (we use a donated pair). Make sure you budget for extra HDMI cable (about $10) and a surge protector, if which is your call. The wall mounting kit we found is called Premium Atlantic Articulating Mount for 37" to 64" Flat Panel TVs. ($50, Walmart).

For the cables, we selected the AmazonBasics High-Speed HDMI Cable (6.5 feet for $5.79) and a Belkin 6-Outlet Wall-Mount Surge Protector ($9, Home Depot).

The $100 HD Apple TV was an easy choice. For the iPad, we had plenty of options and probably would recommend a slightly larger 32 GB or 64 GB size, considering that

some apps can be up to a 2 GB in size. To stay within budget, we stayed with the 16 GB iPad 2 for $350, which contains all the power you'll need to use the Apple TV. To make it easier to use with children, we included a foam case from GripCase USA ($40, www.gripcase.com).

USING YOUR MINI-JUMBOTRON: HOW TO USE APPLE TV IN A LIBRARY

The concept of screen sharing is a wonderful thing and has huge implications for public settings. When we first started Mediatech, we installed a very expensive hardwired screen sharing system for this purpose. The system took a crew three days to complete the work, and the hardware alone cost over $10,000. It worked well for a while but soon a component would break and we stopped using it. Sound familiar?

AppleTV and other similar types of screen sharing devices that use Wi-Fi offer hope. Don't be fooled by "TV" in the title. The real power of the Apple TV system is that it uses your Wi-Fi router as a hub, creating an invisible invisible wire that connects any iOS device to the big screen, as long as both are using the same Wi-Fi channel. If you have an iPhone iPod touch or iPad you can see if an Apple TV is within range using the home button twice and swipping to the left. For System 7, swipe up from the screen bottom to see the "Airplay" options. Once it is installed you can use it for:

• Running a digital story time. Display a popular e-book that may be associated with a printed version on the big screen. Let children take turns swiping the pages are touching items for discoveries on page.
• Turn your iPad into a WebCam to highlight pages printed pages from books.
• Record children reading traditional books using your tablet video camera features. Replay the performances at a later time.
• Display a weather app especially during a weather event. People like watching the real-time radar for example is a storm passes overhead.
Use the screen to show news pages during breaking events.
• Use the screen to show YouTube videos. Especially highlight local personalities events organizations schools and businesses.
Make sure that the screen is facing outward toward a public window. You can use the screen to display upcoming events or other important announcements such as the library hours.
• Host a new app demonstration evening. Using Apple devices anyone can demonstrate their favorite app putting it on the big screen for a closer look by the entire group.
• Make a screensaver out of slides from that depict historic views from the area. Have a slides playing throughout the day.
• Make a slideshow by quickly snapping pictures of new books that have recently arrived in the library. When not being used, your Apple TV goes into screen saver

mode. It is possible to choose any cloud-based photo library for this screen saver. With some work, you can create a series of seasonal or theme-related information displays.

LINKS TO MATERIALS

See: http://www.walmart.com/ip/Sceptre-50-Class-LCD-1080p-60Hz-HDTV-X505BV-FHD/19793654

See: http://www.walmart.com/ip/.com-Articulating-Mount-for-37-to-64-Flat-Panel-TVs/21853464?action=product_interest&action_type=title&placement_id=irs_middle&strategy=PWVUB&visitor_id=41401538475&category=0%3A3944%3A1060825%3A447913&client_guid=7a0e3862-295b-4c76-a301-67b4903a20e7&config_id=0&parent_item_id=19793654&guid=da214f73-bb39-4aaa-8fbf-02d7e0e4448c&bucket_id=000&findingMethod=p13n

http://www.amazon.com/AmazonBasics-High-Speed-HDMI-Cable-Meters/dp/B003L1ZYYM/ref=sr_1_1?ie=UTF8&qid=1380024407&sr=8-1&keywords=hdmi+cable

TABLES

Our first stop was a local used office furniture store, called Blaher's, who provided never ending supply of treasures, including adjustable-height computer tables with holes for wires at a used office furniture supply store (six for $200, including delivery!). Some of the ends were chipped and they had to be adjusted for size.

When choosing tables, look for:
___ table tops at elbow height
___ monitors at eye level
___ an easy to clean surface
___ a place for power outlets and iPod/iPhone/iPad charging cables.

CHAIRS

Chairs fall into different categories, and each have strengths and weaknesses

- Light stacking chairs. We were lucky enough to inherit over 45 strong, but light stacking plastic chairs with steel pipe frames that are nearly indestructible. They are easy to move, and clean. We especially like how it is possible to put two chairs together to encourage collaborative play on the same screen. The only downside is that are brightly colored making them less than attractive.
- Upholstered office chairs. Here's a universal truth about children... they will constantly move. When you combine this natural movement within office chair that spins you know what happens. Still these chairs are higher-quality in adults prefer to use them. The wheels on the bottom make them easy to move into position. Thanks to

donations we've been able to increase the number of quality upholster the office chairs over the years, using the light stacking chairs for special events in case we need increased seating.
• Upholstered loveseat. Another fun discovery at the used office furniture warehouse was a red loveseat. Parents and children would snuggle up together with an iPad. We added the loveseat along with 3+ chairs giving our room a more comfortable, relaxing atmosphere.

INSERT picture of MT furniture (love seat, chairs etc)

POWER STRIPS
Dedicate a power strip to each computer (CPU, monitor, and speakers) or game station (game console and television). This reduces the risk of major loss in the event of a serious power surge, since each system is individually protected. Computers like to go to sleep rather than to be turned on or off. Ideally it will be possible to power up or down a room full of 20 stations in less than five minutes.

MACINTOSH VS. PCS
One of the advantages of getting donated hardware is that we get a large variety of computer brands. These have included just about every variety of operating system. We found that some patrons prefer Windows while others prefer Macs. We've had extremely good luck with our Macintosh computers.

Microsoft Office, may be all the reason you need to choose Windows PCs. Note that Windows require frequent Microsoft operating system updates and licensing can be very expensive. Windows computers can be set up fairly easily (i.e., by following their installation Wizards) with a local area network for printing and sharing resources.

We tried using the Ubuntu version of LINUX (free open source software) on several donated PCs with limited success. It worked very well, but when our volunteer tech support person moved on, so did those computers.

MACS have a definite advantage in terms durability and design but are unfamiliar to many patrons who have more experience with PCs. Once you convince patrons that a browser is a browser is a browser, they are more than willing to use the MACs instead of our Windows PCs. Our MAC minis have been running without problems for over eight years, while we have needed to replace our PCs several times as they “age out” of usefulness. Our MAC minis play DVDs without any trouble and are favorites for Minecraft.

ADDING VIDEO GAME CONSOLES TO AN EXISTING CHILDREN'S ROOM
In contrast to setting up computers systems, a game console is relatively easy to set up.

Chapter 3discusses the various game systems in greater detail, but all need the same basic equipment: a cabinet that will securely store the game console, the game console itself, a television (the equivalent of the computer's monitor), and the associated cables and controllers.

Power.
Finding outlets in old buildings can be challenging, so the first step is to find out where you can plug things in.

Monitors
First the good news. You can easily find yesterday's $1000 Television set on a street corner these days that can function as a video game monitor, for most older, pre 2014 systems.

CHOOSING TELEVISION
Most desirable:
- Has easy to access AV input jacks
- Has easy to access volume controls
- Can be controlled without a remote
- Has a clear picture and sound
- LCD is better than CRT

INSERT BOX: WHICH IPAD?
You may be asked to take older iPads. By all means, accept. But know that like any type of technology, iPads have evolved with time. The biggest difference is between the iPad 1 and the iPad 2 and later. The iPad 2, released just 12 months after the iPad 1 (April 2011) is much lighter, faster and has front/back cameras. It can also be plugged into an external monitor with an extra $25 adapter (for either VGA or HDMI).

Other adapters are available for USB and SD card connectivity. These adapters seem great, but they don't always work as smoothly as we'd like. The same holds true for the differences between the iPod Touch 4th and 5th generations.

The following review of the original iPad was in the April 2010 issue of CTR.

SETTING UP A FIRST GENERATION IPAD
You begin by plugging in your iPad into a Windows or Macintosh computer (required), and starting iTunes (also required). Later generation iPads are self-sufficient.

This starts the standard registration process, and some free trial offers to subscription-based data services; all easily skippable. Next, you log into your favorite Wi-Fi zones (also required). The next parts are familiar to anyone who has ever synced an iPod

Touch or an iPhone with a computer. You can decide which apps you want to transfer, from the huge selection of free choices, along with your movies, podcasts and photos. Or you can give Apple your credit card and download some of the new iPad native apps already on the market.

These titles, in the $3 - $10 range, have markedly better graphics and sounds. Regular iPod Touch apps appear in a regular sized window on the iPad's larger screen, with a "2x button" in the lower corner, making it easy to quickly fill the screen. They look and run fine, but the native apps have an additional sparkle; not unlike the difference between regular TV and HD.

Choosing games is as easy as touching the picture icon, making it simple for a child to get in or out of any activity, at any time. This puts plenty of choices at a child's fingertips. Here are some iPad details that we haven't seen other people mentioning:

- iPad uses the identical cables and chargers as the iPod Touch and iPhone. Later generation iPads (4 and up) use a smaller and faster Lightning connector that is much easier to use.
- It is easy to forget where the volume buttons are because of the way the screen changes directions. Remedy this with a small sticker to mark the "loud" and "quiet" settings.
- The battery lets you work all day on a single charge.
- If you have a lot of apps, you can forget where they are. For some reason, all the App icons start to look the same after about four screens of scrolling. Get used to learning the search characteristics.
- Apps for iPad generally cost more are more expensive than iPod Touch or iPhone apps.
- The iPad 1 has a microphone; but no camera. So some iPhone only apps won't work.

For young children, iPad's touch screen, voice input and motion sensing are significant advances that will enable more children's interactive products, of higher quality.