

I would like to begin this paper by examining exactly what the digital divide is and how it generally applies to librarianship. Jaeger et al.'s (2, 2013) states that 10-15 years ago the digital divide was about access to technology but now, with consumer technologies dropping in price, it is less about access to technology and more about participation. Jaeger et al. (2013) does use a contemporary example to highlight that there still is a cost barrier within the digital divide with that being the escalating price of broadband internet, but, with 99.6% of public libraries offering internet (Jaeger et al., 2013) it is hard to consider possible solutions from a librarianship perspective. I think the lack of participation played out in the literature search I conducted for this paper with the most directly relevant articles written on the digital divide being more than five years old. For example both Agosto (2005) and Moe (2002) found in their studies that a fairly significant section of their socially and economically marginalized patrons were coming to the library use the internet because they did not have it at home computers at home. Jaeger et al. states that, with the availability of tablets and smart phones, a large percentage of Americans now access the internet through those mediums which I think is suggestive that gap has decreased, albeit, is still present. Articles published more recently, Domsy (2013) and Britton (2012), for example, focus more on an increasing gap between technological proficiencies and skillsets which could potentially be offset with participation in maker spaces and hacker spaces. Kenney (2013) writes that in the past 18 months many libraries have chosen to introduce “maker” spaces to their patrons with the underlined philosophy that libraries can be places for creation and not just consumption. “Hacker spaces” are places where Curran (2013) suggests advanced or “sophisticated” users can share their expertise with one another on DIY projects. Again the underlined philosophy here being that libraries are in the ““expand your mind business” (Curran,

35, 2013). For the purposes of this paper I would like to considerate the principals underpinning these spaces, which is to say individuals using technology to create new works, as it applies to librarianship. In this paper I intend to argue that the creation and implantation of maker and hacker spaces will help lessen the digital divide.

So what exactly are these spaces? Loertscher (2012) defines a maker space as “places where design and entrepreneurial ideas are allowed and where serious technology and construction equipment are available in a place dedicated to play (meaning to make, construct, tinker, experiment, invent, and create)”. Just a personal observation from reading through the literature it would appear that is almost uniform optimism that these spaces can help users uncomfortable, or unfamiliar, with technology begin to actively participate and develop information literacy in this area. Kenney (2013) argues that these spaces utilize STEM skills, science, technology, engineering, and math, which are skills libraries have traditionally done a poor job of supporting. How libraries can support and develop these skills is still very much a work in progress but there are examples of how it is been done thus far. The Chattanooga Public Library recently purchased a 3D printer and devoted an entire empty floor to their maker space with the idea being that “it's up to the community to determine how they use it” (Kenney, 2013). Being able to get one hands on a 3D printer, I would argue, is a definite example of an access to technology barrier given their cost, upwards for \$2600, and is able to tackle the digital divide on two fronts. It is easy to see patrons being afraid to interact with the Makerbot without direct support, or instruction, and that certainly will not promote participation, I think that the approach taken by the Detroit Public Library system is better to those ends, which is to say, they had specific programs taught by a local expert whom was paid through grant funding, which does detract from some of the spirit behind these spaces, but is perhaps better in the long run

than expecting community volunteers to keep things going (Britton, 2012). Kenney (2013) argues that maker spaces are “inherently intergenerational” and I also believe that building communities consisting of people from varying age groups will help lessen the divide as people of varying technology proficiencies will be learning from one another. The Raspberry Pi is an example of a similar idea being used successfully in an education setting which highlights the potential of these spaces. The Raspberry Pi was created by a charity with their stated goal being that they wish to see “kids all over the world to learn programming” which its creators advertise as “credit card sized computer” (The Raspberry Pi Foundation, FAQ’s, 2012). It probably will not win any prizes for aesthetic design but it is actually a really neat piece of hardware. It is a single-board system with a number of ports like audio/video out and both a USB and LAN connector which is sold for \$25 and \$35 dollars depending on the model (The Raspberry Pi Foundation, FAQ’s, 2012). That price is a little disingenuous because it does not include the required SD card, but even factoring that in, this is an extremely cost effective way libraries can begin to build their maker space. The Raspberry Pi Foundation (Schools, 2012) include links to lesson plans on their website for instructors as well as a section of their site outlining what kids have been doing with the hardware with one example being a grade school that designed a system to help elderly or disabled people answer the door for their class project. Although their focus is on children I see no reason why similar programs could not be in place for adults keen on learning how to interact with technology to interesting things.

This leads me to discussion of one of my few critiques of these spaces which is to say it looks like a lot of their offerings, from examples in the literature, seem to have a high barrier of entry. Britton (2013) gives the example of a libraries maker space having soldering irons ready

for patrons to use. This is definitely good for patrons that either know how to use soldering irons, or want to learn, but for someone perhaps leery about technology I could easily see this being off-putting. That is not to say there is no place for that, I believe the contrary is true, but I would suggest offerings of basic selections like “how to make a grocery list on a tablet”, or, “how to shoot and upload a video to Youtube” be present as well. If this is true for maker spaces I would suggest that hacker spaces would be very alienating for someone wanting to learn more about technology. It would, without a doubt, be very intimidating for someone wanting to learn how to jailbreak their phone, for example, to enter a hacker space and see people remotely controlling their thermostats using homebrewed software on their watch. Again this is not to say these places should not exist in that form but I think there is equal opportunity to have classes on really broachable subjects like overclocking a computer, installing PC components and how to side-load software on an HDTV or smart phone. Domsy (2013) writes that “maker spaces are seen as a way for students to engage and experiment with technology in creative ways that reinforce theories taught in the classroom” which I would argue this youth focus is a detrimental to the “intergenerationality” of these places and how that dynamic could positively affect the digital divide. Loertscher (2013) gives a personal account of their experience in a maker space which is “men in suits were wrapped up in engaging conversations with t-shirt wearing teens”, so perhaps I am making a mountain out of a molehill, but I do think it is something to be aware of when designing spaces and related programing. My position is that to truly make these spaces for everyone care should be exercised to help promote non-users of technology by having programs, like those exemplified above, in tandem with the wide open community lead approach.

Operating from Jaeger et al. (2012) definition the digital divide as a lack of participation with technology, rather than an inability to access it, I think the argument could be made one of the areas this is most evident is with video games. According to the Entertainment software association (2013) the average gamer is only 30 years old which leaves out almost an entire generation of people alienated from what is rapidly become one of the largest media industries in North America. Domsy (2013) uses the example of game developer Ryan Henson Creighton co-creating a video game with his 5-year old daughter at the Independent Game Jam, in Toronto, as an example of something that could be done in a maker space. Buchanan and Elzen (2012) argue that video games are an established, and unique, medium that have a place in all modern libraries. They continue by suggesting that young people in particular would benefit the most from video games being added to collections and is a way to engage them in libraries. Moline (12, 2010) takes that same idea and goes another direction with it outlining how video games develop problem solving skills in teens while simultaneously engaging them in narrative fiction. I think that, with maker spaces, there is a really exciting opportunity to not only have patrons play video games but also make their own. One potential route is libraries can purchase a few copies of GameMaker: Studio and have a set time where patrons can work independently, or with one another, to see what they could come up with. From personal experience I used this while in high school, and could make something in an afternoon, albeit very basic, without any specialized knowledge. One drawback is this software is expensive, close to five hundred dollars, which could be hard to justify purchasing. Another route is using retail games that have creation modes in them to introduce patrons to game design. One example is the soon to be released Disney Infinity video game. Lead designer John Vignocchi demonstrates in the referenced Youtube video how kids can learn simple programming by playing Disney Infinity. In

the video he quickly creates a soccer game, with programmable scoreboard, using the included “toy box” mode (Giant Bomb, 2013). Kids will have access to all of the assets in the game using this mode and are provided with some operators to connect them and other creation tools. Once they are done they can upload their creations to Disney’s cloud so their friends and other users can see what they made. This is just one example of many of video games that have similar modes that could be used to engage users with video games in a way that leaves them with a created product at the end. Like the Raspberry Pi example these are youth focused but I think there is great potential for intergenerationality here as well. We have the above example of someone developing a game with his 5-year old daughter but more practically a parent could sit down with their child in one of these spaces and work with the game creation tools to create something together.

Jaeger et al. (2012) provide a definition of the digital divide which suggests it is now more about a lack of participation with technology rather than an inability to access it. From that perspective I argue that maker/hacker spaces have great potential to lessen the divide. In the past 18-months there has been a massive swell of interest from libraries in creating these spaces for their patrons and we looked at examples of how this is being realized. Critically examining the current literature about maker/hacker spaces it would seem that there is a mindset that these spaces are more to cater to people with some degree of tech skills rather than brining new people into the fold which is something to be aware of moving forward. Finally we looked at the potential of maker spaces to bridge the digital divide relating to video games by providing examples of how people can engage, and use, that medium for creative means.

List of terms

Assets (Video Games) – Also known as “art assets” they are generally anything in a video game created by an artist. For example character models, surface textures, objects like tables, chairs, etc...

Home brew – User created software loaded on proprietary hardware to make it do something for when it was not originally intended.

Jail-breaking – The process of removing protective elements from a smart phones operating system to gain higher access to certain functions of that product.

Over-clocking – Making a computer run faster than the recommended specifics provided by the manufacturer.

Side-loading – Like homebrew only this is normally commercial or open-source software loaded on a device for which it was not originally designed. For example side-loading Linux on a Playstation 3.

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