Maker Jawn: playing, learning, and making things light up in city of brotherly love and sisterly affection.

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bk
Fall 2013

IDES431
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Jason Lempieri

PROJECT CONTEXT

I am currently focused on working directly with **youth in afterschool library locations** to introduce them to S.T.E.A.M. activities, introducing them to **evaluative thinking**, and increasing engagement through **project-based learning**.

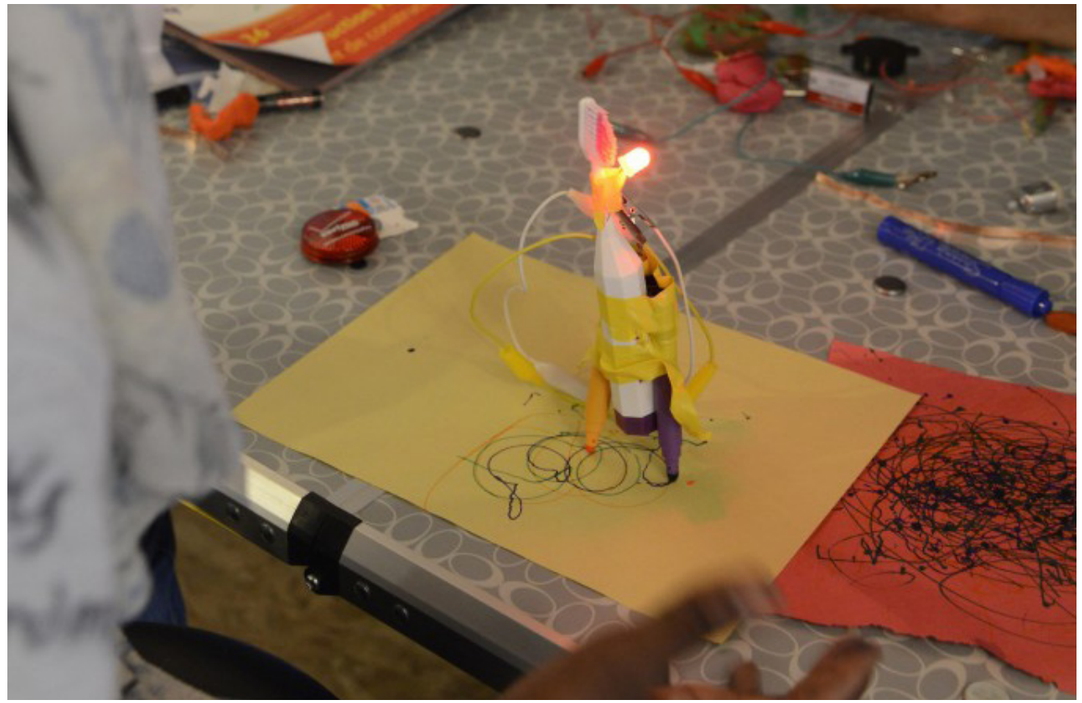
I have been introducing these concepts to youth ages 4-22 through the implementation of digital humanities projects at the **Free Library of Philadelphia** with the **Maker Jawn Initiative**, which I helped to design and implement. Maker Jawn targets youth in **culturally rich**, **low-income neighborhoods** through programming in community libraries. Our mission is to improve access to S.T.E.M./S.T.E.A.M. programming in these neighborhoods through drop-in, interest-driven daily workshops. While we have successfully created working curricula for youth and professional development models, I'm continually surprised by the tangents, collaborations, and experiences that spawn from play and spontaneity with both youth and adults, and often the projects that arise from inter-generational collaboration. Play eliminates the experiential and social barriers that separate mentors such as myself from the youth we work with, and creates learning moments for us to share ideas and skills, and build on previous knowledge as a group.

S.T.E.A.M - Science, Technology, Engineering, Math + Art / Design

evaluative thinking - reflection on actions and making via sharing ones process and vision.

low-income - approximately 86% of households with children are below the poverty line. (The Village of Arts and Humanities Narrative)

An early project consisted of taking an electric toothbrush and creating a simple **"art-bot"** as coined by Steve Davee from Maker Ed. This self driven project is a gateway to questions and interest in other potential future applications these newly acquired skillse

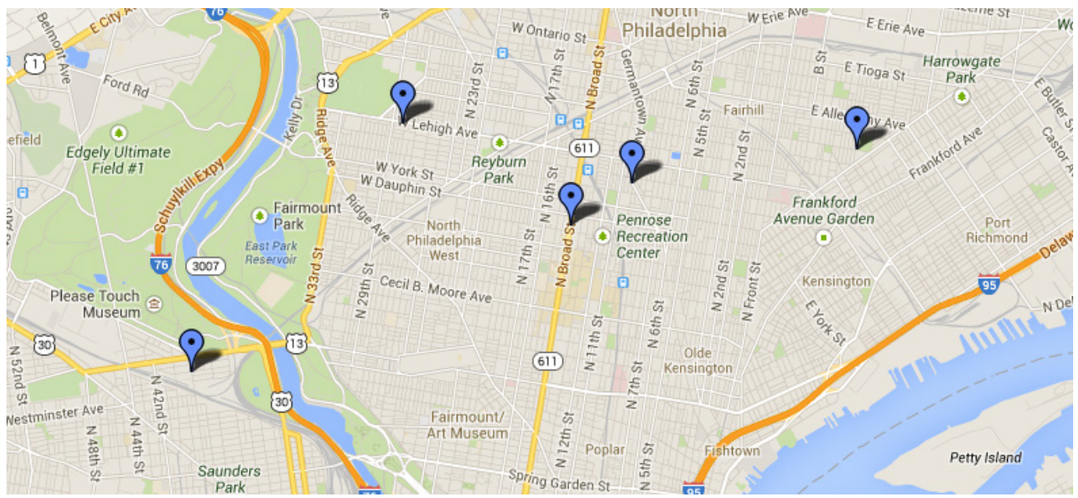


Photos: Julia Staples/The Village

SUMMER OF MAKING

Over the summer the library piloted a program with a diverse collective of people at the Free Library of Philadelphia with backgrounds as students, engineers, and artists. Dedicated to mentoring youth as they articulate their own interests through the lens of technology we ran daily workshops in Free Library HotSpot locations and Branches. A team of **5 mentors worked at 5 locations** in targeted low-income undersereved communities and their respective library locations. Funding and tools for these mentors were initially granted by the Maker Education Initiative and their Maker Corps Program.
Over the course of the summer each individual location implemented their own **digital arts programming** based on youth interest, resources available, the mentor's interests and discipline, and collaboration between locations and external entities.
In my case I was stationed at the Village of Arts and Humanities in North Philadelphia on Germantown Avenue.

digital arts programming - workshops or projects with electronics(LEDs, batteries, and other components) or computers to express creativity and improve digital literacy.



The Maker Jawn Inititative was deployed in 5 sites (l-r), Heavenly Hall, Widner Branch, I.D.A.A.Y. Hot Spot, The Village Hot Spot, and McPherson Sq. Branch.

FREE LIBRARY OF PHILADELPHIA

The mission of the Free Library is to inspire knowledge, advance learning, and inspire curiosity. Its vision is to build an enlightened community dedicated to lifelong learning. The MakerJawn Initiative is embedded in libraries across Philadelphia. Its goal is to increase access to knowledge, tools, and resources in underserved communities by developing pathways for learning through low-cost, low-barrier projects.

MAKER JAWN INITIATIVE

MakerJawn is dedicated to mentoring youth as they articulate their own interests through the lens of technology, in daily afterschool programming and during citywide events and workshops, empowering youth in Philadelphia through project-based learning.

Maker Jawn HQ, once a week all mentors gather in the Annex behind the Parkway Central Library on Vine Street.

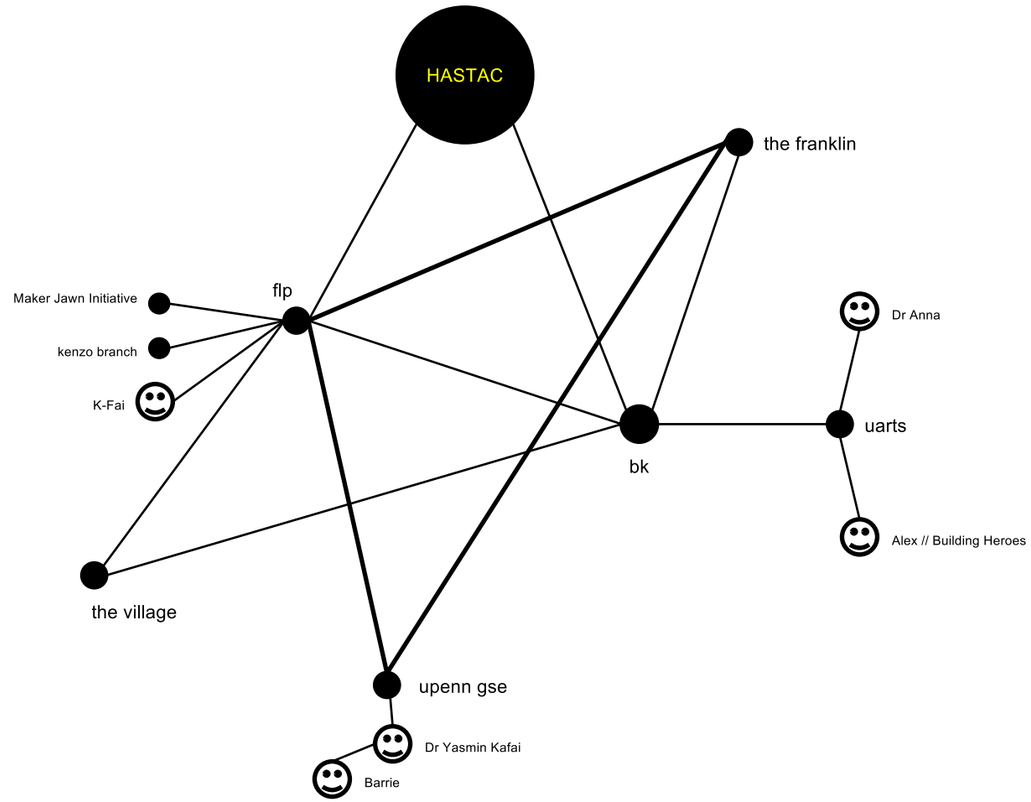
SO WHERE AM I?

I am a **Maker Mentor** working within a Library working on library floor daily.

I am also collaborator, prototyper, and implementer with other mentors and institutions on programming and larger multi-location projects.

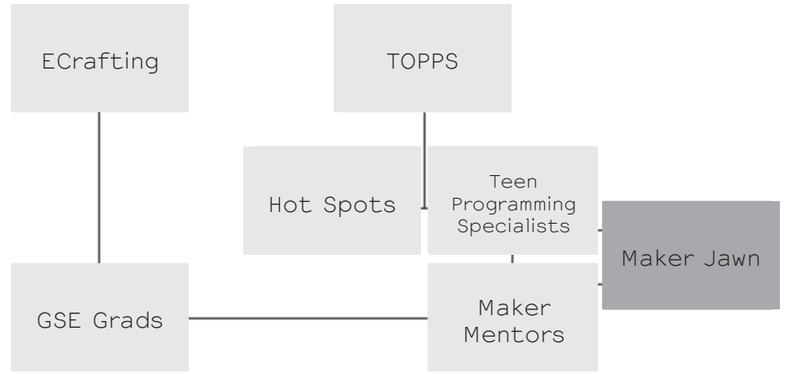
MY NETWORK

I have found myself within a circle of folks in Philadelphia looking for ways to introduce electronics and S.T.E.A.M. programming to youth of all ages.



WITHIN THE LIBRARY

Locally within the library I am housed within the Maker Jawn Initiative with the support of its Teen Oriented Programming Department working directly with UPenn Graduate School of Education Students who are interested in learning more about the effectiveness of our programming.



WHAT AM I DOING?

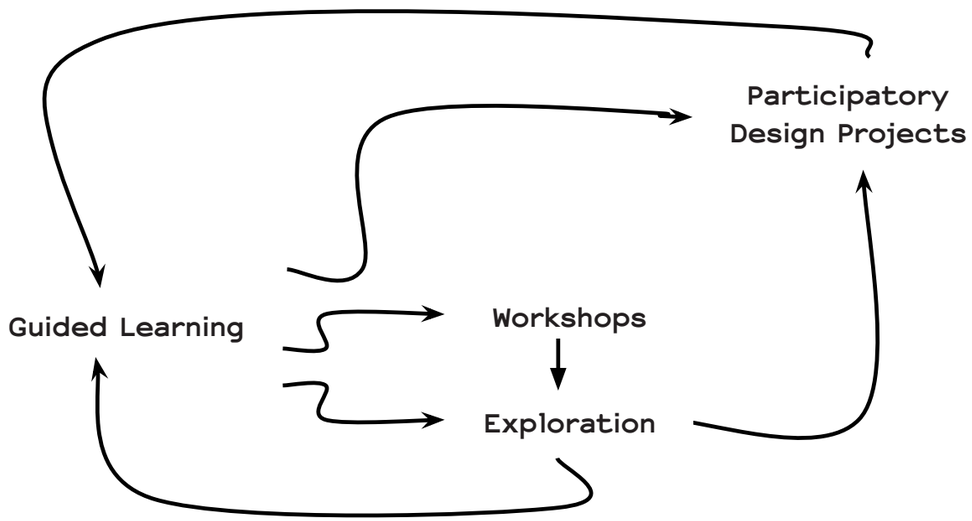
As a mentor I am a guide and facilitator a web of various learning contexts:

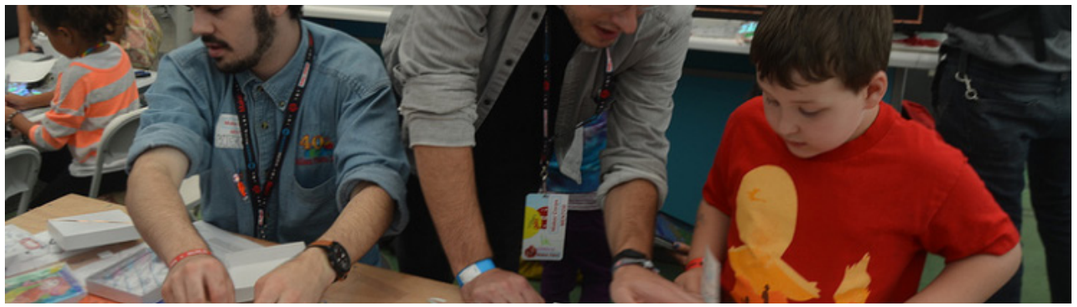
Guided Learning - actively engaging youth and answering questions with content and materials at with the intent to build skills and provoke thought.

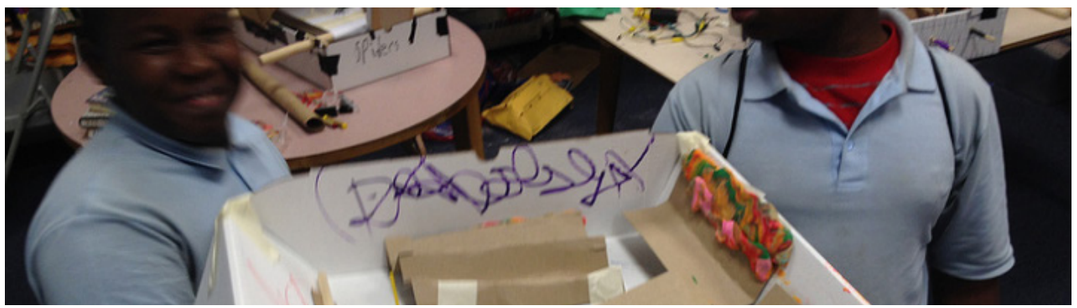
Workshops - brief projects focused on single concepts, ususally done off the library floor.

Participatory Design Projects - long term, focused projects initiatied or worked on by youth with mentor guidance.

Exploration - freeform and completely hands-off exploration of materials and concepts, no specific project or motive.







IT ALL BEGAN...

At the beginning of the Summer when I recieved a box from the Maker Education Initiative.

MAKER CORPS

The summer experience with Maker Ed and Maker Corps began with a development camp. This kit was shipped to each maker with no clear direction or instructions. Eventually over the course of six weeks we dove into personally experimenting with projects ranging from creating simple circuits with playdoh to basic computer programming.

The "Possibility box" was **a kit filled with kits**. Each individual one a new way to introduce anyone to new concepts wether it be physical making with scissors and paper, sewing, or learning simple circuitry.
A sampling of what was in the box is as follows:

- Squishy Circuitry
- firefly jar exextiles kit
- hotglue gun
- scissors
- markers
- copper tape
- electrical tape
- MaKey MaKey
- Felt
- Batteries
- Aligator Clips

This collection of items **drove approximately four weeks of projects**. The ability to mix and mash these projects and their low-cost allowed them to be deployed at a moments notice when needed. The openendedness of this box could only be limited to the creativity and explorative nature of its users.

At the same time a small community was bulit within our band of 5 mentors and Maker Corps as a whole to share project output and ideas. This web based network as noted in my reading of Makers(Anderson) was very influential and easy on our work.

Concepts + Skills

THE POSSIBILITY BOX

This kit of kits and parts was influential to each experience I underwent throughout the summer. The criteria that influenced its contents are what currently influence our projects and direction.

Accessable | Low-Cost

Quickly Deployed | Remixable

SCRATCH DAY '13

My first interaction with children within the context of a **workshop** occured at Scratch Day '13 hosted at UPenn's Graduate School of Education.

Scratch is a web-based tool to introduce anyone to the basic basic structure or syntax of programming. You can create animations or games and share them via the same online portal. Our task was to create example modules for others to hack and modify to tell their own short story.

We gave three hour-long storytelling workshops to charter highschool students, parents, elementary school students, and educators.

Some remixed our examples and others went off on complete tangents with their Scratch explorations. Most notably **we realized the need to hand-hold or heavily coach both pre-teens and adults** throughout the process. When it came to presenting all were exstatic to show off their work or experience the unexpected stories or animations others made.

Sharing of **stories**, **playing** throughout the process, and the need for a bit of **handholding** became apparent and important to me. Also as noted across the page,

I began to see the **value of** interacting with **physical objects** over software and its influence on the learning experience

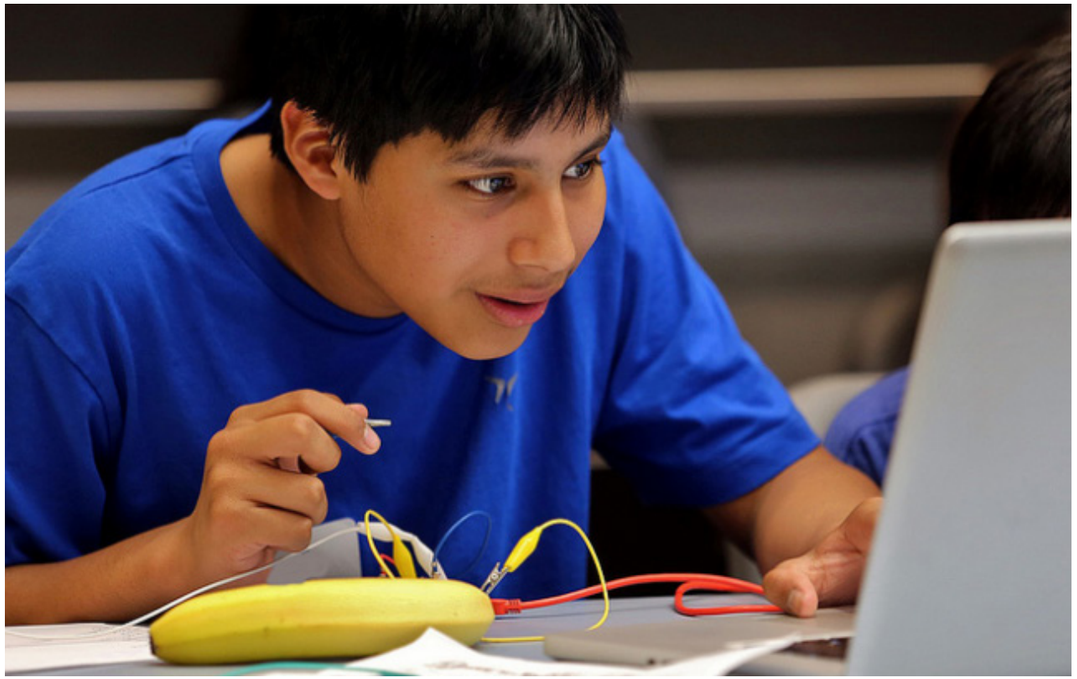
Projects link:
http://scratch.mit.edu/studios/207409/

Experientally:

Hardware > Software

Tangible,
Grounding,
Engaging,
Responsive.

Trouble shooting some bugs in an animation. Note the **intent stares** as we focus on the screen.



An interesting contrast is this **exstatic gaze** from the workshop across the hall in which the Makey Makey, a plug&play interface that allows any object that conducts to become a keyboard input.

Photos: Darryl Moran/Penn GSE

THE VILLAGE OF ARTS AND HUMANITIES

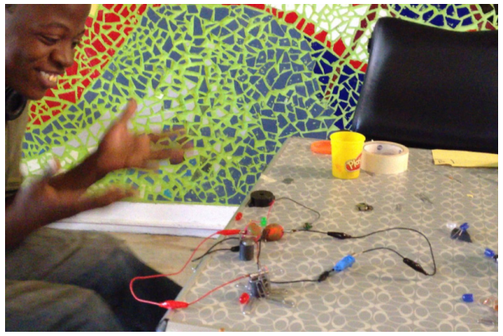
At the Village I became embedded within two different types of environments. Primarily I was a teaching artist for youth **aged 6–13** for summer arts programming. Dubbed the "Digital Making Class" I was one of two classes daily children could choose from for 6 weeks at a time. Classes at the Village range from Mixed Media arts to Hip-Hop dance as the Village has made its presence visable through mural making, mosaic or clay arts, and dance performances in the neighborhood. At the same time I was interacting with teens and adults and helping them overcome obstacles with regards to digital literacy: resume making, job applications, word processing, email, and computing in general.

"Digital Making" began with exploration of the Possibility Box and quickly went into exploring tangents as we spent time together. One of my first interested pupils and myself tinkered with Squishy Circuitry and magnets that I had inroduced as just "excess junk" to our box. Paul, a 22 year old male looking to pass time while watching his cousins or inbetween applying for jobs decided was instantly enamored by making switches with play-doh that made audio-visual feedback. With the addition of those magnets and the age old magnet under the table trick had come up with a tangential project to last us the entire summer.

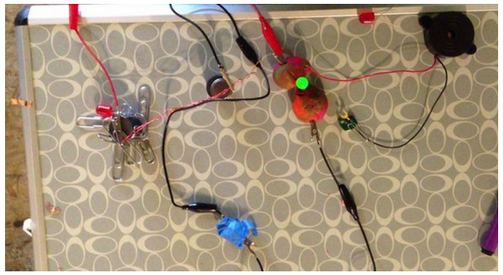
Paul was able to easily figure out how the electronics in the box worked thanks to his reasoning skills and self-driven explorative nature. He became a valuable resource in communicating with other youth and becoming part of the Village family.

As my classes began forming-up mid

Doir here was one of my youngest pupils at 4 years old.



Paul, 22, became a good friend and co-creator of games early in my summer experience. He spent his time at the Hot Spot applying for jobs.



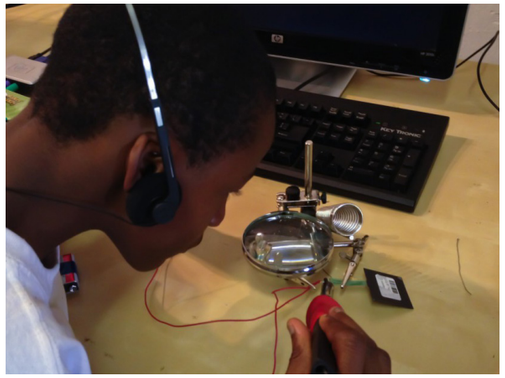
Pauls first "remix" of Squishy Circuits + magnets.

summer we developed our exploration with play-doh and magnets into a workshop for a later event and an online contest for the MaKey MaKey. This focus on one particular project and my close proximity to a computer lab made for a rough month of work. Youth need to be actively engaged and their **interests need to be embedded in the project at hand** for them to participate. **I could not facilitate 15 individual projects**, however II could evaluate each of my participants general interests and use them allow easy contribution to the larger project.

For instance I was able to group those more interested in music and dance into a group that explored a playlist for others to listen to during our project. They would explore songs and create playlists while others more inclined to the actual material I focused on made prototypes of magnetic/play-doh mazes. Those that were interested in neither of these topics would either be drawn into the whole by documenting the situation with my iPhones camera, and those who were left either hung out or were left to their own smartphones or games(albeit frowned upon by the Village).

A sampling of my students and their traits and how each one of them brought something to our group follows on the next page. The data was collected in near peer video interviews, direct observation, and sign-in sheet data collection.

Exploring alternate methods for making Magnetic Mazes in boxes.



Kevin, seen here soldering, retained interest in my programming by exploring is musical interests.

Sameer, was far more interested in sharing our work and hyping it up than producing, he became an asset to our documentation.

JACOB "THE BOSS"

Age: 13
Schooling: Charter School
Coaching Status: Self-Motivated
Interests: Photography, Drawing, Computers(games), and Reading comics.
Contributions/Skills: Programmed in Scratch, Learned basic HTML, worked each day and helped getting others interested in exploring ideas through making.

MYKAL "THE BEST STUDENT"

Age: 9
Schooling: Charter School (Arcoss Town)
Coaching Status: Guided-Learning
Interests: Learning to dance, doing well in school(to please Grandma), MMA.
Contributions/Skills: Talked about projects, introduced others to concepts, tried his hardest to have me tell him he was the best.

STAR "A MAKER"

Age: 11
Schooling: Charter School
Coaching Status: Self-Motivated
Interests: Dancing, Music, Making art.
Contributions/Skills: Craftiness, Helped make things when available, was dipping her fingers in all the programming the Village offered.

DONNIE "THE GAMER"

Age: 10
Schooling: Public School System
Coaching Status: When Interested
Interests: Video Games and Video Production.
Contributions/Skills: Took photo and video. Showed off and controlled Connected Messages at Village event.

(l-r) Donnie, Sameer, Kevin, Samag, Myleak, and Marquis.

KINDNESS CARDS

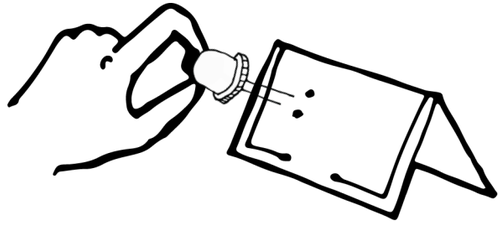
One of the biggest issues I encountered other than heavy smartphone and computer usage was the **inability for projects to be taken home**.
Primarily this was because of the cost of kits or parts. The MaKey MaKey costs $50 per kit, squshy circuitry parts cost around $25, and even smaller projects add up quickly when taking into account 15 regular pupils.

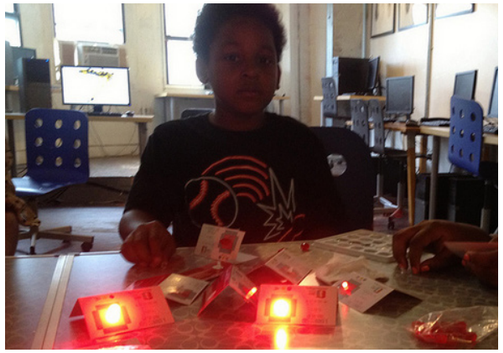
This was resolved when we introduced a remix of Kindness Cards in the form of a simple circuit.

A card is less than a dollar in materials:
Coincell Battery $.29
LED $.40
Tape $.05
Printed Card $.25

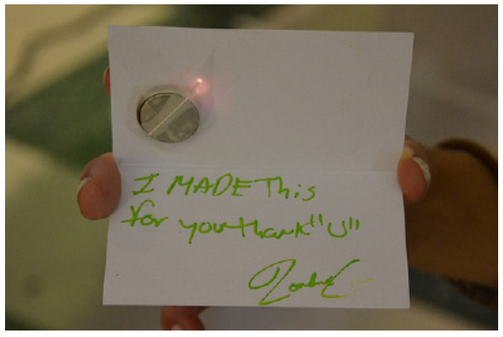
Pedagogically these were a tool to share the concepts and skills our youth were learning with others.

Incidentally these ended up becoming a tool that would be tinkered with and reused for unexpected purposes.

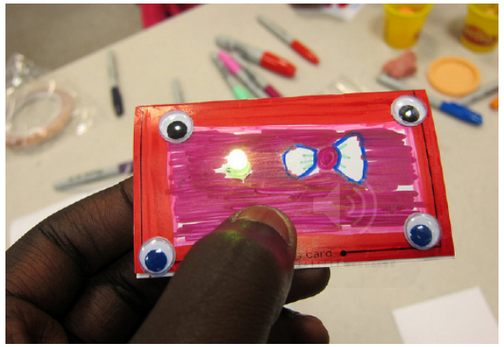




Typical Kindness Card construction scenario and message.



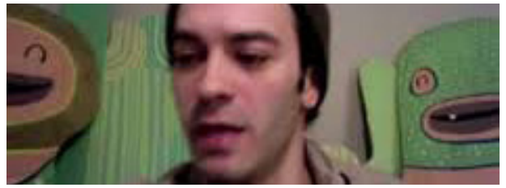
"You can take this with you."



Kindness cards were reconfigured by other Village kids in small structures.

The most interesting and insightful reuse of the cards was when Village Hot Spot users began using them on their bikes.

PEER INTERVIEW



DREW Z. — MCPHERSON SQ. MENTOR

Drew was a Maker Mentor at the McPherson Sq. Branch and had a few end of summer aneqdotes to share about his experience. He graduated as a painting major from UArts in '01.

On successful programming:

"Over the course of the summer I realized that **if a project could be turned into a game** or a competition **it would attract more kids** and keep them involved for longer."
"And then some of the most basic projects were extremely successful with getting kids to participate. A good example of this was the Squishy Circuits."

On integrating/embedding in a location:

"it would be beneficial to have the branches that will be a part have some real involvement in the pre-planning or gatherings that we Makers had."
"I wanted to show MPS that I (This Maker-Person) wasn't just some outsider who wanted to come in and make demands on their limited resources—I wanted to be one of their resources."

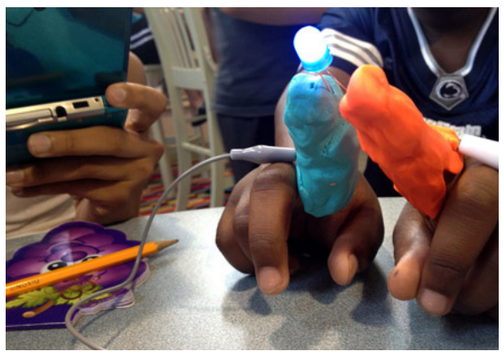
Craziest moment:
"When a girl [8 years old] told me she had 'never used' scissors before..."

Game	v.	"Project"

Make it competitive, make it playful, make it a game.

Resource	v.	Burden

There is a fine line to walk within the context of the library.



SPELLS WRITING LAB

While embedded at the Village I facilatated a workshop at at Spells to cap off a week of storyboarding and creating platform style videogames. In this workshop I experienced how to convey the basic concepts of the MaKey MaKey in under two minutes. This was not the highlight of the event however. I realized that in order **to build a raport** with youth quickly one must **get physical fast**. One should not just sitback and let things happen, in order to spark creative thinking we must have a sudden flash of interaction and suprise. You need to show the power of your tools immediately inorder to command your participants attention.

MAKE MUSIC DAY

As a group with the 5 other members of Maker Jawn we created 5 different interactives with the MaKey MaKey. Our objective was to get event goers to interact with our interactives and tinker with them. Unfortunately at first nobody seemed interested in what we were doing. This us was a product of us standing behind our work like we were attending a sciencefair. Little did w`e know all it would take was moving ourselves and interacting with our own work to pull in passer-by and event goers.

Who would have thought! A high five and/or wildly moving around the room babbling about batteries works well as an ice breaker!

Pretending not to know what our own projects are.

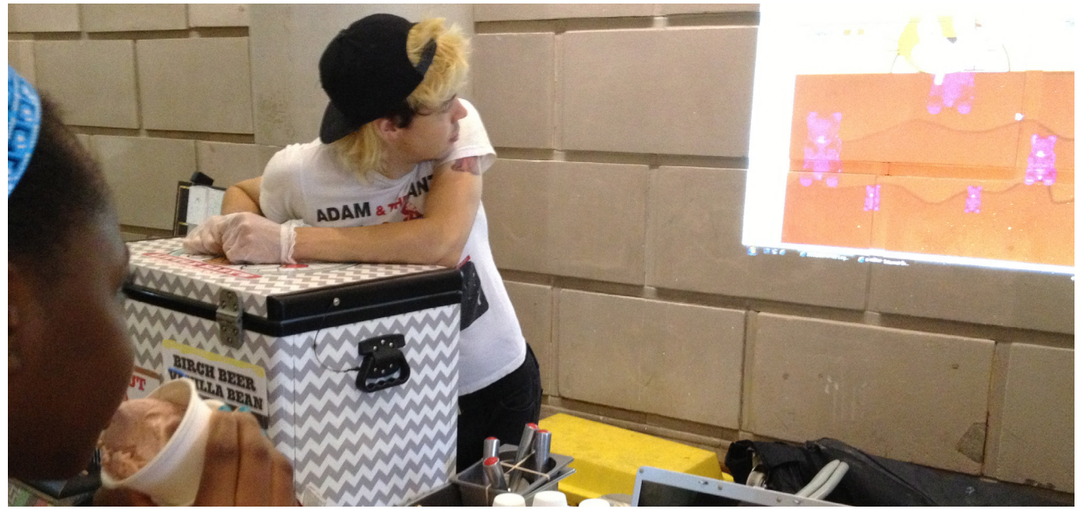
MAKER CELEBRATION

During the summer we collaborated with Penn GSE and Penn Design to create an overarching project named Connected Messages(http://connected.ecrafting.org). A digital mural module created by each Maker Corps location in north philadelphia. At the end of the summer we exhibited the murals during an event in which we invited outsiders to see and experience what we were making and doing.

This event created a precedent for a type of programming which we still deploy today(Connected Messages and Kindness Cards) and **a collaboration between our youth and small business**.

The former will be described as part of the Maker Faire, the later is of more interest as it spurred **interactives that many of our eventgoers (over 200 people) enjoyed**. All prototyped and developed by our youth with mentor guidance. As the youth at the Village learned skills in relation to their Magnetic Play-Doh Mazes project they were able to reapply the tools and skills to developing two interactives for the Maker Celebrations caterers. Pizza Brain and Little Baby's icecream agreed to use dough and icecream as our media for interacting with. We were able to have our youth see the influence of their works on others. This empowered them to **convey the the nuts and bolts of their work to others and share their learning**. This could be seen from early on in the development of the project.

Mykal teaching his cousin how the MaKey MaKey works.
The MaKey MaKey was the backbone of many of our interactives.



Star testing out the "Cone-troller" after setting it up.

None of these people were affiliated with the creation of the Magnetic Mazes, yet they are activly playing with and customizing them.

MAKER FAIRE

While we were successful in implementing Connected Messages at our own Maker Celebration its biggest succes was at the 2013 NYC World Maker Faire. At the Faire we did daylong programming with Connected Messages and our Kindness Cards.

Connected Messages is a mural composed of shadowboxes that are constructed and decorated by youth participants. Each participant is given a introduction to simple circuitry and shown how to construct the box. Then they imbue a visual meaning on the boxes face with marker and are allowed to transcribe a corresponding statement or message to go vith the piece. This can range from jokes to serious issues and topics as seen in CM's deployment in North Philly.

Kindness Cards are a take-away from our programming, again they are a simple circuit that we introduce the participant to. However in this case the end product is to be taken and shared with another person. The hopes of this interactive and interaction is that the participant can share their learning with another person.

From deploying these two interactives at Maker Faire I learned how the **pacing** for projects and its **impact on interest**. For instance deploying this project over the course of two weeks was like pulling teeth compaired to getting as many people interested as possuble in completing connected messages in one day.

At the Village I had to create modules for the youth to work within. At Maker Faire we worked with a deadline and had much more creativity and freeform thought.

Customizable + low-cost

A recurring theme which was acknowledged and accepted with Connected Messages.

Part v. Whole

The need for pieces to come together to form a collaboration became crucial to projects in the library.

Duration = Interest

The quicker you run and leapfrog off a project the better.

ECRAFTING CIRCLES

As I came to understand the larger network of people in Philadelphia focused on youth and technology and as Maker Jawn collaborated with UPenn I attended educators workshops at the Franklin Institute. Currently projects are designed from a very top-down approach. Little thought is given early on [in the development process] to the skill level of our cities youth when it comes to general making. Interesting projects have come out of this collaborative in the past, however, they must have required a great amount of guidance [or older participants] throughout the process of introducing and working on the products and interactives. Also, one cannot figure out their end-users interests within a bubble

FIREFLY WORKSHOP

As a new team of Maker Jawn mentors we took part in a workshop at the Hactory. Their method of running a workshop was much more casual than expected. The materials were orderly straight forward when it came to instructions. However, as it turned out we were only creating the shell for a premade circuit. At first it seemed offputting that the final piece was not fully made by the participant. In the end they still educated the participant on how the electronics worked via another hands-on prototyping exercise. A very diferent approach than we at the library had used.
When using more complex components one must make a compromise.

Platform v. Project

It's easier develop to make a platform to work on. Interests can then be applied later.

Learning about it. v. Making it.

The former leaves you in the dark, it also makes you feel like you're not taking too much away from the experience.

DIGITAL LIBRARY CONFERENCE

I litening in on a webinar about Maker Spaces and Fablabs within Libraries. Two of my takeaways from this conference was that we cannot allow projects that depend heavily on a product. The **product or platform** a project is run within **must be openended and allow for creativity**. And in measuring a projects success, get metrics on its use, parent feedback, or even a survey. In our case we have methods for both of these means of feedback as ducussed under methods.

INST-INT

While presenting my preliminary research and precedents in creating interactive games for small businesses and our collaborative mural installation with UPenn I learned to focus my intent and terminology. I am looking to make tools and the knowledge I have accessable to those in the areas I work.

"...making your tools and skills publicly accessible"

KENSINGTON BRANCH

In the fall I moved from the Village to an actual branch of the library.

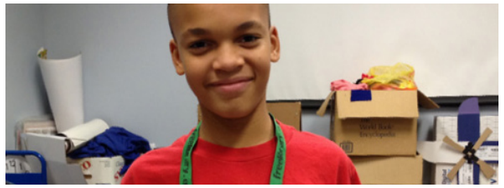
At the Kensington branch we have the luxury of coming after a string of art programming initiatives.

The perks of this branch as with others, we have a **dedicated safe space** to work within with our youth participants. Also with the diverse ethnic backgrounds of the branches library goers comes **heavy usage of its resources**: homework help, E.S.L, computer labs, and more.

We are just now only begining to introduce ourselves to this new group of youth. Also, as seen in their profiles the majority of them are homeschooled. This makes our programming not just a bandaid for programming being stipped from schools but part of an alternate method of schooling and learning.

JUDAS

Age: 15
Schooling: Home Schooled
Coaching Status: Self-Motivated
Interests:Video Games, MMA, Football, "Learning new things".
Contributions/Skills: Soldering, Cardboard Making, Duckttape



PAUL

Age: 13
Schooling: Home Schooled
Coaching Status: Guided-Learning
Interests: MMA. Video Games.
Contributions/Skills: Works with other kids, helps out, plays with stuff.

CHARITY

Age: 9
Schooling: Home Schooled
Coaching Status: When Interested
Interests: Painting, Singing, Glitter.
Contributions/Skills: Brings in art projects to work on, wants to be a doctor, decorates whenever possible, always trys to include others, makes games out of everything.

JASON

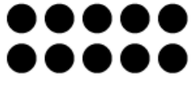
Age: 15
Schooling: Home Schooled
Coaching Status: Self-Motivated
Interests: Storytelling, Poetry, Comics, Anime, Wrestling.
Contributions/Skills: Tells jokes, asks rediculous questions, helps with organizing and sorting for tasks.

SYNTHESIS

INTEREST TYPE MAPPING

A majority of the youth that frequent the library are interested in physical activity over stationary activites. Youth participants aged 7-15 were polled during introductions to see what their general activity interests were.

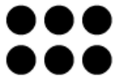
Map of interests amongst Maker Jawn programming participants:
(24 Participant Sample)



the Village

physical activity
(sport/performing art)

stationary activity
(reading/media consumption)



Kensington

Answers for physical activity:
Dance, Mixed Martial Arts, Wrestling, Football, and Basketball.

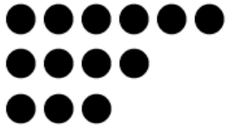
Answers for stationary activity:
[Comic] Reading, Video Games, Television, and Movies.

CURRENT PROGRAMMING INVOLVEMENT

Based on tags from daily sign-in sheets. Using Ito's participitation in New Media terminology.

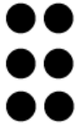
the Village

Hanging Out
Messing Around
Geeking Out



Kensington

Hanging Out
Messing Around
Geeking Out



WHAT DID I GATHER THUS FAR?

I am making myself a

resource.

By making my

skills and tools

accessible.

I am looking at a

hardware

platform

that needs to be

low-cost,

customizable,

able to be taken home,

quick,

+ physical.

METHODS

Methods used to extract the general sentiment of the learning experience. Documentation occured while working to expose the effectiveness of making which also allowed for "bragging". Were primarily video and in particular near peer interviews on what each child was making at the time. Also sign-ins and reports of each participants actions are recorded after each day.

OUTPUT

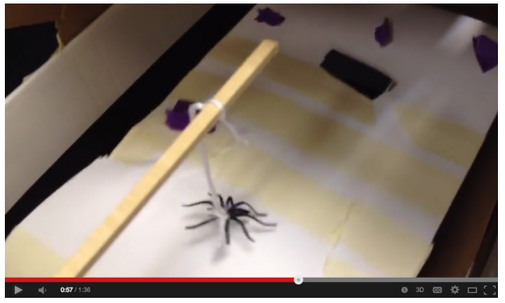
From these videos and other photographs content was created for MakerJawn.org and its blog section.
Currently we are also trying a more formal Maker Minute or Vine(6 second) type of reflection with our participants and their work.

TERMINOLOGY

quick, low-cost, platform, physical, accessible, customizable, collaborative, hardware, connected learning, digital literacy, electronics, making, maker, library, resources, underserved, after-school, teens, programming, computing, technology, understanding, play, exploration, workshops, etextiles, crafting, flat, teaching, guided learning, participatory design, eorigami, hi-low tech, mit, makered, digital media, internet, proficiency, sharing, collaborating, exposure, computation, programming, kids, youth, arts, craft, empowering, failure, fabrication labs, fab labs, maker spaces, institutions, kit based.

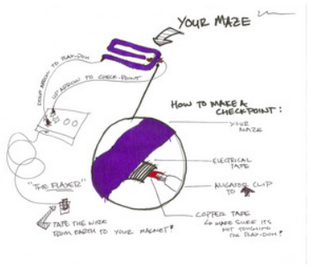
Video v. Writing

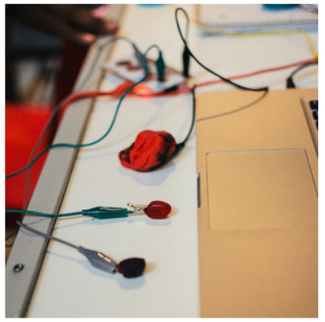
In locations where literacy low, video or audio is the easiest method of documenting project success and learning.

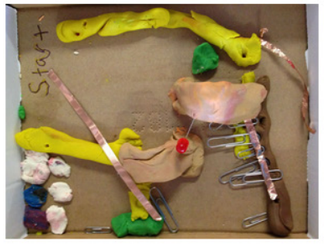


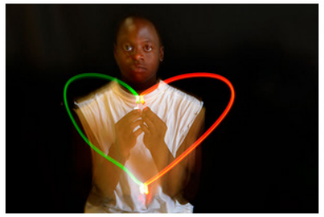
CATEGORY ARCHIVES:

Village Of Arts And Humanities









SECONDARY RESEARCH, LIT. REVIEW

ITO

In reading Ito's book * we found that the easiest way to categorize our participants interest is via their system of categorization.

Hanging Out: "Engagement with the new media is motivated by the desire to maintain connections with friends."(39)
Messing Around: "Participation is driven by own interests and motivations"(63)
Geeking Out: "Intense participation, usually to one technology or platform" (65)

DEWEY

Dewey speaks about creating a non-insular learning environment and exposing students to the world as a guide. This resonates with our collaboration on projects to be exhibited. This allows participants to see the context in which their work lives and allows them learn from public interactions and experiences. The primary topic that resonated with me was in Chapter 4 in which Dewey argued that learning and participation happens with common activities for all that are done in a hands-off or non-forceful approach by the teacher.

"Anything which can be called a study, whether arithmetic, history, geography, or one of the natural sciences, must be derived from materials which at the outset fall within the scope of ordinary life-experience" (Ch. 7)

Make it relative to who you're with, just as learned from the Hactory workshop, bring it to their level and you needn't make big compromises.

Metrics for Engagement.

Based on daily reports out of the 30 regular students I've had they could be categorized into on average: 15 hungout, 10 messed around, and 5 geeked out.

Keep it public.

Whatever the end result, make sure that the makers share their thoughts with others.

Also: Within reason I no longer restrict anyone from situations and interactions, even if mildly unsafe or sure to be executed incorrectly.

ANDERSON

Anderson's Maker Revolution focuses on bits and atoms at one point. Primarily on the fact that bits can transfer ideas very cheaply and efficiently.
This is seen in our collaborations and also the creation of web content for next to nothing. Bits seem valuable when looking at a low-cost project, however in my experience come at a cost. When using bits one can easily loose participants to distractions or other things. This is very different from doing projects in the world of atoms in which we can maintain steady interest on an activity via communication and less distraction or temptation.

Bits v. Atoms

If you keep it physical it gets expensive, keep it digital, it is very quick and almost free.

SUTTON–SMITH

Through the lens of play with the aid of Brian Sutton-Smith and the ambiguity of play I was able to make a bit more sense of John Dewey's statements. Play's rhetoric according to S-S is progress and development for adulthood. This allows one to come to the conclusion that serious allowance and tolerance for play in creating something or programming is needed for a successful project.
Also: allowing for Emotion(34) and also Flexibility in whatever play is happening is a must. One must be able to create their own experience and happiness in their play.

Play.

Flexibility and allowance for play is key to development and progress in growth.

PLOWMAN

Within the context of a childs community, family, and self play encourages expression and connection as highlighted by Growing up with Technology exposed me to thinking about childrens previous experience with technology. I do not wish to be a person whose parents want to send their children to work with because of the "cool" content. I want to be able to actively see how youth participants have interacted with technology, what they have, and what they're capable of. This allows me to develop and allow them to explore in relation to their interests. Case and point: Getting Donnie at the Village interested in working with us via uncovering his interest in video production.

MURAKAMI

Remembering context is critical to acting appropriately to mischief as expounded upon in Norwegian Wood. I came to realize through this piece of fiction that you can never judge a book by its cover. Sending a kid home or kicking them out of programming can be sending them back to a very dark environment. You never truly know what is going on outside of the safe spaces we work within.

SERAVALLI

In creating Fabrication spaces Seravalli suggests finding a variety of local stakeholders to have better drivers and success. A **research body, a non-governmental organization, and a business** should be brought together in the same space to make together. One could say that our collaboration between Maker Jawn, our Youth, and Pizza Brain for the Maker Celebration interactives was because of this very same model of organizing.

Involve "the Village".

Get the tools, learning, and talk out of the room its explored in, be able to take it home and share with the community.

Gain external stakeholders.

Our success might be because of our network and our reaching out to small businness.

STEWART

"I'm not going to teach you any software programs. Software changes. Technology chonges. You are here to learn how to learn." - Red Burns

SCHULTZ

"We now understand that individuals don't learn in isolation; we learn as members of communities in relation to eachother. Those relationships are key to construction of knowledge."

Thanks to the relationships we bulid with others, for instance on a schoolyard, we're able to build communities to live and learn with.

Time v. Technology

What we're really doing at the end of the day is creating experiences, relationships, and molding tought and work.

TERTIARY RESEARCH, PRECEDENT.

POSSIBILITY BOX

`The possibility box as described earlier is the primary precident for a kit to be implemented to teach maker type programming. As drew noted the simplest kits such as squishy circuitry was the best. This is because it has simple [very inexpensive] components such as batteries and aligator clips, feedback(LEDs or Buzzers), and play-doh. This allows for almost anyone to tinker and it is easily scalable. This is different from other more physical kits within the box that deal with sewing just as the ECrafting circles has been trying to deploy.

M.E.S.S. KITS / DR. PRATT

"Single-serving experiments that allow kids to explore scientific concepts at their own pace." Checked out and updated frequently with simple chemistry, physics, and crafts projects. Very low-cost(less than $2 to replace materials) and easily implemented projects. These kits were **modeled after fast food service systems** as they are ordered at a counter and tray based. They were born out of the need for many cheap interactives that don't take up too much space.

MONROE NJ LIBRARY KITS

One of the primary examples of a "kit" to implement maker programming in libraries. It is a blog that acts as a resource(hyperlinks) hub for three kits: A Button Maker, A Vinyl Cutter, andMaKey MaKeys. These kits can be lent amongst branches and held on reserve for patrons. They **require staffing and programming to actually implement** each project yet.

Stuff v. A Kit

At the end of the day a box of stuff can be acquired anywhere. What you really want is a toolkit to make things with.

The need for impactful projects in a small space was solved with these simple projects.

Tools v. Kits

Kits that allow for exploration require less specialized mentors. Specific tools require those with training or skillsets.

SPARKFUN / JEFF BRANSON

Nationally tested and utilized curriculum for scafolding learning with regards to electronics, physical computing, and programming. In talking to Jeff my primary critique is the need for mentors to heavily moderate the flow of learning with this linear system. It is a great path to follow, however it is not project driven. It gives the feeling that one is building themselves a box of skills with no product of labor.

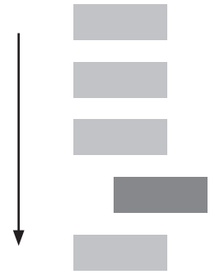
FUSE STUDIO

Online, drop-in model, inquiry based, S.T.E.A.M. centric design-build challenges. Free to the public, sans physical project materials. It is a menu of projects targeted for use in after school or maker space environments. It is the opposite of Sparkfuns model in that there is no linear set of projects and the participant can begin anywhere, however there is still quite a bit of hand-holding required.

MAKER HANDBOOK

One of the most indepth resources when it comes to how to create your own space for learning and making. With project ideas, funding methods, waivers, and much more its almost a requirement. However, because of its depth, and its attachment to Maker Media, it is a cold book with its red, white, and blue icons and lack of human warmth.

Start Here



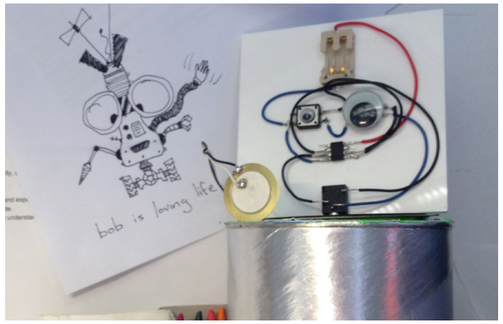
Choose One

Flexibility and allowance for play is key to development and progress in growth.

Make it human, not red, white, and blue.

FLANNIGANS FEEDBACK MACHINE NOISE TOY

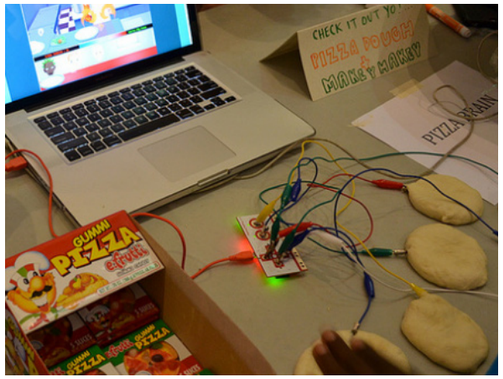
This is one of my favorite projects as it is a low-cost method for creating a synth and instrument. The noise toy is a **kit you can buy online for ~$25**, however Leslie and her partners have created a **workshop that utilizes less than $4 in materials** per noise toy. This is done by removing redundant switches and the printed circuit board. Instead components are superglued to a piece of acrylic and soldered together by hand.



Simplyfy the technical, make it super low-cost.

MAKEY MAKEY

The MaKey MaKey is a USB tool that is allows everyday objects to act as keyboard inputs. This allows for conductive materials to make things happen in games or in physical space with very little overhead or work.
The issue with the MaKey MaKey is that it costs $50 for the tool and a set of wires to use with it. The MaKey MaKey is a tool that enables any kid computer could use to explore new concepts and forms of interaction. At the library we have the **issues** of **safe guarding** them, their **fragility**, and their **cost** when serving multiple locations and hundreds of kids.



Cost v. Usage

The MaKey MaKey has enabled some of the best work we've seen, its inability to be easily borrowed, lended, or shared due to its cost hinders its usage.

CIRCUIT STICKERS

Circuit Stickers are a developing version of copper tape circuitry(what was used for Connected Messages). Components such as LEDs and switches are manufactured ito conductive copper foil. They are not entirely low-cost or a sustainable option to purchase for public workshops, however they can be when made with a Vinyl cutter and some soldering skills. Their Starter Kit sells for $25 and has very **limited interaction**, **flexibility**, and audio-visual **feedback**.

Image: http://www.crowdsupply.com/chibitronics/circuit-stickers

Buy-it v. "D.I.Y."

Some things are easier to produce on your own, you can also learn new skills from the experience.

CIRCUIT SKETCHBOOK

Jie Qi, an ex-High-Low Tech researcher and collaborator on Circit Stickers has also created **book based interactive circuits**. She utilizes the low-cost materials we use and have available at the library in a familiar form.

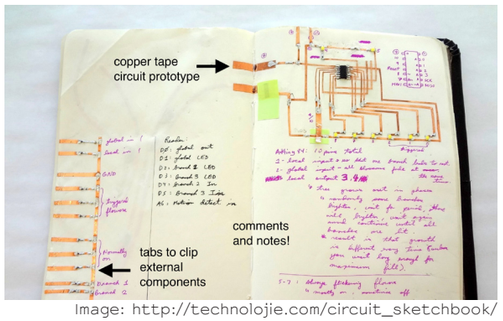


Image: http://technolojie.com/circuit_sketchbook/

EARN-A-BIKE

A local precident for a running workshop that teaches youth technical concepts and skills while making a final product. As Neighborhood Bike Works' flagship program it is an **pathway** for youth to earn bikes, accessories, and contribute to a community.

Earn-it v. Own-it

What I would consider to be the best workshop model in town.

SO IN GOING FORWARD...

I should investigate a	tool
that is	earned,
	~$10,
	able to plug into many projects,
	flexible,
	+ also creates a community.
It will have	the qualities of our most most valuable tools
and be	created via a workshop series.

PROJECT STATEMENT

I am working on a low-cost tool to introduce librarygoers to electronic making. This tool will be created by programming participants, for use in programming, and eventually will be taken home.

This tool is a response to the lack of funds to allow programming participants to make or take home the current tools and projects they're creating and working with.

PROJECT STRATEGY

This will be tested during library events and workshops and executed in afterschool programming primarily at the Kensington Free Library branch.
Users will build and create interactive games or installations relative to their interests with their tool and mentors.
The tool is to be taken home after a duration of time to allow for participants to have a takeaway that has some of the capabilities of hardware that once cost upwards of $50 per unit.

The aim is to bring the "magic" out of its currently isolated and confined space at the library and into homes and other public spaces.

This tool will become an artifact of the participants experience with mentors at the library.

S.W.O.T. ANALYSIS

I see two issues with this project. One, there needs to be a way for these tools to combine and make something greater than their individual units. A concept that I know must exist to have the project greenlit and backed by the library.
Two, I have ample electronics knowledege, however pairing things down into the most basic of components will take a good amount of thought. Both of these concerns I believe are able to be overcome through collaboration with other mentors at the Library such as K-Fai Steele and Kenny G.(UArts D.A.T. Student). Also, technically speaking there are many precedents when it comes to simplifying hardware. Locally we have Hive76 and the Hactory as resources if I need them aswell as friends who study Electronic Engineering at both Stanford(Rich D., K-Fai's boyfriend) and Penn State (John Z. a highschool friend).

PROJECT PLAN

Prior to fall semesters end I will be prototyping the tool and attempting to hold a prototype construction workshop at our December Maker Celebration. Over the course of the Winter Break I will further develop the physical hardware of the device, how to guide learning to its creation, and any other needed tools or learning moments.

As the semester progresses I will implement and develop workshop materials for the tool. Eventually once a set of final tools is created, my measure of success will be creating an installation in collaboration with the kids [with the tool] and then allowing them to take the tool and explore its uses on their own.

TIMELINE

DECEMBER
first prototype complete
mock workshop / making in public
seek assistance on electronics if needed
initiate contact with hactory

JANUARY
initial tool prototype done
bulild around tool (book/kit?)
seek funding from library/elsewhere
begin workshop materials

FEBRUARY
refined prototype complete
prototype workshop materials

MARCH
inital interactives should be underway
final prototype created
final workshop @ library
workshop outside of library context?
document interactives / derivatives

APPENDIX

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LINKS OF INTEREST

https://pittsburghkids.org/exhibits/makeshop
http://www.libraryasincubatorproject.org/?p=11684
http://www.pensacolamesshall.org/explore/mess-kits/
https://learn.sparkfun.com/curriculum
https://www.fusestudio.net/challenges
http://makerkits.org/kits-instructions/
http://www.hastac.org/

for more:
https://www.diigo.com/list/bklvnc/Funstone/2p8pn0c1d

PROJECT PARTNERS

Free Library:
K-Fai Steele
Kahleef Aye
Barbara Tait

UArts:
Kenneth Guglielmino

PROJECT RESOURCES

Dr. Anna Beresin
Jeff Branson (Sparkfun)

GLOSSARY

S.T.E.A.M - Science, Technology, Engineering, Math + Art / Design

evaluative thinking - reflection on actions and making via sharing ones process and vision.

low-income - approximately 86% of households with children are below the poverty line.
(The Village of Arts and Humanities Narrative)

electronic interactive - a digital media installation, ranging from a game, to a sculpture, or art work, utilizing electronics and knowledge of circuitry and or programming logic and syntax.

kit - a set of parts or things for a specific purpose

framework - structure

scaffolding learning - to tier or create stepping stones so concepts and knowledge can be built upon within a learning environment.

HASTAC - Humanities, Arts, Science and Technology Advanced Collaboratory

Guided Learning - actively engaging youth and answering questions with content and materials at with the intent to build skills and provoke thought.

Workshops - brief projects focused on single concepts, ususally done off the library floor.

Participatory Design Projects - long term, focused projects initiatied or worked on by youth with mentor guidance.

Exploration - freeform and completely hands-off exploration of materials and concepts, no specific project or motive.