KEEP MAKING: A DESIGN CASE ON SUPPORTING KIDS TO GEEK OUT ON THEIR OWN TIME

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HOW DO WE SUPPORT CONTINUED ENGAGEMENT IN CREATIVE PRODUCTION, EVEN AFTER YOUTH LEAVE OUR EVENTS & PROGRAMS?

As youth development educators and learning scientists interested in supporting long-term, interest driven learning around digital media, we took a crack at this problem, and we hope the lessons we share here might advance the ways that informal education organizations could think about promoting learning pathways that span contexts. The case we share here documents a series of design experiments that Mouse and Hive Research Lab collaborated on to better understand this problem space, and some pitfalls and lessons learned along the way.

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THE DESIGN PROBLEM: KEEP MAKING

Our team first narrowed in on a specific problem of practice related to supporting youth interest-driven learning pathways that fit a number of criteria. First, it had to be something that fit in with the existing programmatic and pedagogical infrastructure that Mouse, a national youth development nonprofit, brought to the table as a design partner. Second, it had to be something that could be of interest to the broader field of informal learning, digital making, and youth pathways, rather than just useful within Mouse — we wanted to advance both learning theory as well as learning design. After going through a process of problem definition that was rooted in a theoretical model of **"brokering future learning opportunities"** and looking closely at the organizational context of Mouse, we landed on the following design problem:

How might we encourage youth participants of in-person "maker events" to "geek out" and engage in "after-event" creative production activities on their own time to further their maker identities and skills?

The problem was one that we knew would help Mouse deepen its impact if we were successful, and was also potentially relevant to other digital learning organizations with program models that blend offline, face-to-face activities and extend them into online contexts, such as ones that run events like hack jams or pop-ups as on-ramps into tech interests.

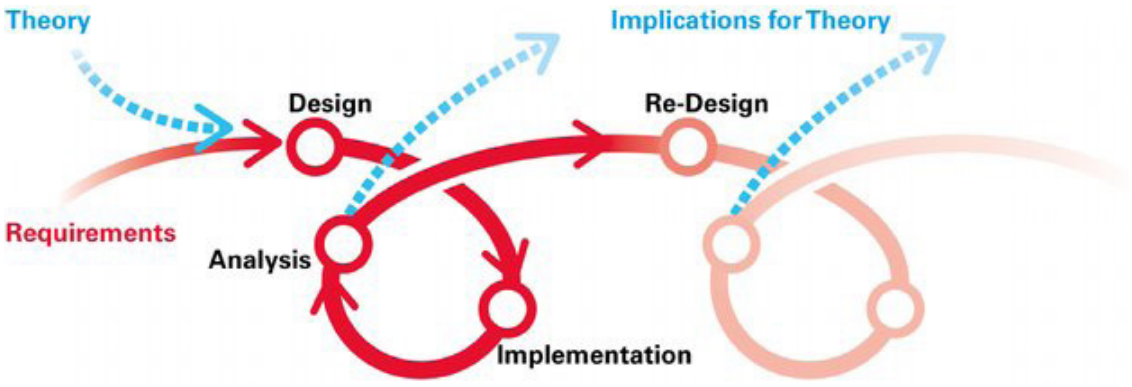
THE CONTEXT: MOUSE MAKER NIGHTS

Mouse Maker Nights are monthly drop-in events open to any New York City students, and primarily advertised to students who belong to the Mouse network. The event usually gathers after school at the Mouse Makerspace in downtown Manhattan for a couple of hours, and features a number "stations" that have guides and materials for making activities ranging from creating light up circuits and games in Scratch to 3D design and making cardboard VR goggles. Each table is led by a Mouse staff member, volunteer, or a partner organization.

We selected these events as a context to look at approaches to supporting youth pathways, because in theory Maker Nights lend themselves to brokering moments that can support continued engagement and identity building. The events sometimes involve outside educators or professionals from the technology field who could broker learning opportunities in their fields of expertise, or direct students to resources that they know about. The informal and more interest-driven format of Maker Night, in contrast to structured workshops, also lent itself to sampling several different kinds of activities to help students experiment with a bunch of different kind creative technology experiences they may otherwise be difficult for them to replicate because of access issues around tools and expertise. Finally, Maker Nights provide a space for youth interested in creative making and technology to come together and find like-minded makers that some attendees may not have access to outside of these events.

THE APPROACH: SHORT-CYCLE DESIGN-BASED RESEARCH

Utilizing a design-based research (DBR) approach, our team then went through a process of ideating, testing, analyzing, iterating, and retesting a number of approaches aimed at moving the needle on that problem. DBR approaches involve the development of designs — tools, curricula, pedagogical approaches — rooted in grounded assumptions, or "conjectures", based on learning theory, and then piloting and collecting data to see how these assumptions play out in practice. In this way, DBR aims to "put theory in harm's way", as learning scientists would put it. In this project, we developed four different iterations of designs aimed at supporting youth to "geek out" after Maker Nights they attended, changing, advancing and sometimes abandoning and coming up with entirely new designs based on looking at data about how prior designs played out.



DESIGN ITERATION #1 — THE "KEEP MAKING" DIY FORTUNE TELLER OVERVIEW

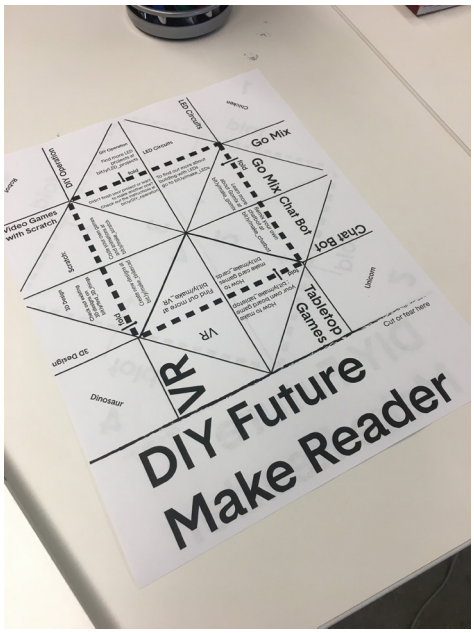
The "Keep Making" Fortune Teller was a mash-up between two ideas — traditional flyers that youth might receive to tell them about opportunities or resources, and the classic middle-school "paper fortune teller," that has kids fold and then engage in a fun little interaction with one another where messages are revealed from within the fortune teller. In our design, the fortune teller pointed students to online resources and digital tools that they could use to make stuff on their own time after they left Maker Night.

THE SPARK

We'd both seen and heard from students that when they get a flyer, they'd usually just throw it out without even looking at it. We tried to rethink the concept of the "flyer," to look for a more engaging way to share information about resources that youth might use to geek out and make things on their own. The playful nature of the paper fortune teller seemed like it would be more eye-catching and memorable than a traditional flyer, and would act as a sort of "make" in itself.

THE DESIGN

Each fortune teller started as a printout that youth would then fold and use. Each of the four "secret message" sections had a bit.ly link that pointed to a google doc with information related to a different kind of making that happen at Maker Night — things like LED circuits, virtual reality design, making chatbots and 3D fabrication. The idea was that students could follow the links to get to the free online tools that we'd linked to so that they could continue working on a maker night project on their own time at home. The second element of this design was the gathering of resources, listed into a linked google doc, around different areas of digital making, with categories and tools chosen based on how we thought they might build off of work started at Maker Night.



THE CONJECTURE

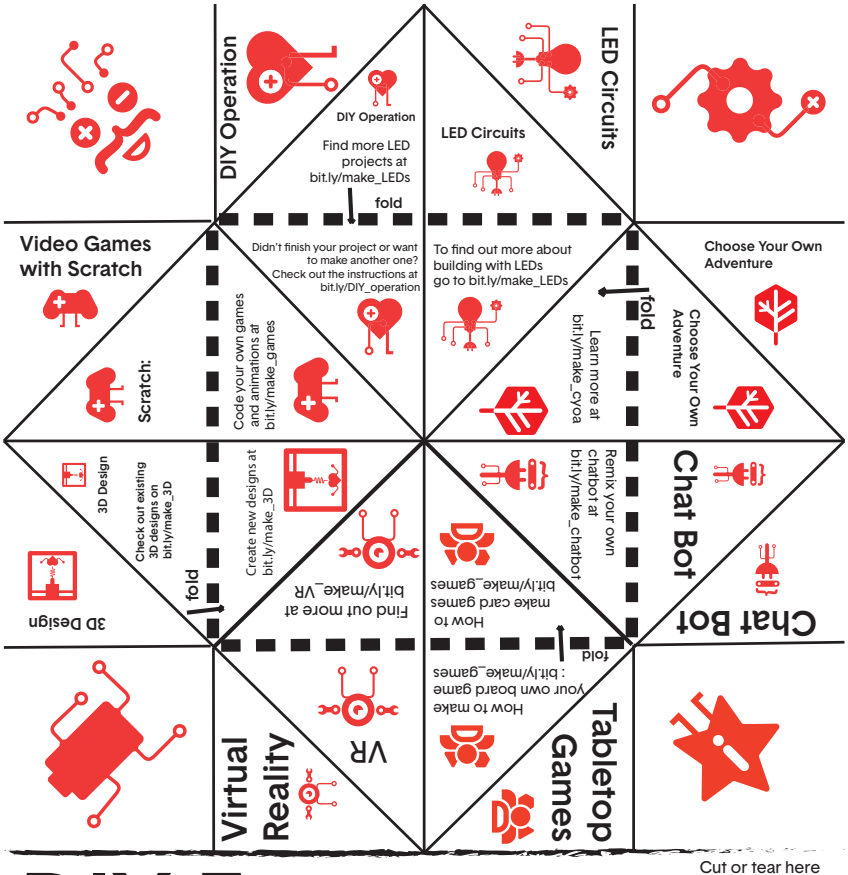
Our core question was always about how we might support kids to geek out on their own time to further their maker identities and skills, and some of the key assumptions in this design were that...

1. ..something that was interactive and engaging, more like the activities it was advertising, would lead students to pay attention to the maker resources it was sharing.

2....having knowledge about maker resources would be enough to get activated youth to make on their own time.

3. ...that the particular resources and tools we pointed them to be aligned with their interests and expertise and could "fit" with their habits in terms of how they spent their free time.

4. ...that we'd know something about whether we were successful — whether or not youth accessed the bit.ly link after they left, something we could know via the link statistics.



DIY Future Make Reader

WHAT HAPPENED?

We introduced the DIY Fortune Teller Make at several Maker Nights. During the opening of the evenings we showed the group how to make and use it. In some on-site user tests, it seemed that most kids immediately knew what do with the fortune teller, the core mechanics of how to fold it up, how to use it with a friend to count and then how to open up the "secret messages." Cool! Some were really engaged by the activity of using it with a friend, others less so. Ok, good to know.

We got some feedback from students about adding in icons related to different maker areas, and making the fortune teller more colorful was incorporated into a later version. Ultimately though, we never got any clicks on the bit.ly links to the follow up information, though students did make the fortune tellers and take them home. This wasn't entirely surprising either — in our user tests, even when kids were having a good time with it, they usually had to be directed to the fact that it was about getting to access online resources for making. They didn't really see a connection between the fortune teller itself and the idea that it was an information resource that could support future creative work.

LESSONS LEARNED

- Reduce friction between the different aspects of the design. In order to get to the digital making resources, youth had to create the fortune teller, take it home, retrieve it, and then type in a link. Too many points of friction along the way may have been contributed to kids not accessing the resources.

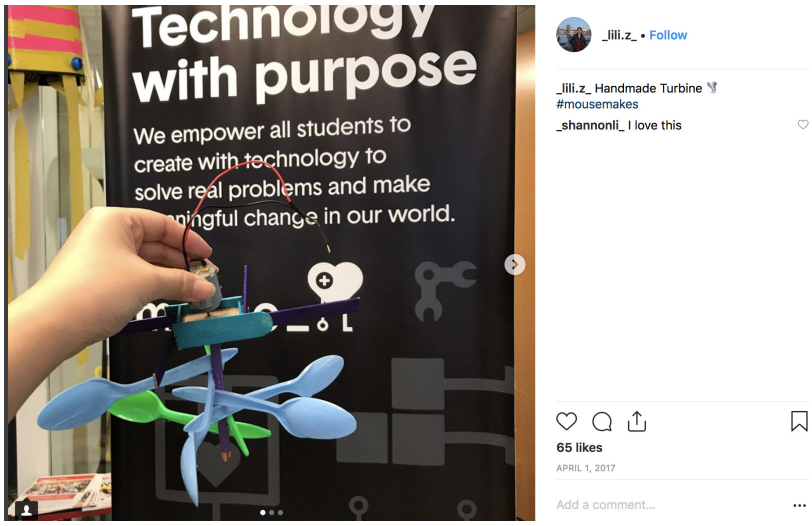
- Make sure a design isn't just engaging, but engaging in a way that closely aligns with what the design is trying to accomplish. Ultimately, the fortune teller design and keep making message weren't aligned.

- Reflect on the problem we were trying to solve here - was it a problem that students prioritized? Was a lack of knowledge about tools that could support making the thing that got in the way of teens making on their own time? Or were other factors getting in the way?

DESIGN ITERATION #2 — #KEEPMAKING & #MOUSEMAKES SOCIAL MEDIA RAFFLE

OVERVIEW

The #KeepMaking and #MouseMakes social media raffle aimed to utilize social media platforms like Instagram, Twitter and Snapchat to have youth attending a Maker Night post raffle submissions — pictures or videos of youth-created "makes" —using the #KeepMaking or #MouseMakes hashtags, both during and then after the events.



THE SPARK

A design meeting with youth leaders from Mouse's Design League had our team thinking more about potential design directions that involved social media. We thought about how we might leverage ways that youth already spend time online, and that often when we create things, we want to share them with our friends. We also saw that at Maker Night, youth would post their Instagram and other social media handles on the collaborative whiteboard on the wall of the Mouse offices. Finally, coming off of the experience with the fortune teller design, we reflected on the fact that even if kids were clicking the link we shared, we'd really have no way of knowing whether or not they were actually using the resources around digital making tools to, well, actually make anything. If they posted things they made, we'd have actual evidence of continued engagement in making on their own time.

THE DESIGN

Youth that came to Maker Night could post their makes to the #KeepMaking or #MouseMakes hashtags during the event, with a raffle winner drawn at the end of the night. We'd then announce that anything posted to the hashtag in the month leading up to the next Maker Night would also be automatically entered into a drawing to win a $25 gift card. If youth didn't want to post to social media, they could also email in their entry.

THE CONJECTURE

There were a bunch of different guesses we were making with this iteration, including:

1. ...that the problem wasn't about the need to provide additional resources (bit.ly links to design tools) to help with making but more about engaging with the mindset of making and encouraging any sort of activity that involved invention and creative thinking.

2. ...that having a social context — their social media connections and those following the #keepmaking hashtag — to share what youth made would be motivating for them.

3. ...that having an incentive in the form of a gift card could motivate participation in making on their own time.

WHAT HAPPENED?

We introduced the social media raffle during a couple of different maker nights, with not much success. We had some limited engagement during the event itself, with one student, a pretty active social media user, posting her handmade wind turbine to Instagram using the #Mousemakes hashtag.

At that event, we encountered a different problem that we hadn't anticipated — most of our attendees came from middle school! So, technically, none of them should have social media accounts. We iterated on the fly and shared that they could have a Mouse staffer come and take a picture to post to the hashtag, or to email to one of the Mouse staffers to enter the contest without having to have an account, but this increased the number of steps needed to use the design.

We also tried to quickly send out an email about the social media raffle right after maker nights to all those that came to remind them about participating, but we encountered some "silo" issues in terms of what parts of the organization were responsible for and had expertise around the communications infrastructure — staff involved in this project were more on the program design and implementation side of the organization, rather than involved in external.

LESSONS LEARNED

- Parts of the organization that usually didn't have to closely coordinate — in this case, program staff and communications staff — both had to be involved in order to meet goals around extending learning online after events. Supporting ongoing learning in multiple settings might mean we need to think about new ways of thinking about organizational roles and coordination.

- Using a social media approach can only work if you're dealing with youth 13 and up, key to consider for organizations that have events with that have both middle and high school students.
- Tread into social media spaces carefully! We heard from youth about the intentionally curated nature of their social media streams, and that having things that were produced during Maker Night into that space could be touchy and maybe even invasive. Sort of obvious on reflection.

- It seemed like the general prompt to "keep making" might've been too open ended, lacking enough of a hook for kids that weren't already the sorts of kids who made stuff on their own time.

DESIGN ITERATION #3 — TECH WITHOUT PURPOSE RAFFLE

OVERVIEW

In this iteration, we aimed to create more of a "hook" to get kids interested in making, and we came up with the "tech without purpose" raffle. Basically, participants, both during and after Maker Night, could submit a make that was meant to be a bit silly — a simple prototype for a technology that had no point at all.

THE SPARK

Coming off some of the prior iteration, we thought the more general #KeepMaking and #MouseMakes hashtags might be too open-ended. We decided to try for something that could be more inviting, and maybe playful. We were inspired by the early internet artist Ze Frank, who would come up with all sorts of silly prompts that invited people from around the world to engage in playful creativity online, like creating "earth sandwiches", by having people on exact opposite sides of the world find each other and put slices of bread on the ground, and then findings ways to share their "sandwiches" out online. We also took some inspiration from the "Stupid Hackathon" run by NYU"s Interactive Telecommunication's Program. We thought "design without purpose" could be a low barrier for entry and fun way to encourage teens to make something on their own time.

YOUR DESIGN CHALLENGE IS: DESIGN A TECHNOLOGY WITH NO PURPOSE

Make the most pointless invention that you can! You only need to come up with a design you don't need to build the whole project to be entered into a random drawing to win. This is the perfect chance to explore design. A box whose only function is to open and close itself

TECH WITHOUT PURPOSE:

- Click n'Wait- it's an app with a button you click, but you have to wait to click again!
- A box whose only function is to open and close itself.
- A glass that tells you if it's empty or full
- A website that translates text into gibberish.
- Light up shoes that only light up when you aren't wearing them

Other ideas that are only fun and don't do anything useful! Make it as pointless as possible!

SOURCED FROM: MOUSE.ORG

THE DESIGN

We had a station dedicated to the idea at maker night where youth could come and make, and we also announced the contest as something that youth could submit to win a gift card in between maker nights. We created a landing page with some examples that could spark ideas for youth interested in submitting to the raffle. Also, the "makes" could just be simple prototypes, like a sketch or paper model — we wanted to keep a low barrier for entry.

THE CONJECTURE

There were a bunch of different guesses we were making with this iteration, including:

1. ...the hook of design without purpose would provide more context and a specific challenge to respond to, rather than a more general encouragement to "keep making."

2. ...a context that invited more early stage ideas or prototypes to could mean that some youth might participate that otherwise might be afraid that they needed something "perfect" or technically complex to submit to a raffle.

3. ...having a dedicated station during maker night that modeled the kind of submissions we were looking for would be effective in terms of communicating about the raffle.

4. making a more snazzy landing-page on the web will make it feel more "official" and support more clear understanding of how to participate after Maker Night ended.

WHAT HAPPENED?

We had some decent engagement during some Maker Nights where we had the dedicated station for the "tech without purpose" contest, but, again, no submissions came in after Maker Night to the raffle. During one Maker Night, we had one teen who was a regular help out with the station, and he was really taken with the "tech without purpose" concept — he brainstormed a bunch of example ideas that we could share with kids that came to the table ("a backpack with an RFID-based self-locking mechanism," "shoes with pressure activated LED lights on their soles"), and we similarly experienced kids who came over to the table and had a good time coming up with silly ideas, like glasses with mirrors on the inside of their lenses, and a remote control that only worked if it was touching the television. Make the most pointless invention that you can! You only need to come up with a design you don't need to build the whole project to be entered into a random drawing to win. This is the perfect chance to explore design.

LESSONS LEARNED

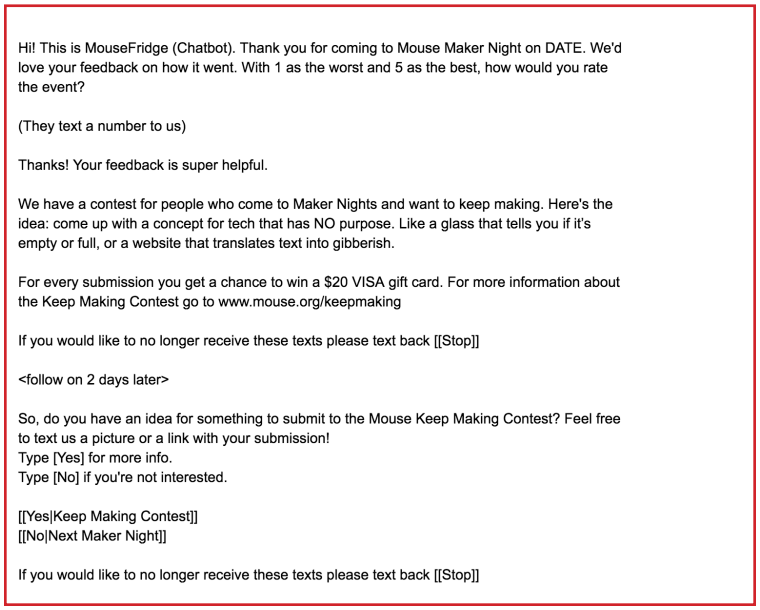
- Having a more specific and fun prompt definitely seemed like it could have promise in terms of engagement.

- But clearly something was still off when it came to communicating that teens can submit something that they make outside of the context of being at Maker Night itself. We weren't sure exactly what the sticking point was though.

DESIGN ITERATION #4 — THE MOUSEFRIDGE CHATBOT

OVERVIEW

In this iteration we designed a chatbot that youth could opt into at a Maker Night. We added a section to our evaluation form asking attendees if they were interested in getting reminders or information about Maker Nights. After a Maker Night concluded the chatbot texted them to remind them of future Maker Nights and how to submit projects for the Keep Making raffle.



Hi! This is MouseFridge (Chatbot). Thank you for coming to Mouse Maker Night on DATE. We'd love your feedback on how it went. With 1 as the worst and 5 as the best, how would you rate the event?

(They text a number to us)

Thanks! Your feedback is super helpful.

We have a contest for people who come to Maker Nights and want to keep making. Here's the idea: come up with a concept for tech that has NO purpose. Like a glass that tells you if it's empty or full, or a website that translates text into gibberish.

For every submission you get a chance to win a $20 VISA gift card. For more information about the Keep Making Contest go to www.mouse.org/keepmaking

If you would like to no longer receive these texts please text back [[Stop]]

<follow on 2 days later>

So, do you have an idea for something to submit to the Mouse Keep Making Contest? Feel free to text us a picture or a link with your submission!
Type [Yes] for more info.
Type [No] if you're not interested.

[[Yes|Keep Making Contest]]
[[No|Next Maker Night]]

If you would like to no longer receive these texts please text back [[Stop]]

Mouse Chatbot draft dialogue

THE SPARK

In this design, we were considering how the trend of chatbots to facilitate interactions online could be leveraged to "push" into the after-event lives of youth. Acknowledging the trickiness of social media as a space to do that, with the attendant issues of how youth want to craft intentional online identities which might be at odds with posting their makes. Chatbots, being more private, were seen by our team as a way of leveraging existing youth online practices — in this case, chatting through messaging platforms — to support after-event making. The idea also had the potential to be scalable in an automated form. We also thought that the idea that youth were chatting with MouseFridge — an anthropomorphic refrigerator in the Mouse office — was a fun and playful spin on the design.

THE DESIGN

We created a google voice account and a script that would function as the chatbot. Though the chatbot would be operated by a human we would simply copy and paste from our script to encourage students to submit work to the keep making challenge.

THE CONJECTURE

1. ..youth would be more comfortable interacting with a chatbot than an educator, as the chatbot is more out of the context of school.

2. ...youth were more likely to engage with a chatbot versus participating on social media since interactions with the chatbot were private rather than public, and therefore didn"t impinge on how they wanted to present their identities online.

We also assumed that the text reminders might encourage and remind youth to try and submit work to our keep making raffle after they left.

WHAT HAPPENED?

A few students gave us their phone numbers, but when we reached out to them through the chatbot (texting through google voice) they mostly ignored the texts. One students asked who it was but further replies were ignored. Anecdotally, several students said that they did not feel comfortable giving out their phone number.

LESSONS LEARNED

- It's possible that lack of responses were due to confusion around who was reaching out to them — clearer ways to establish that the account was linked to an organization they trusted, either during the event or when the chatbot reached out, or both, might help with this.

- Some youth were hesitant to give their phone numbers to organizations.

LESSONS ON SUPPORTING YOUTH TO KEEP MAKING

Broadly, our team learned that the problem we were trying to solve was both more complex and more challenging than we'd initially understood. We came in thinking that supporting youth to keep making after an event would involve just building a small bridge, creating a modest nudge. We were just trying to get youth to just go one step further, not take on something bigger like enrolling in a new program or finding an internship, common pathway-supporting goals that informal learning organizations sometimes try to facilitate. The story turned out to be much different.

Anyone involved in any sort of organizing does know that getting people to engage in valued activities when you're in a face to face context is easier than supporting them to do things once they leave. It was certainly true in our case.

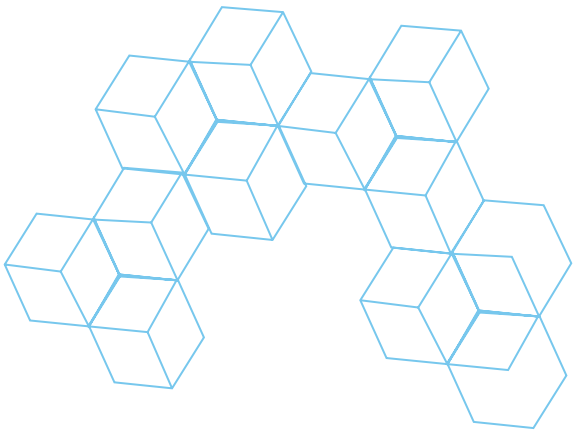
On reflection, we believe that many of our challenges were due to a misunderstanding on our part of what kinds of youth were coming to maker night. We thought that the students who opted to attend a program like this would likely be self-motivated since these programs are entirely optional, and would be the kinds of students who would geek out on their own if given the proper amount of support. We assumed many who had an interest in technology would be interested in attending Maker Nights to get an opportunity to either sample other technologies they haven't used before or to be able to dive deeper into something they are already familiar with by talking to that activity table's facilitator. And we assumed that if a student showed interest in a topic like circuitry after building a light up creature that if we provided them with online resources they would continue pursuing their new interest on their own time. As it turned out, the youth that came to Maker Night had a number of characteristics that challenged these assumptions. First, most were brought by teachers that had Mouse programs in their schools, not ones that were at enough of a threshold of interest to continue making. Second, the range of ages of students varied in ways that meant some of our designs, like those that involved social media, not viable for them to participate in.

In general, these realities reinforced the importance of really well understanding who your users are, their levels of interest and expertise, digital lives, motivations for engaging in your programs, etc.

Another lesson learned was that the problem we were trying to solve meant that our designs often were hard to measure and test. We were able to gain a pretty decent understanding of how youth interacted with our "inputs" — like the fortune teller or "design without purpose" prompt. But when youth left, there were fewer data points we could use to understand what was going on with them; we either saw that they submitted things (to the hashtag, through emailing Mouse staffers), or clicked the bit.ly link with resources, or not. For all we knew, some of the students that came to Maker Night were making on their own time after the event, just not making this visible through our participation structures.

Coming off the project, we offer a couple of principles that others might consider as they attempt to support youth to engage in making after an in-person experience:

- **Know your youth** — don't skimp on understanding exactly who the youth are that you're trying to encourage to make on their own time, both in terms of more general characteristics like age and gender, but also their level of interest, expertise, and habits around digital media.
- **Align the design with the valued outcome** — a design might be engaging, like our Fortune Teller, but if its overall design doesn't convey the valued activity, you won't get the outcomes you care about.
- **Be sensitive to cross-setting contexts** — in attempting to bridge both into contexts like home, social media and peer settings, a range of cultural norms and practices are at play that impact how a design meant to support learning across contexts plays out.
- **Find a good hook** — we do believe that our designs that had a clearer purpose and context in terms of making (ironically, the "design without purpose" challenge) had a positive impact in terms of motivations and overall engagement.
- **Iterate often, quickly, and in context** — one aspect of the project that feels like a success was having a design trajectory that ended up involving many iterations, with new ones directly responding to how we saw prior ones playing out in context. This was supported by choosing a setting — Maker Night — that took place with relative frequency, but also had some time in between to look at data and develop new iterations.



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