Young Makers

Maker Club Playbook

January 2012

Maker Club Playbook

Table of Contents

Welcome to a community of people who have a passion for making things and want to share that with others by making with young people.

This playbook should help you—a local Maker Club manager—establish a great club in your school, neighborhood, or wider local community. It shares the knowledge and experience from the founders of the Young Makers program as well as from those club managers who have already established Maker Clubs.

Through Young Makers, we encourage everyone to start making in your communities and schools to create something of your own imagination. We know that the thought of getting a club started can be daunting, whether it's finding a shop facility, recruiting young makers, recruiting mentors, dealing with liability, etc. This playbook is designed to help you navigate through the issues. It is written for club managers who represent Young Makers to the community at large and who coordinate the activities of a local group of young people who make.

We are invested in the success of your Maker Club. We want your club to succeed, to build Maker community, to share the DIY mentality, and to engage and stimulate your neighborhood, school, town or region. That is why we have spent the energy to write this Playbook, why we will help your club, and why they have "open-sourced" the Young Makers program and encouraged the Maker movement to flourish. We are constantly trying to refine and improve the material we provide. Please contact us if you have anything to add or share, and please report back on your experiences each season so we can enrich the book with new insights, advice, illustrations, and anecdotes. We have published this document so that it might grow and reflect new practices and current experiences. If you are reading this in a PDF or printed format and would like to contribute comments via email, please address them to **contact@youngmakers.org**.

For more information and continuing updates, visit youngmakers.org.

The creation of the Maker Club Playbook was generously funded by STEMposium. The majority of it was written by Young Makers program co-founders Michelle Hlubinka, Tony DeRose, Dale Dougherty, Karen Wilkinson, and Mike Petrich, with additional contributions from Aaron Vanderwerff, Suzie Lee, Shawn Neely, and Darrin Rice. Some sections were adapted from the Mini Maker Faire Playbook written by Sabrina Merlo, Sherry Huss, Dale Dougherty, and others.

We like to say that if you can imagine it, you can make it. So let's make your Maker Club!

Young Makers Program Overview

Young Makers are youth, typically aged 12 to 18, who choose to work alone or in small groups to prepare a project to exhibit at Maker Faire. Each project team pairs up with one or more adult mentors who are experienced in one or more forms of making. Project teams are organized into Maker Clubs, and each club members share access to shop facilities as well as progress on their projects. Each club also has a club manager who is responsible for recruiting Young Makers, mentors, and shop hosts to support the club.

We encourage the creation of Maker Clubs in all parts of the country (and the world for that matter). In the San Francisco Bay Area, we encourage clubs and project teams to meet regionally at the Exploratorium on the third Saturday of each month starting in January before Maker Faire in May. At these regional meetings Young Makers present their work in progress to other project teams, they have the opportunity to interact with a different "Featured Maker" each month, and they can participate in Open Make, a hands-on activity facilitated by Exploratorium staff. Other geographical areas may be identifying regional hubs as well.

> **Program goal:** Inspire and develop the next generation of makers, creators, and innovators. Create a community of like-minded youth, parents, and other adults interested in this goal.
>
> **Key attributes**: Exhibition not competition, youth-driven, open-ended, interdisciplinary (art, science, engineering, math, crafts, green design, health, music, technology), community-based.

Chapter 1 Beginnings

People learn in many different ways, but many learn best by building things.

Building toys such as LEGO bricks offer powerful and open-ended experiences for younger children. Unfortunately, as shop classes have closed over the past few decades, there remains very little infrastructure to nurture older kids who want to expand beyond construction kits. Through the Young Makers program, we're building a community that brings together like-minded young people, experienced adult mentors, and fabrication facilities to help more kids make more things. We hope to create an infrastructure to nurture older kids and teens who want to expand beyond the construction kits of early childhood.

The Young Makers program is different in several ways from other activities such as robotics competitions and science fairs. In particular...

- There are no winners and losers.
- Projects are cross-disciplinary and youth-driven.
- Just as you see at Maker Faire, anything that's cool is fair game.

We encourage projects that meld different disciplines into ambitious projects. Final projects might include math, science, art, craft, engineering, green design, music, and more. Trial and error provides a means to success. Failure *is* an option, because it provides another chance to learn.

In a nutshell, this is how it works. Young Makers bring ideas to their club. If they don't have a project vision, they might work with a mentor to find one. Everyone in the club—both the adults and the Young Makers—work together on a regular basis to realize these many visions in time for a deadline. The deadline can be a Maker Faire, a Mini Maker Faire, or another showcase event that offers a stage for the resulting projects to be exhibited and explained. Along the way, the project teams discover the underlying math, science, and engineering principles behind the projects and learn about tool usage and safety. Everyone works together to foster an open-ended, collaborative culture of creativity, innovation and experimentation at monthly meetings and regular build sessions.

The Maker Movement

The Young Makers program grew out of Maker Faire, a leading force in the Maker movement. It's hard to describe just what the Maker movement is. Yet, there is a mindset that is shared by all participants in a Maker Faire. At a typical Maker Faire, you'll find arts & crafts, science & engineering, food & music, fire & water — but what makes this event special is that all these interesting projects and smart, creative people belong together. They are actively and openly creating a Maker culture. At their core, Makers are fascinating, curious people who enjoy learning and who love sharing what they can do.

We hope that you'll see this mindset reflected in your Maker Club. We want everybody who participates in a Maker Club to see themselves as a Maker. What makes a Maker?

- Makers believe that if you can imagine it, you can make it. We see ourselves as more than consumers—we are productive; we are creative. Everyone is a Maker, and our world is what we make it.
- Makers seek out opportunities to learn to do new things, especially through hands-on, DIY (do-it-yourself) interactions.
- Makers surprise and delight those who see their projects, even though the projects can be a bit rough-edged, messy and, at times, over-stimulating. (Think punk rock.)
- Makers comprise a community of creative and technical people that help one another do better. They are open, inclusive, encouraging and generous in spirit.
- Makers are generally not in it for the money. This isn't about filing patents or making a profit. At the same time, we're not anti-commercial—Makers sometimes start businesses, and we celebrate that…but we don't make it a focus as it would change the spirit of the movement.
- Makers celebrate other Makers — what they make, how they make it and the enthusiasm and passion that drives them.
- The typical project made by a Maker does not provide a platform for politics or religion.

Unlike many other organizations for kids who make things, Maker Clubs (like Maker Faires) are about exhibition, not competition. We don't see Makers pitting themselves against each other. We hope each Maker gets useful feedback on what they exhibit, and that the feedback is offered in a spirit of generosity and received with similar openness and magnanimity.

Maker Faire, and How It All Began

Maker Faire is (literally) an explosive environment—full of blasts of imagination, invention, and creativity . . . oh, and some propane too.

If you haven't been to Maker Faire before, words don't really do it justice. It's the premier event for grassroots American innovation and a festival/celebration of DIY (do-it-yourself) culture, organized by Make Magazine. Nowadays, over 700 Makers of all ages will convene for one fantastic weekend to show off a spectacular array of projects that combine arts, craft, engineering, food, health, music, performance, creative reuse, science, and technology. Rockets to robots, felting to beekeeping, pedal-power to mobile muffin cars — you never know what you'll see at Maker Faire. In its simplest form, Maker Faire creates conversations with Makers. It is a show-and-tell format for people of all ages that brings out the "kid" in all of us. Maker Faire is a community-based learning event that inspires everyone to become a maker and connect to people and projects (and passions!) in their local community. Maker Faire provides a venue for Makers to show examples of their work and interact with others about it. Many Makers tell us that they have no other place to show what they do. It is often out of the spotlight of traditional art or science or craft events. DIY is often hidden in our communities, taking place in shops, in garages and on kitchen tables. So the goal of the event is to make visible the projects and ideas that we don't encounter every day. Young Makers projects are a perfect fit.

From the beginning, Maker Faire has been a perfect family event, with many attendees under age 18. Even at the first Maker Faire in 2006 in San Mateo, California, we had young people exhibiting as Makers alongside adults. Some Young Makers come on their own, others exhibit as part of community or school organizations, and sometimes they are part of a family team that created a project together.

One such Maker family is that of Tony DeRose, a Senior Scientist and lead of the Research Group at Pixar Animation Studios. After brothers Sam and Joseph came with their dad Tony and mom Cindy to their first Maker Faire, they left inspired to return to Maker Faire the next year with a project of their own: a multi-touch table they built in their garage. They returned with a Potato Gatling Gun the following year.

In 2009, Tony approached Dale Dougherty (the Founding Editor and Publisher of Make Magazine & Maker Faire) and Michelle Hlubinka (Maker Faire's education director) about partnering to help more kids create projects for Maker Faire as a way to fuel kids' intrinsic motivations in science, math, and engineering. At the same time Dale and Michelle were discussing similar initiatives with Karen Wilkinson and Mike Petrich of the Exploratorium's Tinkering and Learning Studios. We five said, we all prefer to learn by doing, so let's do this: let's run a pilot and see what it tells us. And so the Young Makers Program was born. We gathered about 20 kids together monthly and hooked them up with mentors so they could make something great for Maker Faire 2010. In the first two years of the program, we have devoted an area to these projects, where Young Makers displayed the fruits of their labor for short timeslots (rather than the full weekend.)

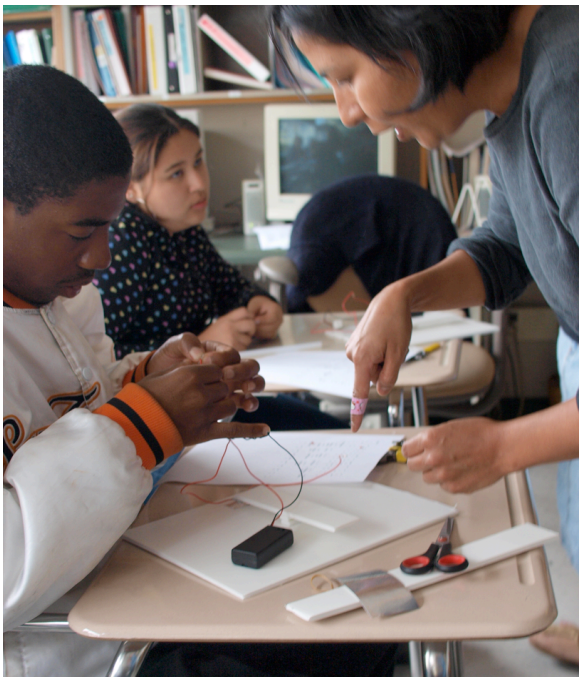
Projects made in that first year, 2010, include furniture that doubles as a hamster habitat, a fire-breathing dragon, and a mobile spy camera. In our second year, leading up to Maker Faire Bay Area 2011, we experimented with the Young Makers program model — seeing what would happen if it we allowed the network to become more decentralized, and monitoring how clubs tried out different ways of working. We ended up with about 20 clubs, up to 100 Young Makers, about 50 adult volunteers, and about 40 project teams exhibiting at Maker Faire 2011 — including a seesaw water pump, an animatronic galloping horse, gokarts, and a hovercraft. (See "Snapshots" for more examples of projects.)

Encouraged by how the Young Makers Program has grown in two years, now including clubs and classes throughout the Bay Area and beyond, we have welcomed the creation of more Maker Clubs in more communities. There may be Young Makers program affiliates near you, or you may encounter classes and community groups whose work is a good match for the Young Makers program, and we encourage you to introduce them to the network and our resources and ask them to join.

Each club consists of 6 to 10 Young Makers with access to shop facilities sponsored by a shop host. Another adult serves as club manager, and mentors, who may be parents or Makers from the community, help out as needed. When possible we feel it helps to have monthly meetings at public places such as libraries and science museums to build a sense of community, and to present work in progress. Having an event like a Maker Faire to work toward encourages project completion. (If you'd like to learn more about how to organize a Maker Faire, the Mini Maker Faire Playbook will help you get started.)

A Potential Impact on Education

Education happens everywhere. Learning happens in our community, not just on campus. Our current education system struggles to tap the resources available in the community, yet our culture is richer with information and opportunities than ever before.



Changes in technology over the past few decades have led to a shift toward more focus on the individual and a move away from decentralization in many parts of our lives. Big city newspapers to bloggers. Large-scale manufacturing to personal fabrication. A handful of Hollywood studios and television networks to millions, perhaps billions, of online "amateur" video options. Lobbyists in Washington to grassroots, Internet-based political financing. Factory farming to slow food eaten by localvores. A vast power infrastructure to living off the grid with solar panels and windmills. We can produce and consume as *individuals* within a networked community in all these areas.

The glaring exception to this is in how we teach our kids. Somehow, we've allowed education to become increasingly centralized, where we let public officials say that children will be pumped out of the school machine at age 18 knowing the same facts and gaining all the same skills. Learning standards reflect the uniform expectations our governmental agencies have of all children of a certain age. Teachers are preparing them for a world that none of us want to live in, and one that doesn't exist anymore. We know that all kids are individuals, and yet in schooling, our public officials and administrators expect them all to be the same. Arguably, the diversity of educational options was greater two centuries ago than it is now.

Our kids can be learning more efficiently—and as individuals. We imagine that schools can become places where students learn to identify their own challenges, solve new problems, motivate themselves to complete a project, engage in

difficult tasks. work together, inspire others, and give advice and guidance to their peers. We see all that happening already in the Maker community. And, increasingly, we recognize there is a real hunger for the resources and infrastructure for kids and adults to be spending more time making, too.

We're working to support that hunger for making in several ways. The Young Makers program is one initiative. We're also developing online resources to support making in many different contexts, as well as working to create physical spaces where kids can make things: Makerspaces. Through these and other efforts, we seek to develop self-motivated, self-directed learners. We aim to help the youth of our nation regain the spirit of innovation, ingenuity, and curiosity that has been dormant until recently.

As leaders in the resurgence of the do-it-yourself movement, we are dedicated to sparking the DIY spirit in all those whose lives we touch. We don't see any reason why we, as a society, can't transform education into a system that nurtures individuals to adopt the habits of mind that Makers have and to become the engaged citizens we all want to be.

Impact Areas

- *Inspiration* : to participate in the creative economy and direct their own future
- *Innovation* : a catalyst for grassroots invention
- *Education* : building a connection between the community and learners

We are particularly interested in how this approach might reach students who don't fit well into the existing system or who have already dropped out of it. As we've said, at Maker Faire, there are no winners or losers — anything that's cool is fair game. It's not a competition, and there aren't prizes, so there are no judges deciding who has succeeded and who has failed. Yet Makers — some with two PhDs, others who never graduated from anywhere — are motivated to spend long hours in their studios, shops, kitchens, and garages finishing their projects. Makers work in art, craft, engineering, music, food, science, technology, health, and often in several of these areas at once. Their projects are thoughtful, challenging, and innovative. But most importantly, we notice that all Makers are curious and motivated people.

The 2010 President's Council of Advisors on Science and Technology Report states that "the problem is not just a lack of *proficiency* among American students; there is also a lack of *interest* in STEM fields among many students." When students and teachers develop personal connections with the ideas and excitement of STEM fields, their learning is most successful.

It isn't enough to train current students for the world of today — we have to train them for tomorrow, a tomorrow that will require them to master technologies that don't yet exist. Think about it: a child in middle school today will be entering the prime of their careers in 2040. We have no idea what the world will be like then. Therefore it is crucial to develop timeless skills such as curiosity, creativity, and the ability to learn on one's own. These are precisely the skills that are honed by efforts such as the Young Makers program.

We believe the Maker movement captures something about the future for a new direction in education. We know that many teachers are re-energized by their annual visit to Maker Faire, and a few join us in our optimism for making as a way to learn. We hear this time and again from teachers.

The Maker movement exemplifies the kind of passion and personal motivation that inspires innovation. We can engage students as makers who learn how to use tools and processes to help them reach their own goals and realize their own ideas. How can we translate this intrinsic motivation to education? How can we channel these core values, a shared spirit, ethics, discipline, mutual respect, reciprocity, self-directed learning into how we teach? Or more generally, in a future world, what could schooling look like? And how can Maker Clubs shift how we think about achievement? These are the questions we hope to answer … with your help!

Chapter 2 Making

Making things, and your love for making things with others, may be your main reason for starting a Maker Club. That may be true, but we hear from club managers that they can feel somewhat daunted doing the thing they and the kids love most! You might not know how to get your club started. That's OK. Don't overthink it, just start making!

Starter Projects

We recommend that you make something together to get your feet wet and see what it's like to work together. It could be one large group project or a simple project everyone can do. It can be customizable or not. Of course, your club members, the Young Makers, may have very different levels of expertise. Here are some sources for simple workshops and starter projects you might consider as first projects.

Browse Make:Projects. We've seeded this DIY project-sharing site with projects straight from the pages of Make magazine, and it has grown with many more submitted by our most creative readers. You can access step-by-step instructions and materials lists for hundreds of projects, but here are some tips for finding the simpler ones.

- Some of the "Easy" projects should be do-able by new Makers and adaptable to challenge intermediate Makers: the Wind Triggered Lantern, Soda Bottle Rocket, or Cigar Box Guitar provide easy starting points.

  http://makeprojects.com/Project/Wind-Triggered-Lantern/1271/1
  http://makeprojects.com/Project/Soda-Bottle-Rocket/446/1
  http://makeprojects.com/Project/Cigar-Box-Guitar/87/1

- The “Kids” topic page is a good place to start, too, but the projects are not all projects that young people would build; some are projects kids would enjoy playing with: **http://makeprojects.com/Topic/Kids**
- You might also want to check out the most popular projects: **http://makeprojects.com/?page=1&sort=popular&filter=all**

Tinker and explore. The Exploratorium’s Tinkering Studio developed some terrific hands-on explorations for our Open Make sessions. These are all documented with an overview of some of the reasons why you might want to do the project with your members, images of the process of making and using the project, and a discussion area at **http://tinkering.exploratorium.edu/activities/**

Projects include BlinkyBugs, BristleBots, Bling, Cardboard Automata, Chain Reaction, Circuit Boards, Circuit Necklaces, Get in the Groove (sound and vibration), Light Painting, Light Play, Marble Machines, Mmmtsss, Piezo Drum Circle, Plastic Fusing, Scribbling Machines, Sew a Circuit, Toy Take-Apart, and Wind Tubes.

Seek out simpler Instructables projects. The Crafts for kids link includes projects on how to make playdough, oobleck, seed bombs and much more.

Build Howtoons projects. This wonderful collection of highly visual materials also distributes a particularly helpful Guide to Visual Communication.

- ***Make It Go*****:** Take a dive with Das Bottle. Turn electricity into motion with your own mini-motor. Bring a Frankenmouse or a nocturnal robot to life.
- ***Make It Sing*****:** Turn a turkey baster into a flute. Transform a cup into a speaker and microphone. Strum a guitar you craft out of a cigar box.
- ***Make It Fly*****:** Shoot marshmallows in kids' all-time favorite Make project! Float your own blimp. Send a bird-like ornithopter flapping.
- ***Make It Stop*****:** Capture motion with a homemade strobe
- ***Make It Dance*****:** Make light bend.
- ***Make It Tall*****:** Construct a tower to the sky.
- ***Make It Tasty*****:** Shake up a batch of your own ice cream.
- More Howtoons

When choosing a starter project, consider the diverse interests and skill sets of the members of your club, and make sure that the project you choose is open-ended enough to welcome all kinds of budding Makers into the culture. These are some activity design tips adapted from the Exploratorium’s Tinkering Studio:

- Build on the kids’ prior interests and knowledge.
- Choose materials and phenomena to explore that are evocative and invite inquiry.
- Think of STEM (science, technology, engineering, mathematics) education as a means, not an end in itself.
- Provide multiple pathways (i.e., don’t ask your kids to adhere to rigid step-by-step instructions)

Brainstorming Main Project Ideas

Coming up with an exciting but achievable project can be very challenging. If your members already have a clear idea for a project, congratulations! That's great. They can start working on their designs and prototyping them. If they don't know what they want to do, we've collected a few strategies that might get them going.

See what's out there. To get your idea generator going, it helps to look at as many examples as possible of what other people have done. You can try to replicate the project exactly, but more likely you will add your own twist along the way. Some project sharing-sites most popular with Young Makers include:

- ***Instructables***. This vast database of thousands of projects submitted by a large user base contains a nearly inexhaustible resource of step-by-step instructions for a million different projects of all difficulty levels. You can find both simple projects and deeper expertise when a member gets stuck on a project. You could spend half a lifetime browsing this site. (And don't forget to contribute your project to the site after you've finished it, in order to help others.)
- ***Maker Faires of the past.*** Maker Faire booths, both what Makers have shared at Maker Faire and what we have previewed at events where we promoted an upcoming Maker Faire, also offer a lot of great ideas for projects. Browse nearly 4000 projects that have exhibited at previous Maker Faires in the Bay Area, Austin, Detroit, and New York City. http://makerfaire.com/search.csp
- ***MAKE magazine***. Every edition, filled with detailed project ideas and plans, is a well-spring of ideas. Aaron Vanderwerff used his complete set of Make magazines, distributing one issue to each student in the class and asking them all to choose a project that appeals to them. As of late 2011, Make magazine has published 27 volumes. One note of caution: a few of the issues are out of print, so share your copies of the magazine carefully.
- ***Makezine blog***. Each day a number of posts describe thought-provoking projects, sometimes with links to instructions. The comments made by readers can also be very helpful.
- ***Make Projects.*** A great source for starter projects as well as more ambitious ones, this user-contributor DIY project-sharing site has projects from MAKE magazine and its readers.

Go window-shopping. Look at the wacky inventions in SkyMall magazine, found in the seat-back pocket of many airlines. If you know someone going on a flight, ask them to pick up some copies of SkyMall for your club. Your members may get a kick out of seeing what silly inventions people buy at high altitudes. You may also consider sites like Etsy and eBay, two sites rich with unconventional ideas from creative, resourceful people who sell vintage and handmade objects.

Go shopping for stuff. An art teacher once said, "Half of art is shopping." You could take your members on a field trip to an art, hardware, electronics, plastics, fabric, dollar, or thrift store. If you can't go to a real-world store, poking around online might work too. You can use your shopping trip as a time to talk about budgets and the hard task of finding supplies for projects. At the store, your members may find odd things to hack together, or new materials they hadn't considered. Point your members to the site IKEA Hackers http://www.ikeahackers.net/ for ideas for repurposing materials.

Cut and collect. Disney Imagineers cut out a collection of images they find interesting, then they start arranging them in pairs or triplets to see if that triggers any interesting hybrid ideas.

Play with something new. Stimulate ideas by playing with a new material. Mylar, electroluminescent wire, shape-memory alloy, ... any new material (or even an old material used in new ways) can jolt your imagination. Spend a long time with the material, experimenting in as many different ways with it as you can imagine, or look to see what others have done with this material by searching online.

Figure out what you want to learn. Another strategy is to pick a set of skills that you'd like to acquire (such as knitting, soldering, or welding), or a medium that you'd like to experiment with (such as wood, metal, or ceramics). Once you've narrowed it down, there are a few ways to get started:

- Don't hesitate to ask questions of people who have the knowledge you're seeking. People are generally very happy to share what they know and are happy to help. If you find a Maker who has exhibited at Maker Faire and who has skills related to your project, they may be available to advise you—sometimes they include their email addresses on their project pages, or just tell us who you're trying to get in touch with and we'll try to make the connection.
- See what others have done—often the enthusiasts will document their passions with great detail, enough to recreate and learn from them. Do web searches related to the skills and media you've been working

with. You'll very likely find countless blogs, websites, and organizations related to your interests.
- Go buy some of the materials used in the medium you are interested in and tinker with them.

Do what you love. Focus on things you like, such as music, video games, or holidays. Halloween and Christmas provide great opportunities for Makers. For Halloween you can make props for your yard or interesting costumes. For Christmas you can make wonderful decorations for your tree, your home, or your yard.

Have lots of Ideas. Dr. Linus Pauling famously said that the best way to have good ideas is to have LOTS of ideas. That is, create a list of as many ideas as you can, then start focusing on the ones that appear promising. Eventually you'll winnow the list down to the good ones. Don't be surprised if only a fraction of your initial ideas turn out to be good. That's normal.

Some design educators swear by IDEO's seven rules for brainstorming. These four are most relevant to brainstorming Young Makers' projects: defer judgment, encourage wild ideas, build on the ideas of others, and go for quantity. To see all the rules explained, visit IDEO's writeup on the seven rules.
http://www.openideo.com/fieldnotes/openideo-team-notes/seven-tips-on-better-brainstorming

Plussing

Pixar uses the term "plussing" to mean finding what's good about an idea and making it even better. In the Young Makers program, plussing sessions provide an opportunity for project teams to share their ideas, progress, challenges, and next steps with the participants in the program on a monthly basis. We held plussing sessions at our regional meetings, but you can hold them at a local level in your clubs as well.

Plussing sessions provide…
- a monthly deadline so that project teams can pace themselves and aren't faced with one huge deadline (Maker Faire) months in the future.
- a glimpse of the creativity and breadth of ideas of the entire group—teams can see other projects develop through the season.
- a chance for project teams to talk about their failures in a positive and constructive way.
- an opportunity for project teams to practice talking about their projects in advance of exhibiting at Maker Faire.
- a time for participants to get to know each other, helping to build the kind of community and culture we're trying to promote.

We organized plussing sessions to be like small Maker Faires, where half the group shares their work at the same time—with their materials laid out on a table for discussion—as others circulate and ask questions. Then the two groups switch, with the other half staffing their stations, and half circulating. You can also try a show-and-tell format so that everyone can hear about all the projects and give feedback if your members know each other well. (Otherwise, everyone tends to be a little shy, and the adults end up talking too much!)

Here are a few of the kinds of questions members can ask one another during their plussing sessions:
- What is your project vision? What are you hoping to do?
- What inspired you to pick this project? Why are you doing it?
- Do you know of other people who have done projects that are similar, or is this one-of-a-kind?
- What other project ideas have you toyed with?
- What kinds of projects have you built in the past?
- What do you think the hard parts are going to be? What are the easier parts?

At your first plussing session, members shouldn't worry if they don't have anything to share. There will be time for that over the months you work together. If they have several ideas for a project but haven't yet decided upon one, they might consider briefly describing them all. If they have work in progress, they'll certainly want to bring visuals—photos, sketches, models, artifacts or other materials—to help them illustrate or demo their ideas.

Through the Young Makers program we are modeling and sustaining a collaborative culture, and having highly interactive plussing plays a key role in reaching that goal. Admittedly, the adult mentors and volunteers tend to have the most to say during the plussing sessions. It takes a lot of work to get kids to comment on one another's projects, but it is critical you put the effort into encouraging the kids to plus too.

By the way, the kind of feedback we foster in plussing sessions does not have to happen only in person at the monthly

meetings. We would love to see more online discussions and conversations among Young Makers, and if you find a good way to get those going within your club, please share your success stories with us.

Documenting

It's not enough to just make something—it's also important to be able to tell others about the projects and why they are great. To tell their stories better, your club's project teams will want to think ahead to make sure they have the tools they need to document their process and their final project. One team member on each project could take on the role of documentarian along with their other making duties.

Exhibiting at Maker Faire is a golden opportunity to take a step back and tell the story of how and why a project was made. But once the weekend of the event is over, how will your members be able to show off what they've done? It's possible that their project is too large or the pieces of it too temptingly reusable that the project won't last long. Spend the time after Maker Faire adding the project to your club members' portfolios, or starting some kind of portfolio.

As they prepare to exhibit, ask your members to collect documentation that tells the story of how and why their projects came to be. Maker Faire attendees love to know how and why Makers created their project, and so you will want to encourage your members to gather evidence of their process. This can go all the way back to the brainstorming phase—one exhibiting group "Awesome is What We Totally Are" proudly shared the dog-eared spiral notebook which they had used for their original brainstorming session. In it you could see a full page of great project ideas scribbled down. The ideas were all over the place and each one looked like the next great project.

Documentation could take many forms, but whatever medium the members choose to tell their story, the important thing is that it captures why and how they made what they made. Some ways that your project teams may choose to capture their projects follow.

> ***Notebooks***. At our first meeting, we often distribute a Maker's Notebook to make sure that each Young Maker has a place to sketch concepts, jot down notes, paste in inspiring clippings and printouts, and so on. Young Makers have found it helpful to bring their notebooks to Maker Faire so that they can answer questions about what they've done and also show off the hard work they put into their project. Paper is low-tech and affordable by all.
>
> ***Blogs.*** Blogging software is pretty easy to use, and multiple teammates can contribute to a blog, whereas it's harder to share a notebook. If members keep Maker's journal online, adding photos as they go along, they'll have a pretty rich record to tap later.
>
> ***Project Binders.*** Simplify and revise what has been recorded in the notebooks to create scrapbooks of the projects. Three ring binders are wonderful tools since they allow you to collect all sorts of different printed material (component spec sheets, press clippings, sketches on napkins...) in one place. You may prefer a binder to a bound notebook because of the flexibility. It is also helpful to date everything you put in the binder. That provides an accurate historical record that becomes increasingly interesting over time.
>
> ***Photos.*** Take candids of the team working together and time-lapse shots of the project forming, as well as well-staged explanatory photos in case you want to write up their project as a "how-to" someday. Snap pictures of materials before and after adding them to the project. Sure, it helps to have an amazing camera, but you can also just ask the Young Makers to use their phone's camera. If you create a Flickr set or collection of photos online, please be sure to add "youngmakers" to your tags. License photos as Creative Commons images as appropriate, and then email any links to sets to contact@youngmakers.org.
>
> ***Posters.*** After Maker Faire, Aaron Vanderwerff asked his students to create posters describing their work on the project. The posters were designed to be similar to posters which scientists and engineers create to share their work at professional and academic conferences. The posters included a description of the project, a key scientific concept the project exhibited, an explanation of how one piece of technology worked on their project, and the students' conclusions about the project.
>
> ***How-tos.*** Give back to the DIY community and the Maker movement by having your Young Makers write up their projects and add them to Make:Projects, Instructables, or another DIY community website. Having to explain how to do something to another person often helps learning "stick" better in the long-term.
>
> ***Slideshows***. Have your members tell their stories through a slideshow. You can give them free rein with the

length and number of slides, or challenge them to use a quick-and-lively format like Ignite http://en.wikipedia.org/wiki/Ignite_(event) or Pecha Kucha http://en.wikipedia.org/wiki/Pecha_Kucha, both of which limit the number of time and images the speaker can share. Using the slideshow format gives you automatic content for future fundraising and recruitment presentations.

Videos. Bring a digital video camera to all build sessions and meetings. Joseph, from the team that created Saphira, created a fantastic "trailer" to show off the animatronic, fire-breathing dragon he helped to build. And don't forget, video is much easier to move around than a machine with propane and an 8.5-foot wingspan. While a good microphone would be great for capturing the conversations and sounds of building, it's not essential as you can always add voiceover or an energetic soundtrack over the footage you capture.

Digital Stories. Digital storytelling combines photos, video, animation, sound, music, text, and often a voiceover to create a short 2- to 3-minute multimedia narrative. The Center for Digital Storytelling has used this technique to have their storytellers reflect on their lives and work, and it has also been used with young people to reflect on creative projects of their own design. While we don't have any favorite tools for classroom or club use, and video editing is getting easier all the time, a quick online search of "digital storytelling" will get you some of the latest news on how you can bring this to your students. Often, the voiceover in a digital story is recorded with a quality microphone.

Project Books. At the end of the project, you can put together your best photos of the finished project and the process of making it, and print these out on a nice printer so that the members have a permanent record of the project. Or consider printing custom photobooks (from Blurb, Apple, Lulu, etc.) that the members can keep in their portfolio to show off how they spent their months of work.

Regardless of the form your members choose to document the story of their project, the questions they can answer are not unlike those that they may have answered at the plussing sessions and Maker Faire.

- What was the project vision? What were we hoping to do?
- What inspired us to pick this project? Why did we do it?
- Have other Makers done similar projects, or was this one-of-a-kind?
- What's next? Are there other project ideas we have toyed with?
- What kinds of projects had we built before?
- What was hard to do? What was easier to do? Did that surprise you?
- Were there any interesting, surprising, or spectacular failures?
- Were there any interesting or surprising behind-the-scenes stories?

Along with adding to your personal record of what the club has accomplished together, you can also share this documentation with us and we will consider it as a post on our active blog at makezine.com or in Make:, our print magazine.

Ensuring Diversity of People and Projects

The Maker movement attracts a wide variety of people, and we think that's one of its greatest strengths. Why is this? Perhaps because Makers are open to relating to a similarity in the depth of passion for one's work and a way of working and being curious about the world, without necessarily sharing a prior interest in what is being made or how it is being made.

Makers might be individuals or groups who demonstrate a skill or craft, show a finished piece of work and explain it, and/or teach a skill or lead a hands-on activity. Makers can be anyone from yarn-spinners to hackers to terrarium makers to alt-energy vehicle designers to facilitators in the learn-to-solder booth. They might be performers: Musicians and dancers and snake-charmers fit this group. They might take a slot on the stage, or offer a guerrilla performance.

As you introduce the idea of your Maker Club, check that examples you share set the stage for a real variety show! Starter projects should include materials and phenomena that invite inquiry and provide multiple pathways for different kinds of skill sets and expertise. If you put together a slideshow of inspiring exhibits and performances from earlier Maker Faires, pull examples from all the categories of Making: arts, craft, engineering, food, green design, music, science, technology. Or you could think in terms of common theme areas usually present at Maker Faire, and encourage your members to distribute their projects across these areas: Electronics, Music, Crafters, Robotics, Lego Park, Bike Village, Farm / Food.

Keep the bar low for the newcomers: counterbalance the novelty and "geek factor" of the examples you share with projects that are, perhaps, not novel at all. Throw in some more common yet creative / delightful / lovely projects in with

your examples. Some Makers might want to build their own Adirondack chair rather than a nifty Arduino-based gadget. That's completely fine. Anyone who makes something gets into the whole universe of materials, tools and techniques. That "normal" Adirondack chair can always come back next year and get geeked out with a built-in infrared remote that controls the lawnmower. Or they can some back and build a fine replica of a piece of 18th century furniture. You never know.

If you have club members who bring widely varying levels of experience, it's fine to pair a "newbie" with a project team that is working on something more advanced, as long as the newcomer and the team are all right with this. This approach helps newcomers participate at their skill level but contribute to something that would be beyond what they'd be able to accomplish on their own. For Saphira, the fire-breathing dragon, two of the team members were brothers who had worked on Maker Faire projects for three years together already. The third member brought in new expertise but less experience bringing a project from idea to Faire. It worked out very well for all.

Also, a project for Maker Faire, and likewise for a Maker Club, does not necessarily need to be some kind of physical object that can be exhibited on a tabletop. In fact, some Makers are better featured performing, or talking, or teaching, or interacting with other Makers. Preparing for performance, hands-on interactive experience, or a live demonstration can require at least as much thinking ahead and logistical coordination as creating a new object.

For a hands-on workshop, your members might want to teach Maker Faire attendees how to ride a goofy bike, silkscreen a piece of clothing, play a musical instrument, launch a rocket, operate a remote control robot, or explore a cardboard jungle. Fairegoers line up for workshops like "How to Make Jam" or "How to Prune a Bonsai Tree." Your members might demo something they learned together as a starter project or in class, like how to shake cream in a baby food jar until it becomes fresh butter.

A few Maker Faire hands-on exhibits that have entered the lexicon of "greatest hits," and your members might volunteer to run these at a Maker Faire:

- How to solder
- How to take apart anything
- How to build a simple circuit (like LED throwies)
- Science experiments for kids
- Make a rocket and launch it
- Make a musical instrument
- Fix your appliance
- Learn to knit or sew
- Clothing hack and swap: piles of donated clothing (encourage attendees to bring with them on day-of event) get picked through and transformed with hand sewing, sewing machines, silkscreening, gluing, and other decorating stations.

If your Young Makers do create a hands-on activity for fairegoers, they will want to keep in mind these tips for designing exhibits that engage the complete amateur:

1. Offer as many facilitators as possible.
2. Use signage or handouts to help guide the user.
3. Supply sufficient lighting and safety gear.
4. Design your booth to manage the people you are interacting with (e.g., one chair per user).
5. Provide a place for people to wait their turn.
6. Make sure to model safe use of tools and materials in your space (see Safety section, below.)

If you have performers in your group, encourage them to transform the talents they usually share with audiences by adding a Maker spin to their act. Musical acts that feature homemade or altered instruments fit well on a Maker stage.

Kids who don't usually consider themselves "performers" may also create a large demonstration that wows a crowd. Kinetic sculpture performances (e.g. big robots) or demonstrations (like the Coke and Mentos fountains pioneered by Eepybird). Demonstrations might also be onsite builds where a maker sets up a shop and creates an item from scratch over several hours, such as an igloo formed out of empty gallon milk jugs. Some Makers create film or video projects to premiere at Maker Faire (although not all Maker Faire-inspired events set aside a space dark and quiet enough to screen a film--this may require some extra planning on your part.)

Finally, encourage your kids to think big! They might propose working together to create a large maze out of cardboard or a giant web of string. These large installations would require a lot of testing and prototyping before the event site is open, but the payoff in big smiles could be as huge as the art they create.

One of the most surprising, stimulating and identifiable traits about Maker culture is the diversity of fields it encompasses. You can look far and deep into the nooks and crannies of your community to find inspiration for your members. Here is a list from the staff of Maker Faire for places to look for Makers. You can use it to brainstorm possible sources for Makers in your community who might come to your clubs as special guests or mentors. Or you might take your club on a field trip to visit a studio or shop run by one of these Makers.

Arts: Art Cars, Art Museums, Blacksmithing, Burning Man, Comic Groups, Filmmaking, Fiber Artists, Fire Arts, Holographic Groups, Kinetic Art Groups, Local Chapters of AIA and AIGA, LEGO Users Groups, Metal Arts, Neon Art, Painting, Photography Groups, Pinball Groups, Recycled Arts, Steampunk, Yo-yo Clubs

Crafts: Bazaar Bizarre, Bobbin Lace Makers Guild, Bookmaking and Bookbinding, Cardmaking, Ceramics & Pottery, Clothing Design, Craftster, Crocheting, Dollmaking, Embroidery (groups, associations), Etsy, Felting, Fiber Arts Groups, Folk Art, Glass Blowers, Jewelrymaking, Journalmaking, Knitting, Lacemaking, Modelmaking, Moldmaking, Mosaics, Museums of Craft and Folk Arts, Open Source Embroidery , Origami, Painting, Quilters, Renegade Crafts Fair, Scrapbooking, Sewing, Silkscreening Groups, Smart Materials, Soapmaking, Swap-O-Rama-Rama, The National Needle Arts (TNNA), Wax Sculptures, Weavers and Spinners, Woodworking

Engineering: 3D Printers, Amateur Aviation Groups, Amateur Radio Groups, Amateur Rocketry Groups, American Engineering Association, Arduino Groups, ArtBot Groups, ASME, BEST Robotics, Bicycle Groups, Car Repair Groups, Catapult Groups, Circuit Bending, CNC Groups, Combot Robots, Computer Modders, Computer User Groups, DIY Drones, DIY Energy, DIY Radio Groups, Dorkbot, Electric Cars, Engineers Without Borders, Fab Labs, FIRST Robotics, Hackers Groups, HAM Radio Operators, IEEE, Insect Bots, Intel Computer Clubhouse Network, LED Art, MIDI User Groups, Model Railroad Clubs, Odyssey of the Mind, R/C Model Clubs, Repair Groups, Rube Goldberg Groups, Soapbox Derby, Solar Cars, TechShop, Underwater Robotics, WALL-E Builders, Women In Engineering Groups

Food/Sustainability: Audubon & Bird Groups, Beekeeping, Beer Brewing, Cakemaking, Cheesemaking, Chocolate-making, Citizen Science, Composting, Cooking Classes, Culinary Programs, Edible Schoolyards, Edible Communities, Farmers' Markets, Homegrown.org, Local Foragers, Master Gardeners, Molecular Gastronomy, Mycology, Permaculture, Preserving, Seed Saver Libraries, Slow Food, Vegetarian Groups, Winemaking, Urban Roots

Green: Calcars.org, Co-Housing, Community Bike Groups, Composting, Eco Modding, Fix Your Bike Groups, Green Arts Groups, Green Cleaning, Hybrid Car Groups, Recycling Groups, Solar Groups, Solar Ovens, Treehugger, Water Groups, Wind Power

Science: Adult Education/Community Colleges, Astronomy Clubs, Chemistry, DIY Biology, DIY Energy, DIY Forensics, DIY Science, Kitemaking and Flying, Paper Airplane Making, Robots, Rocketry Groups, Science and Technology Centers, Science Workshops, Space Exploration, Teachers Resource/Support Groups, Telescope Makers, Tesla Coils, University Programs, Zoology Groups

Music: Circuit Bending, Dance Troupes, Electronic Music/Theremin, Instrument Hacking, Instrument Making, Jug Bands, Marching Band, Taiko Drummers, Theater Groups

Play: Board Games, Chess Groups, Computer Gaming, Halloween, Hula Hoops, Juggling, Star Wars Clubs

Chapter 3 **Shops**

Maker Clubs all need a space to work together and review their projects. It can be the same place or two different places. Whether it's a kitchen table or a Fab Lab, we use the term "shop" for the place you make things. A shop can be a living room or garage, or it can be a community center. Making can happen anywhere, but if you put some extra effort into finding or creating the right kind of space or spaces to meet and work, it can make a real difference in how enthusiastic your club's members are about participating and creating.

We are currently developing a Playbook for the design of hackerspaces and Makerspaces in general, for Makers of all ages. We also recommend you take a look at the Make: magazine special issue, the 2011 Ultimate Workshop and Tool Guide for suggestions, checklists, and images of gadgets, tools, workspaces, and more.

Designing creative environments

Ideally, the space where your club works should be conducive to inspiration, collaboration, and conversation. Make sure the tools and materials you have on hand give your members the nudge to make projects in any or all of the content areas of a typical Maker Faire: arts, craft, engineering, food, green design, music, science, technology. So if you found a great woodshop to use, find an area within it that is more isolated from the sawdust to set up a soldering station or a sewing machine, for example.

Make a wide variety of materials available, but also visible and easy-to-find. You might use clear or mesh containers that members can scan visually when they're looking for something specific or letting their imagination wander as they have Maker's Block. Keep something like an "idea rummage box" in the space, where members can throw in cool clippings and clever objects they think could inspire others. Choose well-placed shelves and wall space for showcasing examples of past projects and current activities to seed ideas and inspiration.

Allow for groups to be able to work together easily with large surfaces when possible, but also design the layout to provide adequate isolation to kids who want to work on their own until they are ready to share. On the other hand, locate the

workspaces close enough to one another so that ideas can “cross-pollinate” from one Maker to another.

Finding a shop and a shop host

Just about any space can turn into a small fabrication facility. We expect that many shops will consist of little more than a few tools in a garage, while others may be more advanced. It is surprising how much can be done with limited shop facilities, so don’t let finding the “right” shop deter you from getting your club going. If you already have a shop in your own garage, or have access to a shop at work, you've got a great head start. If you don't have access to a shop, consider asking a neighbor or co-worker that might have one.

The shop, or the place you make things, is overseen by a special kind of Mentor we call a "Shop Host." That adult might also be your Club Manager or another volunteer helping the program. The shop host has access to shop facilities and knows about the usage and safety of tools in the shop. They should have the same skills outlined in the section on Mentoring, as their interactions with the Young Makers will likely have a profound effect on the kids’ confidence as Makers and continued interest in making.

Some possible requirements you may want to keep in mind when you are looking for a space.

- Soldering stations should have sufficient ventilation or be outside.
- Messy projects need easy-to-clean environments.
- Internet access will allow your members consult expertise online while they work. They might consult static pages or interactive chats. They might even want to Skype with a remote expert Maker.
- Projects and machinery with sensitive electronics need to be protected from moisture and sawdust.
- Some projects may require outdoor space with pavement, no overhead foliage and lots of room to test fire.
- Some projects need relative quiet, others are so noisy that they need to be acoustically isolated.
- Some special maker exhibits featuring electricity could ask for 220 volts or even three-phase power.

HINT: volts x amps = watts. In the U.S., most power is 110 volts (though electric dryers typically need 220 volts). An average household circuit is 15 or 20 amps. Most consumer electronic devices have a little label on them that will tell you how many watts or amps they draw. If you know two of these three numbers in this equation, you can figure out the third. For example: if you have a stage light that is using a 500 watt bulb, and you know you are on 110 volt power or circuit, you can plug those into that equation and know that light will need about 4.5 amps. And if that light is on a 20 amp circuit, you can only add 3 more of those same lamps before you risk tripping that circuit breaker.

Partnering for Space

Consider partnering with community-based organizations to find space and a community to support it. An existing organization may bring valuable infrastructure that helps your club in the following areas:

- visibility: promotion / marketing
- financial: payment processing, receiving money from grants, fiscal sponsorship
- people: potential mentors and other volunteers
- access to existing relationships in the community

Some ideas for potential partners:

- Nationally organized groups with local chapters (e.g. 4-H, FIRST Robotics, Girl Scouts, Boy Scouts, Boys & Girls Clubs, YMCA and YWCA, Intel Computer Clubhouse)
- Schools: public, private, charter, or homeschooling collectivesespecially certain tracks or departments in engineering, art, science, crafts) — consider from pre-K to college
- Community art centers and art collectives
- Libraries, museums, and science centers
- Master gardening programs, beekeeper clubs, urban greening groups
- LEGO user groups
- Hacker meetups and hackerspaces

Many communities now have hackerspaces, and many of these are more than happy to open their doors to special interest groups who’d like to join their collective. The site hackerspaces.org maintains a list of all hackerspaces, and as of Fall 2011 over 500 were listed worldwide, with about one-third of them in the United States.

Tools, Equipment, and Materials

Once you have a space where you can work, you'll want to outfit it with the tools, equipment, and materials your Young Makers need in order to accomplish their projects. But before you go on a shopping spree and max out your credit card, assess what your club will actually require. You don't necessarily need a fully equipped shop. In fact, sometimes an empty counter might be more valuable than a fancy new machine. You may be surprised at how many projects can be completed with a few hand tools, along with some simple power tools such as an electric drill, jig saw, and circular saw. For engineering-oriented projects, an appropriate shop would be a traditional woodshop or metal fabrication facility. However, for more craft-oriented projects, a shop could consist of large tables, adequate light, a sewing machine, a quilt frame, and so forth.

Club managers have taken a few different approaches to equipping their shops:

- **Find an advocate with a wallet.** Sometimes, you can stock a shop using funding from a foundation or a local corporation who shares your vision for a new kind of shop facility for kids. See the Resources section for a sample proposal and budget to submit to a funder.
- **Beg and borrow.** Do a tool drive in your community. Your neighbors may have some of the tools you need and be happy to share these with a new generation of Makers. You may also be able to find Makers or other clubs that are near enough to you that they'd be willing to loan you a hard-to-find tool for a single use. And don't forget to check to see if your community happens to have a "tool library", where you can check out tools the way you can check out books.
- **Buy used.** Tools, especially power tools, have very long lifetimes, so buying used expensive tools can save you 50% or more on cost with little or no loss of functionality or quality. Keep your eyes open on sites like Craigslist for hobbyists' estate sales and fabricators who are liquidating their shops.
  And this is an environmentally friendly approach. (Reduce, reuse, recycle, right?)
- **Lure kids in with the latest and greatest.** Sometimes, having just one hot new machine to give your students a glimpse of a fab-friendly future world can open their minds to new possibilities in their projects. They may not know what to make on a MakerBot, but the experience of using one may transform their thinking.
- **Just-in-time purchasing**. You don't have to have a fully equipped shop to get started. It can be very effective to wait to purchase a new tool only when a project comes along to need it.
- **Wait for critical mass, and for prices to come down.** There's nothing more lonely than a $3000 machine collecting dust, while its more powerful, smaller, cheaper cousins roll off the manufacturing floors. If a project "needs" to use a laser-cutter, you might find that it's more economical to rent time on one or send your digital files out to a service which can create the part for you. Once there's momentum and you see that your members really can't create their projects without that tool or machine, you have some great anecdotes and visuals to support your claim that you need it as you fund-raise to buy one.

Safety and Training

No matter how you equip your shop, it's likely that if you are doing anything interesting with your members there are some risks involved. Be sure to emphasize safety to the members of your Maker Club. Learning how to use a tool isn't all that helpful unless you also learn all the risks and precautions you have to take in order to come out of your project build with all your eyes, ears, fingers, and limbs intact. It's a fine line, though, between informing kids about the potential dangers and scaring them from ever using any interesting tools! While accidents happen when the proper steps aren't taken, many millions, perhaps billions, of people make with dangerous equipment every day without incident.

People need to concentrate when trying new tools, especially ones that can injure. Make sure there is enough real estate to use a tool safely. Use the lower heat glue guns when possible, and make sure there's cool running water nearby for burns. Enforce eye protection while members solder. Keep Band-Aids and a full first aid kit nearby.

William Gurstelle wrote a piece called "The Safe Workshop: Rules to make by" for our 2011 Ultimate Workshop and Tool Guide, and we're including this text below and the PDF of the original article in the Resources section.

> Your workshop should be a welcoming and friendly place. The key lies in creating a safe and secure environment. Before embarking on a new project, it's a good idea to take a close look at the working conditions in your shop. If your project area gives you a vaguely nervous feeling, now's the time to bring things up to date. Don't delay: inspect, review, and evaluate your space and make whatever changes seem necessary to keep you out of trouble.
> Don't know where to start? Here are some ideas from the members of MAKE's Technical Advisory Board to get you started. Have at it!
> • Obtain a pair of well-fitting, cool polycarb goggles, leather work gloves, and a protective lab coat. Make them

attractive and stylish so that wearing safety equipment is fun.

- Pull back long hair.
- Secure your work when using hand or power tools. Always use clamps, not your hands, to hold a work piece on a drill press table. If the tool binds, the work will spin dangerously.
- Aim away from yourself. When cutting with a utility knife, position yourself so that when you slip, the blade doesn't land in your flesh.
- Avoid using a table saw when you can. Statistically, it's easily the most dangerous piece of equipment in the shop.
- Don't touch a bare wire, or cut any wire, until you're sure where the other end goes. When in doubt, measure the potential. This will save you from a possible heart-stopping electrical shock.
- Always keep a first aid kit in your workshop, and always know where it is. First aid kits can be purchased ready-made, or you can put one together yourself. Essential items include bandages, pads, gauze, scissors, tweezers, and tape.
- If you work with heavy things — say, timbers or angle iron — or are prone to dropping tools, steel-toed safety shoes are a great investment in long-term foot appearance.
- Install a smoke detector in your shop and place a fire extinguisher in an easy-to-reach spot. Make sure the extinguisher is rated for all types of fires.
- Wear a particle mask when appropriate to avoid breathing dust and other particulate pollutants common in workshops. Sawdust from treated wood and some plastics have known health risks.
- The high-decibel noise generated by power tools such as table saws and circular saws can damage your hearing. Protect your ears by using full-sized, earmuff-style protectors.
- Wait 12 hours between sketching the plans and starting the construction process. The times people get hurt are usually when they're excited and in a hurry. Slow down, and work deliberately.

Consider creating a "Maker mantra" that covers potential risks in your shop, that your club can chant as you get started with each build session. Perhaps something like:

Protect. Double-check. Aim away.
Clamp it. Focus. Never play.

At Maker Faire, safety plans are necessary for any projects that would display, operate, or use anything that could harm another person. Whether or not your showcase event will require a written Safety Plan, creating one is a wise habit to establish among Young Makers. We have more about safety plans in the section on "During the Season." Take a look at the Safety Plan guidelines as they could also affect how you equip your shop for projects that verge on the dangerous.

Chapter 4 Mentoring

Mentors are adults who are interested in working with youth and who may be experienced in one or more forms of making. Mentors answer technical questions, address supply issues, pass on their knowledge of tool usage and safety, and help manage realistic project-build schedules. Along the way, mentors might exploit “teachable moments” to explain underlying math, science, and engineering concepts.

The role of a Young Maker mentor is to help one or more project teams find a ***project vision*** if they don't already have one, and then to help them realize that vision for ***exhibition*** at Maker Faire. Along the way, we encourage mentors to exploit the ***teachable moments*** that naturally occur during making to expose the underlying math, science, and engineering principles involved. But they aren’t teachers so much as guides. We also expect mentors to pass on their knowledge of proper ***tool usage and safety***. Finally, an important role for mentors is to demonstrate to Young Makers the importance of ***failure as a means to success***. That is, to expect and embrace failure as a normal part of the making process.

It is difficult to be a good mentor. No matter what our age, we appreciate mentors whose facilitation is welcoming and intended to spark interest, provide focus for our attention as needed, strengthen our individual understanding and clarify our intentions through reflective conversation. You can learn more about facilitation on the Exploratorium’s Tinkering Studio website: tinkering.exploratorium.edu

The Intel Computer Clubhouse has invited mentors to support the creative projects of young people since 1995. They define the role as a “balancing act [of] being aware of the complexity of your role as both a knowledgeable guide and a friendly partner.... Although mentors wear many different hats, the primary goal of a mentor is to guide and support—rather than direct or teach.” In Clubhouses, much like in a Maker Club, a mentor could be an observer, guide, resource, role model, active participant, catalyst, or friend. For more of the Clubhouse’s Tips for Mentors, see the Resources.

While there is no simple recipe for how to mentor, you will be most effective if you think like a Maker: stay curious,

interested, respectful. Focus on their interests, not yours, but share what you love to do so that they can see that you are passionate about Making too. Try not to lecture, but instead ask questions and model habits of mind that will help your Young Makers discover answers on their own (even if this takes longer than just answering their questions or doing the work for them in the end!) Encourage the Young Makers to support one another and help each other with the problems they face. Build community within your club. Be ready to learn from the kids.

We have gleaned a number of tips from effective mentors who have participated in the Young Makers program.

Mentor Tip #1: Help define scope
Give the participants free range in choosing their project and then help them narrow the scope through planning and experimentation. Part of the Maker's process is dealing with the realities of time and budget as well as developing new skill sets, and it's more fun to watch the kids think through their goals than to give them "assignments". For example, if a Young Maker says they want to build a spaceship, definitely encourage them (and agree how cool that would be), but then ask some probing questions about what part of the experience they're most interested in so you can adapt the project accordingly. If they want to physically crawl into a box and perhaps feel a sensation of weightlessness, then maybe we'd start a discussion about constructing an isolation/flotation tank. If they are more interested in propulsion, then maybe a scale model rocket might be an appropriate starter project. Interested in the view looking back down onto the earth? Start an exploration about the possibility of a remote camera attached to a balloon. Encourage the kids' wild ideas, but then engage them in thinking about where you might find the construction parts, and whether they would need to be purchased or could be salvaged or recycled. This kind of discussion will lead the Young Makers to their own realizations about what might be practical but still allow them to fully define their own project goals.

Mentor Tip #2: Help define schedules
Unrealistic expectations about time-budgeting for projects happens all the time with Makers young and old. In this program, building the projects usually happens outside of group meeting time. Individual projects will mostly be developed by the Young Makers during evenings at home or on weekends in a collaborative workshop setting with available mentors. This may be a scheduling challenge for kids with a lot of extracurricular activities like team sports, music lessons, etc. but the kids get out what they put in over the duration of the program. For Young Makers who won't see their mentor(s) on a more frequent basis, weekly phone chats or Skype check-ins might be useful for trying to build momentum early on so (hopefully) all the work doesn't fall onto the last weekend before Maker Faire. (And this help with project management can come from club managers and parent volunteers, perhaps more so than the Mentor. But when all is said and done, this is the final responsibility of the Young Maker!)

Mentor Tip #3: Nurture notetaking
Encourage your Young Maker(s) to keep a notebook for jotting down their ideas. Paper is low-tech and affordable by all. Graph paper is a useful tool for discussions of physical scale: OK, you want to build that... say one square represents six inches... draw how big you imagine it. (Or one square represents one decimeter... let's talk about the potential benefits of metric units.) Ideally, the notebook would have rings or a pocket for inserts, pages printed from a computer, etc. A notebook is also a useful tool for keeping track of tangential ideas that can't be explored right away for the current project, but may be good fodder for next year.

Mentor Tip #4: Embrace failure, and keep it safe
Let the kids fail, while monitoring their safety. Occasional failure, and the accompanying recovery and adaptation, are an important part of the learning process. If you think you see something faulty, point it out (in advance if possible), but try to avoid insisting things be done a certain way unless safety is an issue. You'll be surprised how many different paths lead to the same goal, or what new ideas are developed by accident.

Mentor Tip #5: Avoid empty praise
Compliment the way that kids try different things at least as much as you heap praise on the results: that is, something like “I admire how you worked through that hard problem. I noticed how you tried [x], [y], and [z] and you stuck with it until you figured it out.” is an effective way to foster confident learners, perhaps more than a thousand “Good job!” comments.

Mentor Tip #6: Use your down-time well
Your services may not be required every moment that you are working with your Young Maker. It’s OK to feel

superfluous sometimes — hopefully that means the kids are perfectly engaged with their work. You can sit back and watch for opportunities to point out something interesting (those teachable moments), or you can work on your own project alongside the Young Makers, either making something or picking up a new skill. (Just be sure you seem open to interruption!) The Young Makers might learn something by seeing you plan out your project, muddle through a problem, or struggle with a new tool. You can also use this time to get to know your club members better by just chatting about things that might not have anything to do with Making.

Chapter 5 **Getting Started**

Before or as the season begins, you will have many details to arrange in order to make your own Maker Club. We have people trying all kinds of models for Maker Clubs. There are some who are even creating regional hubs. Maker Clubs generally consist of five to ten young people ages 12 to 18 organized into project teams of one or more Young Makers. Some clubs are larger, and some have younger kids. Some Young Makers may choose to work alone within the group, others may choose to work together. And sometimes the entire club works on one big project.

Each project team will have one or more experienced mentors who are chiefly responsible to help the team realize its vision for a project to be exhibited at Maker Faire. Each club should have a designated club manager who recruits Young Makers, mentors, and one or more shop hosts. We've run the program for about four months leading up to Maker Faire Bay Area, and we think of that as a good length of time for a "season."

No matter what your club looks like, we've put together a sample timeline of the kinds of things you can do before, during, and after a season of Maker Faire, and we share this task list over the next three chapters.

Find a Club to join (or to learn from)

Check to see if there is a Young Makers affiliate near you. If it's an "open" club that fits your needs, you can ask to join them and save the trouble of creating a new organization. Or you can learn from them and start your own club.

> *HINT: If you discover that there are a lot of clubs or lots of interest near you, find out if there's a regional hub in your area. This playbook was written with the assumption that your club is the first of its kind within an hour or so of where you are. If there's a regional hub, some of the tasks—like hosting plussing sessions, hosting hands-on workshops, connecting with local expert Makers, and adding inspirational interactions with Makers to your members' experience—can be shared with a local network organized around a regional hub.*

You may also consider starting the club within the context of an existing community-based organization or school. An existing organization may bring valuable infrastructure that helps your club in the following areas:

- visibility: promotion / marketing
- financial: payment processing, receiving money from grants, fiscal sponsorship
- people: potential mentors and other volunteers
- access to existing relationships in the community

We encourage you to consider starting your club as a program within one of these existing organizations, if you feel you need the extra support that you would get from such an affiliation.

- Nationally organized groups with local chapters (e.g. 4-H, FIRST Robotics, Girl Scouts, Boy Scouts, Boys & Girls Clubs, YMCA and YWCA, Intel Computer Clubhouse)
- Schools: public, private, charter, or homeschooling collectivesespecially certain tracks or departments in engineering, art, science, crafts) — consider from pre-K to college
- Community art centers and art collectives
- Libraries, museums, and science centers
- Master gardening programs, beekeeper clubs, urban greening groups
- LEGO user groups
- Hacker meetups and hackerspaces

Identify a Club Manager

The club manager is an adult responsible for the creation and management of a Young Maker club. Since you've taken the initiative and started reading this Playbook, this person may be you! While we respect those who would like to share duties with others, we ask that one adult serve as the point of contact, organizing the club and keeping us abreast of the status of the club and the progress on projects (so if you are a Young Maker starting a club, this is the time to get an adult to do the not-so-fun organizational stuff.)

Responsibilities of the club manager include:

- Recruiting Young Makers, adult mentors, and shop hosts.
- Assigning mentors to project teams.
- Scheduling group build sessions. The number and duration of group build sessions varies considerably depending on the size and scope of the projects hosted by the club. Build sessions typically occur on Saturdays between the second plussing session and the big event, with increasing frequency in the final run up to exhibition.
- Arranging for transportation to regional meetings.

Get listed

Join the Young Makers program network of Maker Clubs by adding your club to our list of affiliates. The network is growing around the country and the world. More people are going to want to find you and learn what you did and how you did it! Our website, youngmakers.org, will list your Maker Club in a section called "Affiliated Clubs" if you fill out the form for us there. Please write to contact@youngmakers.org if you don't see your club on this page.

Get connected

Join the Young Makers email list to hear announcements that are relevant to everyone in the network. Although the list currently posts announcements only, we will be rolling out discussion groups later, which you can opt to join.

The purpose of the Maker Club Managers' Google Group is to help each other, to generate discussion, and to share resources and ideas. If you haven't yet been added to our Google discussion group for Maker Club managers and would like to be, please write contact@youngmakers.org and request to be added. We are working on developing more resources for our Maker Club partners, including webinars and conference call trainings.

MAKE Magazine, Maker Faire, and the Young Makers program team are thrilled about the Maker Club movement, and we are willing and able to help you promote your club and its projects through our media channels. If you have news to share, be in touch! Please write to contact@youngmakers.org with news to share.

Determine the Size of Your Club

You may have a few kids ready to sign up for your club. But if it's just you and a kid or two, you don't have a club yet! But how big should it be? Too few members can lead to a lack of energy, dropping the club below "critical mass". Too many members can be difficult—and potentially dangerous in a shop environment—to manage. *The most important thing is to pick a size that is most comfortable for you*. You may want to start off small in your first year to test things out. You need at least a few kids to get the kind of interactions we imagine in all clubs to happen in your local affiliate too.

The largest club we've seen so far were the twenty students in Aaron Vanderwerff's class at Lighthouse Charter School in Oakland. They brought a dozen projects to Maker Faire Bay Area 2011. On the other hand, other clubs are just a couple of families getting together every once in a while.

Find Young Makers

Young Makers are youth who are passionate about hands-on activities. While each club sets its own age range, we think the model works best with youth ages 12 to 18, and that the members within a single club should all be within a few years of one another in age. There are clubs with younger members, and we're interested to hear your experiences working with younger kids if you do.

Young Makers must be willing to:

- Work on a project for exhibition at Maker Faire.
- Meet regularly with a mentor for design and build time. The amount of time needed varies considerably depending on the project vision.
- Give other Young Makers working on other projects feedback and help make their projects the best they can be, in a positive, creative, dynamic spirit.
- Attend monthly meetings.

If you're short on kids to participate, consider basing a club at a local after-school program, a scout troop, or a church. These organizations have a pool of kids attached to them. We share this list earlier in this chapter and in the chapter on shops. These are the kinds of organizations in which other clubs have started, or which we recognize as sharing in their mission.

- Nationally organized groups with local chapters (e.g. 4-H, FIRST Robotics, Girl Scouts, Boy Scouts, Boys & Girls Clubs, YMCA and YWCA, Intel Computer Clubhouse)
- Schools: public, private, charter, or homeschooling collectives (especially certain tracks or departments in engineering, art, science, crafts) — consider from pre-K to college
- Community art centers and art collectives
- Libraries, museums, and science centers
- Master gardening programs, beekeeper clubs, urban greening groups
- LEGO user groups
- Hacker meetups and hackerspaces

In recruiting participants for the pilot in Spring 2010, we relied on our personal networks and some announcements through the partners (on the Makezine blog, an email blast to TechShop's mailing list, and a mention in the Exploratorium's member newsletter.) We reached out to friends that we thought might be interested in participating, and at work we found interest groups of parents and Makers that turned out to supply a number of participants.

We found it helpful to ask every applicant to the program to write a short paragraph about why they wanted to be in the program, what kinds of things they made, or what they'd like to make. Sometimes this helps you sniff out which kids have been signed up for the program by a parent, rather than on their own initiative.

Find a shop and recruit a shop host

Shop hosts are adults with access to fabrication facilities who are willing and able to make their shops available to members of a Young Maker club. You can read more about shops and shop hosts in the chapter on Shops for Maker Clubs.

Shop hosts must be willing to:

- Provide access to their workshops on a regular basis; typically three to four hours on selected Saturdays over the course of the season, with the frequency of access increasing in the run up to Maker Faire.
- Work with project groups to help them achieve their project visions.
- Help project teams to acquire skills with tools, tool safety, and other aspects of hands-on fabrication.

Recruit Mentors

You will probably want to find different kinds of mentors. There are those whose curiosity, sense of adventure, project management skills, and positive attitude can help carry young people through the difficulties of a project toward a successful completion (or at least a valiant effort!) Then there are those who have extensive skills in lots of kinds of making, or a deep expertise in one kind of making. Sometimes you can find both modes of mentoring in the same person. You probably need the first kind of Mentor as you start the club, and you'll probably need to match the Young Makers with the expert-at-making Mentors as they progress in their projects.

If you're an experienced Maker and have lots of Maker friends, you already have a source of mentors. Other places to look for mentors are neighbors who are handy with tools. Don't forget to think about retired men and women who might be looking for ways to give back to the community, and they often have significant hands-on experience. If you're having trouble finding mentors, let us know. We may be able to help.

Mentors must be willing to:

- Work with one or more Young Makers project groups to develop projects for exhibition at Maker Faire.
- Give any Young Makers working on any project feedback and help make their projects the best they can be, in a positive, creative, dynamic spirit.
- Exploit the “teachable moments” that naturally occur during making to expose underlying math, science, and engineering concepts in an inspiring and engaging manner.
- Attend monthly meetings.

By the way, parents of Young Makers provide invaluable help! Parents should be encouraged to participate, as mentors, club managers, or shop hosts, or as general volunteers willing to support the club in whatever ways are necessary.

For more information, see our chapter on Mentoring.

Spread the idea

You may have enough members and mentors before you start, but if you are having a hard time recruiting, it’s a good idea gather support by identifying partners and engaging the community as you kick off your season. As we’ve built support in the Bay Area, we’ve shared news of Young Makers and the Maker movement with schools, colleges, preschools, local businesses, the human resources departments of larger companies with local branches, youth centers, libraries, museums, art centers, and so on. Really, anywhere that people experience community in your community is a place where a club might grow.

You can get the word out by having a visible presence at community events. In this way you can diversify your member pool with people you don’t know personally. For instance, one year, we reached out to girls through a gathering organized by Exploring Your Horizons, an educational non-profit that aims to nurture girls' interest in science and math. When you work a table, we recommend having a simple banner to hang, postcards and printed materials to distribute, sign-up sheets for volunteers and members, and a simple activity or object. An activity or object demonstrates what the club is all about, while also giving shy or curious passersby an excuse to come up and interact with you. For example, we often help people put together LED throwies at events. If you don’t have the energy to “table” an event like this, you can attach posters to poles and business windows just before a fair or other community event you think would attract the kinds of members or mentors you’re seeking.

A slide presentation can convey in an organized and compelling way what the Maker movement is and explain (in pictures!) what a Maker Faire and a Maker Club are. We’ve put together a <<link>>template presentation, and you are welcome to customize and re-use whatever is helpful.

Set up a website and/or a blog

We strongly urge all clubs to create a website. We also encourage every project team within a club to maintain a blog to track their project's progress.

A website is a great tool to use to connect to your club members, as well as connecting to other clubs, and the greater community of Young Maker supporters that we're trying to build. You can use it to document projects made by your club, to recruit new members, and to maintain a schedule of build sessions. Building a website has gotten easier, but it's still not "turn-key."

Feel free to use whatever tools and platforms you're already familiar with. Unless you have an individual in your leadership team who is an expert and is committed to owning the development of a custom website (no small feat), we recommend you utilize a building and hosting application such as Wordpress or Google sites:

- Wordpress.com. Basic Wordpress is free (though you can pay a little for some customization), and has a good tutorial on how to build a blog or website using their templates and servers. It offers over 100 templates (designs) to choose from, clear analytics (usage data on your site), and an easy-to-use management interface.
- Google sites is another easy-to-use, free service (our original Young Makers web site was hosted there). When your site is created, contact us to let us know the address. We'll link to it in your blurb on the Affiliated Clubs page. A simple bare bones example of a site is the one for the Central Marin Young Makers Club.

If you'd like to register your domain name (URL), GoDaddy.com offers an inexpensive domain purchasing and registration site (but don't purchase their hosting). Or you can also do it all at Wordpress: registration, site building tool, and free hosting. Then, if you are using Wordpress, map your domain to your site. Wordpress names your site within their own domain (such as, "youngmakers.wordpress.com").

Your site should probably include a home page, an "About Us" page with your club's back-story and text about Young Makers, Maker Faire, Make Magazine, and O'Reilly Media (see the Resources section for the wording.) Set up a page to show off the Young Makers' projects, too, where you can capture images of their projects in progress, or, better yet, link to the teams' project pages. Plan to archive your project page each year and keep it on the site as a scrapbook as you continue from season to season.

HINT: Be sure to add plenty of tags with phrases and words related to Maker culture (science, engineering, DIY, do it yourself, art, kinetic sculpture, hands-on, progressive education, young makers, maker faire, make…) These tags help Google find your website.

If your members have a social network where they are all hanging out, try to carve out a space there for online discussions about their projects with one another. Or if you find an online tool that works for them and generates a lot of discussion, we'd like to hear about it!

Come up with an identity

One advantage of a club is the opportunity to create a shared identity. Such things as adopting a mascot, designing a logo, having T-shirts made, having a website, and picking a fun name can all help to create a sense of shared purpose and belonging. You'll probably want to pick an identity with member input, but don't spend too much valuable meeting time word-smithing your group's name. Then, in true Young Maker spirit, ask one of your Young Makers to create the logo, and perhaps even manage the website. Some project teams may want to create a T-shirt to wear when they exhibit or present their project.

Find money to fund your club and its projects

Your club may not need much of a budget to operate, if you have a space you can use for free, tools to borrow, and materials found or donated. For many neighborhood-based clubs, or ones with lots of parental involvement, many of the projects are self-funded. But if your club takes place at a school without as much family support, or if you simply do not have this all in place, you may need to research community or family foundation grants to fill in the gap. It's possible there could be city or other government agency grants available to get your club what it needs. Sometimes you can find

the funding with a “planning grant.” If you are partnering with a non-profit, get advice from the fundraising staff who may be able to suggest the right foundations to approach. Ask around.

Online tools like Kickstarter.com and Indiegogo.com might help you conduct pointed fundraising campaigns towards a specific goal. There are many sites like this – search on “crowdfunding” for more suggestions. While it’s not a club, we know that the Rhode Island Mini Maker Faire used this tactic to launch a Maker Faire. Maybe it could work for a club too.

You could invite business sponsors to donate and back up the expenses of your club, just as local sports teams have support from their community businesses. In general, Maker demographics are a desirable audience for businesses (techies and smart families). Remember that the earlier you establish it, the more valuable the sponsorship would be to the business, so don’t procrastinate.

Be flexible—you may have to “wheel and deal” a bit to secure sponsors. To get funding, you would identify potential sponsors and devote time and energy approaching them, following up, and then—when they sign on—representing them on your website and other materials. But keep in mind you may not be able to feature their logo too prominently at Maker Faire itself. Check in with your event staff before making any promises to potential funders.

Set a deadline and meeting dates

Locate a Maker Faire or Mini Maker Faire near you that you think is timed well for exhibiting the club’s finished project. If you don't have a Maker Faire near enough to where you are, **you can make a Maker Faire**.

As for meetings, you may set the meeting dates before the club begins so you can announce the dates at the first meeting or a kickoff, or you might choose to wait to get a sense of the schedules of your members. Whatever you choose to do, set the meetings to be regular: monthly or every other week. Include time for “plussing sessions,” round robins where the project teams share their progress, make connections with other teams facing similar challenges, and get feedback and tips.

Meet as often as you need to in order to make, but don’t have “meetings” too often. Too many are burdensome for busy and self-directed Young Makers and their families; sometimes there is a finite amount of time available and a meeting might take up precious time otherwise spent on actually getting something accomplished on the project.

Young people today and their families can have schedules busier than a senator’s, so it’s helpful to announce meetings well ahead of time so you can get on the family calendar. Regular meetups serve as important milestones along the road to your deadline and also provide some structure and motivation along the way to ensure that a project can be finished in time for the showcase event you choose as a deadline. They are also an opportunity to introduce those lightweight “rituals” that make belonging to a club more fun. They are good for building community, socializing new members, and boosting morale.

Get your Maker Club Starter Kit

We want to offer our Maker Club partners a few Maker Media items to use in promoting the club and a sense of belonging once you have members. The Maker Club starter kit support package is yours for the asking. It includes a promo code for a gift subscription to MAKE Magazine, MAKE t-shirts, and Maker Notebooks. Maker Shed is working on developing some promotional products and ways to partner with Maker Clubs; stay tuned to the Managers group for more information.

Mull over insurance and legal questions

This is an area for which questions come up a lot in the Young Makers community, but, honestly, we haven’t resolved it to our satisfaction yet. It’s probably true that, ideally, you would have some kind of liability insurance for your club in case something happens. If you operate the club out of your home, you can call your current insurance company and ask them if you are covered for the club. Some club managers have found that to be the case, others have not.

You can articulate your intent to run a safe club via waivers. However, at least in the United States, waivers are notoriously *not* a full protection against lawsuits. You can add language, however, to educate your participants, and remind them to be mindful and to act responsibly. We have some example waiver language in Resources.

Chapter 6 **During the Season**

While anyone can create and exhibit at Maker Faire, we feel that one of the strengths of the Young Makers program is having a beginning, middle, and end to the experience that you share with others. Adding a bit of “ritual” to your club season will pay off in more enthusiasm from your members and in continued participation from year to year. So consider how you can start the season off with a bang, how to celebrate its end, and what you can do for the regular meetings that connect one end of the season to the other to provide continuity and excitement to your time together.

The following task list assumes a four- to five-month timeline.

Kick it off

Your first monthly meeting might be the same as your kickoff, or you may choose to have separate events. It may depend on how familiar your members are with Maker culture. If they are less familiar, you may want to set aside a lot of the first meeting to introduce them to this refreshing way of thinking with a dazzling presentation and even more time Making, of course.

In the past, at the first regional meeting of the season, we have started with some low-key initiations: very brief introductions, then a little bit of making, and we end the gathering by giving all the new Young Makers brand new Maker’s Notebooks where they can start jotting notes, making sketches and diagrams, and recording things they find inspiring. We also ask that the members sign an agreement that spells out the things they should expect of their experience and the commitments they’ve made. See the Resources section for a sample Participation Agreement.

You might also start your season with some ways to break the ice and also dig up helpful data. Here are some useful get-to-know-you games you might try:

- Ask kids to line themselves up according to a few different criteria. If they have a really firm idea of what they want to do, they can go to one end of the room. If they have no idea why they are even at this meeting, they go to the other side of the room. And depending on where they are on the spectrum of certainty, they can stand somewhere inbetween. Another criterion might be how experienced they consider themselves in "making" in general. And then you can have people sort themselves according to particular skills, too. "Who knows how to felt wool? Stand on one end of the room if you are a near-professional, and go to the other end if you've never even heard of it." And so on. Keep it light-hearted so that nobody risks feeling embarrassed by how little—or how much—they know about a topic.
- Since it's helpful to know who lives near you, especially if your members live far away from one another, you can use the room where you meet to sort members geographically (remind everyone where north, south, east, and west are, and ask them to create a map of where they've come from within the space of the room by moving themselves in relationship to others.) They may find that people who live near them also share some of their interests, and it'll be more likely that they can meet up to work on a project together if they want to create a team.
- We haven't tried this, but we've considered setting up mentors and members around the room in a "speed dating" format, where kids rotate and share what they are thinking of doing, and mentors share what they like to do, so that members can find mentors they want to work with and vice-versa. If you try it and it works for you, please let us know!

Some goals for the kickoff meeting:
1. Introduce everyone.
2. Distribute notebooks, or ask members to start them.
3. Get a sense of who is in the group, their skill level, and whether they have a project picked out.
4. Ask all participants to sign participation agreements.

Get ready for the first monthly meeting

You'll want to send out the meeting dates and two reminders before each meeting. Email is still an effective way of communicating—at least with the adults in your program. Just use email sparingly; write carefully crafted, succinct messages, and don't send them too often. See samples of emails we have sent during a season in the Resources section.

Each month, we prepared ourselves and the participants for meetings by doing the following:
1. Holding an optional, informal mentor meeting about halfway between meetings.
2. Sending a first reminder email 10 to 14 days before the meeting.
3. Sending a second reminder email two to three days before the meeting, including a summary of things to bring above the quoted text of the first reminder email.
4. Printing out maps and schedules for attendees to find their way to our Open Make workshops, plussing sessions, and Meet the Makers interviews (necessary in a large venue); these can also be posted online for those who can access the images with their data devices.
5. Getting a big white board or giant sticky note tablets or big sheets of paper available to take notes and post announcements.
6. Following up each meeting with an email update of any important announcements made at the meeting that goes out to the whole group, in case someone missed the meeting.

Start adding to your website or blog

Get into the habit of documenting what is happening in your club. Here are some basic types of website / blog content that your membership may appreciate and that aren't too demanding to produce:

- **About Maker Faire.** Stir emotions with your passion for Maker Faire. Tell everyone why you're in it, and who is in it with you. Introduce your audience to the Young Makers program, Maker Faire, Make, and O'Reilly Media. Please see Resources for the particular language you can use to describe all these entities.
- **Meet the Maker.** Publish interviews or profiles of individual Young Makers in your group. Show them off! Give them the attention they deserve. Check out makezine.com for **examples of maker interviews**.
- **Looking for a Mentor!** Describe the expertise that you are seeking, or ask a mentor to describe an experience from working with your members.

Hold the first monthly meeting

Just as recruiting winds down, regular meetings begin. Meetings help Makers keep up a pace that will get them to a finished product for the event where they'll showcase it.

Some goals for the first monthly meeting
1. Project teams form.
2. Idea generation begins or continues; give members tools for coming up with ideas.
3. Members who came to the club with an idea for a project already in mind can work with a mentor to generate a project plan.
4. Participants commit to the future schedule of meetings.
5. Encourage members to find a project vision and be prepared to share it next month.

In the first meeting, you may want to model a plussing session by inviting an adult Maker or previous club members to show off their projects. There are a few ways to run a plussing session. Member could share projects by setting up the room as a Mini Maker Faire where people mill about and see where the projects are. Or they can do presentations one at a time, like a show-and-tell. Both ways of interacting will prepare your members for exhibiting at Maker Faire. We write more about plussing sessions in the chapter on Making.

Choose big projects

Members should aspire to choose projects that are ambitious, yet attainable. Attainable means reining in the idea just enough to acknowledge what expertise the Young Makers have and hope to gain, as well as the expertise of their current or potential mentors. And, of course, attainability also means that the teams will need to keep an eye on budget.

Many great projects have been created with materials that have been scrounged, reclaimed, donated, and borrowed. If the materials aren't on-hand, part of the work of the Young Makers will be sourcing the materials and supplies they need. And if they don't have the money to pay for these out-of-pocket, like so many artists, engineers, and scientists, they may have to spend some of their project time writing to local and large businesses requesting discounts and donations.

Every once in a while clubs will work together all on one big project, like the **Water Totter**. In our experience, though, most clubs will have kids working on individual or team projects of their own design.

Speaking of large endeavors, don't forget that a project doesn't necessarily have to be an object. It can also be a performance or an experience created for others to enjoy, and these also require a great deal of logistical forethought and planning. (Learn more about project selection in the chapter on Making.)

Assign Mentors to projects.

A project team might consist of a single Young Maker who wants to work alone, or a group of Young Makers who have decided to benefit from one another's complementary talents. We feel that both models are fine as long as every project team has a Mentor clearly assigned to them.

As soon as the Young Makers have chosen their projects, they'll probably have questions—how to get started, how to finish before the deadline (that is, how to write a project plan), how to resolve a technical issue. Often clubs tap into their network of the parents and friends of families to serve as mentors for this kind of problem-solving. We find at this stage especially, the best mentors are curious, patient, and flexible, and they have the skills to find out how to do something.

Once you get past those initial questions, however, even with the best mentors you may need to find some specialized expertise. Mentors don't need to possess all the skills and knowledge that might be needed to complete a project —- they just need to be willing to try to find those who do, or to learn alongside the Young Maker. Or this can mean active outreach to identify and draw in talent from the community. That piece is a little bit like community organizing. At the end of the section on Making we list a number of community resources that may be a source for mentors.

For more on matching mentors and Young Makers, see also the Mentoring section.

Teach new skills

Don't get so caught up in the logistics of club life that you forget why you're doing this. Make some quick projects together all along the way, even if the project isn't directly related to any of the projects in your club. (It may help the teams think about their project in a new way!) Do something your Young Makers already enjoy doing, or take on a project that includes new talents the members want to add to their skill set. In the Bay Area, we've been introducing some new approaches and techniques during the **Open MAKE sessions at the Exploratorium** including both "Skill Swaps" in the Tinkering Studio on the museum floor, and a mini Maker Faire with five to ten Makers sharing their projects, often with a hands-on element. See the earlier section on "Making" to get a sense of the kinds of projects you can do in a short time frame.

Keep ideas fresh

Don't forget to expose members to new ideas, even if these don't have an obvious connection to the projects they are creating. During each Open MAKE session at the Exploratorium, we ended the day with Dale Dougherty interacting with a panel of three to six inspiring Makers. These presentations and discussions, called "Meet the Makers" are archived on the **Exploratorium** website. **Make magazine**, and the **Make blog** provide great reading and some video links, as do **TED talks** and Instructables. Encourage your members to go to lectures, events, and a variety of museum exhibitions, to talk to friends, to spend some downtime exploring the web and letting their imaginations roam.

Hold the second monthly meeting

By now, project teams have formed. Idea generation continues for some teams, while others will move into design and prototyping phases.

This meeting will see the first round-robin plussing sessions. At each meeting, Young Makers should bring physical evidence of progress they made each month, whether that's just things that relate to the projects (inspiring raw materials, similar projects, etc.) or sketches and prototypes. Be sure participants take photos as they work—and lots of notes too—so they can remember the important breakthroughs when it's time to tell the story of their projects. This month, members should not worry if they don't have anything to share. There will be time for that in the coming months. If they do have something to share, they should bring sketches or other visuals to help describe their ideas. If they have several ideas for a project and haven't yet decided upon one, they could consider briefly describing them all. If they have work in progress, by all means they should bring pictures, artifacts or other materials to talk over.

Some goals for the second monthly meeting:
1. Each team should be prepared to talk about their current project vision to other teams.
2. Each team brings sketches and "stuff" — materials, any beginning prototypes or making they've done —- to spread out on a table to discuss the project.
3. Teams fill in or bring a simple sign with the title of the project, the names of team members, and a one-sentence description of the project vision.
4. Start scheduling build times in the shop.

Work together, then work some more

Meetings set aside quality time for sharing progress on projects and getting helpful feedback, and unsticking those who are stuck, but in our experience they aren't a great time to get work done. For this, you'll need to plan time to work on the projects in your shop, and to help Young Makers look at their project plan and identify the things they can do on their own at home (sketches, designs, research, programming, etc.) and what they need to do in the shop with their partner. One club met from 10am to 1pm on occasional Saturday mornings for the first few months, then weekly for a month or two in advance of Maker Faire, but this is just an example. Do whatever works for you and your club.

One thing to keep in mind is that in preparing for Maker Faire, the work is unlikely to progress linearly. That is, it's rare to meet someone who can pace themselves equally across a four-month timeline. More likely, a project will be 5% done in the first month, 10% more over each of the next two months, and the bulk of the work—at least ¾—in the final month. (Yes, your Young Makers may go over 100%!) For that final month, see our advice on scheduling intensive build sessions, below.

Early in the season you might meet only one or twice a month for build sessions. Then you might gradually meet more often as Maker Faire approaches. The number and duration of build sessions will depend on the progress and scope of the projects in your club. Between meetings, members might discuss their projects on social networks, chat rooms, email, and so forth. If you find an online discussion tool that works for your members, please let us know about it.

During the course of a project you may find that tools are needed for which you don't have access. When that happens, we hope to use the broader Young Makers community to help. Consider posting a request for the tool to the Young Makers Google Group. If that doesn't work, contact us and we'll see if we can help you find the tool.

Hold the third monthly meeting

Design, prototyping, construction continues as you meet again. Teams should be prepared to talk about their project status, problems they've solved, challenges they've run into, etc. Project visions are probably settled (or settling) by now.

Some goals for the third monthly meeting:
1. Share progress on your project in the plussing session—all project teams participate.
2. Encourage members to rough out a project plan for how to get everything done in time for Maker Faire if they don't have one in place yet, perhaps using a template like the one in the Resources section of this book.
3. Emphasize upcoming deadlines, which may include: project proposal deadline (to exhibit at Maker Faire) and a safety plan deadline.
4. Distribute paper copies of proposal forms so that teams can coordinate their details with one another before going online to fill out the form
5. Provide a short overview of what the Young Makers will need to do to prepare for Maker Faire (we created a 2-page version of the standard Maker Manual)
6. Encourage members to keep it up: their energy may be flagging a bit, they may have hit some snags or the time just seems to be passing too quickly. Share tips for keeping the momentum going.
7. Add build times in your shop as necessary.

Create Project Plans

Project Plans consist of a list of tasks or action items, each one matched to a person responsible for its completion, and due dates assigned to each action item. Any mentors assigned to the team should get a copy of the Project Plan so that they can check in on progress with the team or with its individual members. We have included a template for a Project Plan in the Resources section.

Propose the projects

The Maker Faire "Call for Proposals" is the primary information-gathering interaction between Makers and the event staff. It's your members' chance to tell the event hosts just about everything they will need to help them exhibit their project and to promote themselves and their project at Maker Faire.

In the Bay Area, we offered Young Makers at least two options for exhibiting:
1. Exhibit for a limited number of hours during Maker Faire, usually 2-4 hours (to be determined), after which you will remove your project, so that another Young Maker can exhibit at the same location. To sign up for this option, fill out the Young Makers Application. (See an example of this form and a sample timeslot spreadsheet in Resources.)
2. Members of a class or project team trade off to exhibit throughout the weekend for all the hours that the event runs, probably on their own and not as part of the Young Makers area. Young Makers choosing this path complete the standard proposal from the Call for Makers used by most Makers who exhibit at Maker Faire.

Some managers choose to compile all this data on a modified, simpler form so that Young Makers don't have to face questions they may not know how to answer, which is how we used an electronic version of the Young Makers Application listed under the first option above. Typically, you'll want to collect the following information, or ask your Young Makers to collect this info before they sit down to fill out the form: title, names and bios of team members, short description, mentor(s), keywords, category, logistical needs (location, noise, connectivity, radio frequencies, electricity, safety, etc.), a photo, a project website (optional), a video (optional),

Get over the slump

Around the mid-point of working on any project, creative people often experience a dip in their enthusiasm for its completion, and Young Makers are no exception to this. Sometime a little over halfway through your time working together, start a conversation with the Young Makers about this. Most of them got started with fantastic ideas, and by the third month or so there's a definite risk of losing their enthusiasm as the reality looms. That reality is the overwhelming feeling of all that needs to happen before the deadline as the initial excitement of coming up with the idea fades into the past. And all Makers, young and old, have to face down discouragement.

Some tips from Makers for getting over the slump include the following. They say the same thing in different ways, but one of them may speak to your Young Makers more than others:

- To trick yourself back to work, tell yourself that you'll work on it for "just 10 minutes." Often you'll find that the time flies by and before you know what happened you spent 45 minutes advancing your project!
- Revisiting or creating a new project plan can help. It's a good time to plan ahead and scale back. You may have lots of ideas and not know which one to tackle first. For this version of the project plan, look at all the things you want to do and decide which ones are "musts", which are "nice to haves" and which are "things we're not doing now but we may do them laters." Try to map those things onto a calendar, giving yourself milestones along the way. If you don't finish everything for this year's Maker Faire, that's OK. Get done as much as you can and be prepared to talk about what you'll add for next year!
- Make sure that you break up your project into manageable, bite-sized tasks. Often something seems daunting because you're seeing the task as the entire project. If you break it up into small micro tasks, then you can feel a sense of completion and accomplishment EACH TIME you complete one of the micro tasks.
- When you find that a project is rapidly becoming overwhelming or you come to it at the start of your build session, and you have so much on your plate that you just don't know where to start, just pick a place and begin. Don't angst over whether or not it was the best place to jump in, the priorities and sequences of activities will come to you once you're working. Many of us get hopelessly bogged down trying to sort of priorities, which task to begin first, etc.
- Talk to others about your project. It can get you psyched all over again....and motivated to continue on!
- Connect to why you decided to do this in the first place. First, look at how great it would be to have it done: "the benefits". Then, connect to "the costs" for not getting it done. Finally, look at what's possible and state what can get done and by what date. - Feeling how great it would be and why it's important. And make sure not to beat yourself up for not getting it done yet.
- Anne Lamott's book *Bird by Bird* refers to a school project on birds that her brother waited until the last minute to start on, when they were kids. Her brother sat at the kitchen table, a stack of books on birds and a pile of 3x5 cards in front of him. He was paralyzed by the task. His dad came in, patted him on the shoulder and said: "bird by bird, son, just take it bird by bird." So when Anne is stuck in her writing, she thinks about those 3x5 cards and the bird project and tells herself that she just needs to take it one bird (one paragraph, one simple task, one 3x5) at a time. This can be very helpful when you get overwhelmed.

Hold the fourth and final monthly meeting

Most teams should be in late stage prototyping or the build stage by the fourth meeting. By this point, there's a heavy focus on construction. During the plussing session, project teams talk about their project status, problems they've solved, challenges they've run into, etc. All should bring sketches and "stuff" to the meeting — materials, prototypes or making done to share during the plussing session. Members who feel really far behind might consider creating an interactive experience at Maker Faire, rather than a finished project, if they'd like to participate but feel like they've run out of build time.

Some goals for fourth monthly meeting

1. Ask for Makers who might want to talk to the press about their projects, so that you are ready if you get interview requests from newspapers, TV, radio, blogs, etc.
2. Remind Young Makers of your contact info and event details: booth location, schedule, their timeslots, entrance, registration and project drop-off/set-up procedures, parking, ticket discounts, and the possibility of heavy traffic.
3. Distribute schwag (car magnets, yard signs, buttons, posters, postcards) that Young Makers can use to encourage family and friends and their local communities to come see them at Maker Faire. Tell them how to add badges to their web pages, social media, and email signatures.
4. Ask the group if they need to add build times in your shop, and set those as necessary during the meeting so they have some intensive build sessions to look forward to.

5. Confirm their participation (if you are coordinating timeslots for an area or a booth at a larger event.) Ask if anyone is missing from your list.
6. As they leave the last meeting and in a follow-up email, remind members not to lose heart. You are proud of them.

Submit Safety Plans

Makers who display, operate, or use any items that pose a danger to the exhibitor or a visitor — such as fire (including all heat-producing or open-flame devices, candles, lamps, etc.), explosions, internal combustion, flammable liquids, compressed gases, hazardous chemicals, launches, sharp or otherwise dangerous materials or tools — will have to explain what they'll do to keep Fairegoers safe. This will make the event staff, you, and the Young Maker more confident that you are all aware of the foreseeable risks, considered possible consequences, and have taken all the precautions you could to ensure everyone's safety. By the way, there's usually a different process for people who plan to serve food, which involves getting a city permit. We've included a template for a Safety Plan in the Resources section.

At Maker Faire, safety plans are necessary for any projects that would display, operate, or use any of these:

- Lamps and other heat-producing devices including hot glue guns
- Open flames, burners, candles, etc.
- Internal-combustion engines
- Flammable liquids, compressed gases, or dangerous chemicals including propane and helium
- Any potentially hazardous electrical / mechanical device or chemical / biological substance

Whether or not your showcase event will require a written Safety Plan, creating one is a wise habit to establish among Young Makers. Safety plans typically include a description of the exhibit or demo, the names, qualifications and previous experience of people working the exhibit, a description of general safety precautions, and the emergency plan. If the project includes fire, the safety plan should also describe the fuel source, how much is onsite, where and how it is stored, how much is burning and in what amount of time it burns, and if the valve has an electronic propane sniffer. There is a template for a safety plan in the Resources section of this playbook.

Preparing for Maker Faire (or Other Showcase Event)

Maker Faire requires a lot of behind-the-scenes work to coordinate thousands of moving parts. Typically, Maker Faires are weekend-long events, while Mini Maker Faires are single-day events, usually a Saturday or a Sunday. Maker Faires run from about 10am to 3pm, or 10am to 5pm. Some run longer. Some are evening events at a smaller-scale.

Depending on your event, the Young Makers' projects will be seen by dozens to many thousands of attendees. Obviously, your members won't interact with every attendee, but they need to plan ahead to make sure that those who do see their project can understand what makes it wonderful.

In addition to finishing their projects, the Young Makers will have to keep ahead of a lot of other logistical details so that they can be a part of Maker Faire.

- Review the complete Maker Manual for rules and regulations, or have a parent, teacher or guardian do it.
- Sign the Maker Participation Agreement
- Identify unusual needs for your project on your entry form. If it has any fire or safety issues, you will need to submit a Safety Plan.
- Invite friends and family. Tell them that you will be at Maker Faire, and how fun it will be. Add web badges to your website and email signature. Take some posters, postcards, etc. home with you. Spread the word with a poster at your school or on your neighborhood bulletin board
- Practice explaining. Come up with a 10-second, 1-minute, and 3-minute spoken overview of what you made, how you made it, and why. Attendees will want to spend a brief moment with you, or a long time, and you want to make sure you know how to tell your story to different audiences.
- Design the "look and feel" of your exhibit. Create the best way to showcase or demo your project. Determine what props you'll use – supplies, descriptive signage, etc. to share how you made it and to make attendees glad they stopped and talked to you. Makers typically get a small sign for their project and a page on the event website. Put together additional signs for the exhibit to help the attendees understand what you made and how you made it.
- Start packing. Begin a checklist of all the items you need to bring with you. How can you pack for easy setup? Who will help you set up? Set aside comfy shoes, layers of clothing for variable weather, and maybe even rain

gear. You may need a cart to get your project to its booth location, or the event may have these available to borrow. Come prepared with all you need for setup. (You don't want to have to run to the store.)
- Ask for a venue sneak peek (if you need it.) Some events host an open house before the event date to give makers to get a first-hand look at the site. For projects that may be affected by their setting, put such a visit on the Project Plan calendar.
- Figure out how to get to the event. Are you carpooling to Maker Faire? Using public transit? Planning for the time it will take to get from parking to your exhibit on show days? Check makerfaire.com for updates on available parking and traffic route recommendations.

Hold intensive build sessions to finish the projects

In the final month before Maker Faire, project teams will be very busy finishing their projects and preparing to talk about them with visitors to the showcase event or Maker Faire. We set aside a Saturday or Sunday on the schedule when the Young Makers can spend a large chunk of time getting their project 95% of the way to being finished—and if not finished, then at least presentable.

The energy of lots of people working together in an intensive build session propels everyone forward. You'll want to have lots of enthusiastic and supportive mentors on hand to help get the projects where they need to be. Those mentors can also help revise designs and cheerfully manage expectations and refocus on a modified goal if necessary.

Make the day into a work party. You will want to have some water and healthy drinks on hand, then maybe order some pizza once you see how many people show up.

Encourage and nudge

The interest and excitement members can expect from attendees at Maker Faire is worth it. Try to find out if there is anything you can do to help your members achieve their vision. And thank them for setting such an incredible example of what can be accomplished when kids and adults come together to make things.

This kind of encouragement takes a lot of work. You'll have to stay on top of all the teams to see how they are doing, and to make sure they haven't abandoned their work in a moment of deep frustration.

Some of your members will have projects nearly done ahead of schedule, and you can congratulate them and challenge them to find ways to enhance their projects or the way that Maker Faire attendees interact with it or understand their process. Generally, far more members, especially in the final month, feel that they don't have much to show yet and that they are running out of time. Don't let them lose heart! Remind yourself and them that the extraordinary creativity and innovation that you've all demonstrated this season is really inspiring. We frequently see an expression of wonder and surprise as we describe to people the projects Young Makers have undertaken, even when those projects are nowhere near complete.

Here's another way to look at projects that are incomplete. MAKE and Maker Faire always sponsor the "Most Spectacular Failure" award at The Tech Challenge at The Tech Museum of Innovation in San Jose. Although the award's name makes people laugh, it also recognizes that there is no shame in taking on something beyond one's reach. As long as they have put in real effort, your members will have done their best work, and that alone is something to be proud of. Encourage them to keep going, and if they hit some stumbling blocks along the way, have them document what those challenges are, and be proud to share whatever progress they made at Maker Faire. Whether the project is a tangled heap of lots of great ideas that didn't pan out when they sit down at Maker Faire—-or it's a fabulously finished realization of your original design—-we can assure you that it'll be great and attendees will be impressed, especially if they can tell their story in a compelling and interesting way.

Schedule Young Makers

While Makers generally show their projects off for 10 hours straight, we recommend that Young Makers sign up for short timeslots rather than for an entire weekend or day. We think it's just as important that the Young Makers have a chance to explore Maker Faire and get some ideas for their next projects.

Some teams may want to work together to exhibit their project for a full day, but no individual Young Maker should be

“on duty” so much that they don’t get to explore Maker Faire and be inspired by the wide variety of projects being exhibited. Suggest to members that they arrive before opening on the day they have said they would exhibit. After dropping their stuff off, unless they are working the first timeslot, they will have a chance to walk around and get a peek at Maker Faire before it opens. This in itself is kind of a magical time too: people scrambling, carts rushing around. "Brown paper packages tied up with strings."

Scheduling Young Makers into timeslots can be challenging, however. Make sure your space is reconfigurable in a way that a no-show isn’t terribly obvious. We also displayed projects behind our tables even when the Young Makers responsible for their creation weren’t present.

We kept all the project posters on view all weekend, whether or not the project itself was visible in our space, so that visitors to our booth could get a sense of the diversity of projects the program produced.

Put together a visitor FAQ

Gather some data for talking points for your members. While exhibiting, people may ask them questions, and you can help them answer some of the questions they ask!

- Can I join your Maker Club? How do I start my own?
- What is the Young Makers Program?
- How many projects did your club make?
- About how many aggregate person-hours went into all the projects in your club?

Showcase at Maker Faire

Months of work will finally come to a close, and then it’s showtime! At Maker Faire or the event you chose as your deadline, be sure to show off not just what the Young Makers made, but also evidence of how they made it — sketches and prototypes or anything else that can help them explain their process. We have several examples of how to tell the story behind the projects in the Documenting section of the chapter on Making.

During the event, congratulate each club member on their project, and try to get at least one picture of their project and of them exhibiting it. You may need these for your debrief, website, scrapbook, etc.

Give your participants some talking points for Maker Faire, as people may ask them how they can start a Maker Club or get involved in the Young Makers Program. Give them any data you have, like how many projects you made, how many aggregate person-hours you worked on the projects, how many people attended the event, etc. If you have any links to great images, photo sets, videos, or media mentions, share those too—whether those cover the event, your club or its projects. Share them with people who ask, and share them with us too! Send links to contact@youngmakers.org and we’ll send them along to others.

Chapter 7 **After the Event**

You made it! (Literally!) They made it! How can you keep on making? This chapter covers the steps you should take to keep the momentum going and also to give back to the network so that others can learn from your experiences.

Congratulate everybody again

As soon as you can manage to do so after the event, reach out to your participants to congratulate them on their good work. Thank everyone who participated in the program as Young Makers, mentors, supporters, and in various other roles you might not have witnessed. Offer a special congratulations to the amazing Makers who exhibited and to the dedicated, patient, and talented mentors who helped bring so many wonderful projects to fruition. Tell them again that you are very proud of the results of all their hard work. For those who helped set up and cover your area, or special patrons or sponsors of your club or its projects, be sure to offer a hearty thanks as well.

Give your participants some talking points for between seasons, as people who hear about their experience may ask them how they can start a Maker Club or get involved in the Young Makers Program. Give them any data you have, like how many projects you made, how many aggregate person-hours you worked on the projects, how many people attended the event, etc. If you have any links to great images, photo sets, videos, or media mentions, share those too—whether those cover the event, your club or its projects. Share all these things with people who ask, and share them with us too! Send links to contact@youngmakers.org and we'll send them along to others.

Pass along to the members any great feedback you heard about their Maker Faire projects — and request that they share some of the things they heard from visitors this weekend or to let you know if they know that they happened to speak to anyone from the press. Send a survey to your participants to gather feedback for improvement next year. Welcome any advice, suggestions, or tips that can't fit in the survey.

If you'd like to host a party in a few months, tell them to look ahead to an informal get-together between seasons. Say something that welcomes them to come back again and to keep Making between now and next season's kickoff..

Send out surveys

Within one or two weeks after your members exhibit at Maker Faire, you should reach out to them, their parents, the mentors and other volunteers and offer them a chance to weigh in, offer suggestions, and give compliments. Use an online survey tool such as Google Forms or Survey Monkey to give your participants the option of anonymous responses. Or, at least, send an email where you ask for feedback.

Questions we have asked in past surveys include:

- If a friend asked you to describe the Young Makers Program in 10 seconds or less, what would you say?
- What did you think of the project vision?
  - …the completed project?
  - …the experience exhibiting?
  - …meetings?
  - …workshops?
  - …plussing?
  - …shop facilities?
  - …overall: the whole program this year?
- For Young Makers:
  - How much help did you get from your mentor(s)?
  - What part of the Young Makers Program was the most fun for you?
  - What was the least fun or most frustrating?
- For adult participants
  - How many projects did you help with?
  - Were any of the team members you helped your children?
  - How engaged were the project team members?
- If you could change one thing about the program, what would it be? This is the place to give more feedback that didn't fit any of the questions we've asked. Suggest changes would you like to see for next year, or ways to reduce any frustration you felt.
- Share your success stories! Tell us anything we might share when we try to get other kids and adults excited about the program. Young Makers, you can tell us about things you learned or new skills you gained. You can even describe anything at Maker Faire that interested or inspired you in this
- Do you think you'll take part in the Young Makers Program again in the future?
- Spreading the word: If you know someone who should hear about this program, please give us their email address(es) here.

In asking these questions and analyzing the results, your goal is two-fold: to improve the club for next year, and also to gather great stories and data to help sustain the program.

Throw a season closer or gathering

Organizing a dinner or other gathering after the season is over is a nice gesture and contributes to building maker community. It can have a Maker twist to it, like a potluck, or some kind of food theme that allows each diner to express their creativity and individuality by assembling a meal in their own way, like a pasta bar with five shapes of pasta, 5 kinds of sauce, 5 kinds of cheese, etc. Or you can just do standard party fare, of course! The most important thing is to have a chance for some low-key mixing and mingling among members.

Document and debrief your club season

What your club did will inspire other clubs and other Young Makers, so be sure to share what happened with us and keep a copy of it all for yourself and future club seasons.

- Ask someone to write up what your club did in a blog post or make a video about it.
- Write down some notes about what you did, what worked especially well, and what you might change for next year. Include any highlights or summaries from the survey you sent to your participants.
- Pull together any documentation your members made of their projects. Keep a record of all the projects that

emerged from your club in one place, probably a page of your website.
- Before you lose touch with everyone, ask the members if there's anything they wish they knew before they started their projects.
- Ask the parents, mentors, and volunteers to write or revise their job descriptions so that next year everyone can start the season ahead of the game.
- Organize any photos taken along the way and put them in a place you can find them later.

Everyone has a digital camera these days, so it's easier than ever to crowdsource the task of documentation. Encourage members, parents, and mentors to use a Flickr tag for your club (e.g. "YM-Sebastopol-2012") as well as our generic "youngmakers" in advance. You can also ask them to share pictures via email.

It's handy to organize your photos in a place everyone can access, but it can be a big job too. Google Docs Collections seems to be a solid, free tool for managing these visual assets and keeping them available in the "cloud." Other people pay for a subscription to DropBox for similar functionality.

Make the effort to get an image of every project. When kids don't see a record of their work on your website, they notice and could take it personally. They might assume you don't appreciate their hard work.

Report to and share with the Young Makers network

The network of all Young Makers clubs would *very much appreciate* your sharing some notes, writeups, images, and videos from your club's time together. These help build the national and international community of Makers, and we can sometimes feature your club's efforts in MAKE Magazine or on the makezine.com blog.

There are a few specific things we ask that you do as members of a supportive Young Makers network.

- Participant Post-Season Survey The Young Makers program has developed an online survey for distribution to every Maker Club participant. We require that you email this survey to your attendees within two weeks after the end of our season (the Maker Faire or other event where you exhibit your projects.) Please Bcc: contact@youngmakers.org on the email in which you ask your participants to complete this survey.

- Maker List: Maker Faire and the Young Makers program are building an international database of Makers and their projects with the ultimate goal of starting a Maker Guild. MAKE would also like to offer subscriptions to your Makers, as well as contact some for potential editorial coverage in MAKE or makezine.com. You can submit .csv or .xls files to contact@youngmakers.org. These are fields that would be helpful:
    - Name
    - Club Name and Location
    - Website URL
    - Exhibit name
    - Exhibit description
    - Email address
    - Snail mail address, if you have one

- Managers' Post Season Report / Survey: Our hope is to learn more about how we can support making more Maker Clubs, and to know more about what works and what doesn't. To remain an affiliate of the Young Makers program, you must fill out this simple survey within 45 days of the end of your season. It asks questions about your event like:
    - How many members? mentors? other volunteers?
    - How many completed projects?
    - What was your club's budget?
    - Most successful innovation?
    - Priority improvement areas for next season?
    - Will you do it again next year?

- Share best practices. Take a moment after your season to report back to the Young Makers core team as well as the Managers' Google Group. *Please* share what you learned.

- Contribute to this book! The Maker Club Playbook is intended to be a living document, evolving as the collective

experience of the Young Makers network and its community of Maker Clubs grows. Please email contact@youngmakers.org with comments, helpful anecdotes, or your own club snapshot.

- Share images and video of what you've accomplished: Every day makezine.com offers up inspiring content about Maker projects. We would love the opportunity to feature documentation from your Maker Clubs on our blog. Consider one of these ways to share what you did:

    - Make a three-minute (or shorter) video documenting your club's season. One format is to get each of the exhibiting Young Makers to introduce themselves and say "I Make..." Here are some examples from Maker Faire that you can follow:
      http://www.youtube.com/watch?v=Usw4t7NVnt0
      http://www.youtube.com/watch?v=Cn9ST2ay6c4
      http://www.youtube.com/watch?v=TRjNOoAHaGg

    - Create a Flickr set or collection of photos and tag them "youngmakers". License them as Creative Commons images, and then email the link to contact@youngmakers.org.

Consider Growing the Movement Regionally: from Club to Hub

The Young Makers program started as a pilot at the Exploratorium, with about 20 kids in its first year. They were so scattered geographically that the next step for the program was to encourage participants from the pilot club to create clubs in their own local neighborhoods. By seeding new clubs in this way and finding some new club managers too, the program grew to about 100 Young Makers in the second year. The Exploratorium then was no longer a club site, but the hub for a dozen clubs around the Bay Area.

As the Maker movement in general and the Young Makers program gains traction and interest in more regions, we expect that more and more regional hubs will emerge. Please be in touch as you take this next step, as we'd like to document what we're all doing to make it easier for future hubs to get started.

Chapter 8 **Snapshots**

In-School: Lighthouse Community Charter School

Walking into Aaron Vanderwerff's Robotics class on a Tuesday in the spring, you would have seen 20 students working in small groups, heads bent over computers, soldering circuits, using new-found carpentry skills, or conferring with each other and their mentors. As Maker Faire approached, the students' visions became more certain and activity in the room became more focused. This image of students working independently with the support of mentors on a project they envisioned had been something Aaron had tinkered around the edges of throughout his career; in that first year when he adapted Young Makers to his curriculum, the vision and support of the program, he says, helped make it a reality.

Aaron is a Physics, Chemistry, and Robotics teacher at a small K-12 charter school in Oakland, California. The students in his first Young Makers group were enrolled in his Robotics class. Students in the class were generally 12th graders, low-income, and went on to be the first in their families to attend college. Most students in the class did not choose to take Robotics and were intimidated by the class at the beginning of the year. The students had learned basic programming and electronics as a part of the Robotics curriculum.

Aaron's Robotics class introduces engineering as a possible career to his students. Building a complicated project of their own allows them to really see themselves as Makers. Exhibiting at the Faire gives them a real audience for their project, which forces them to be able to communicate about their project as well as bring it to fruition.

Soon after the first large Young Makers meeting, Aaron returned to school and announced that the class would be creating Maker Faire projects. Aaron knew that none of his students had ever attended the event and none of them had ever developed their own project from scratch.

A few days before winter break, Aaron spread out his personal set of MAKE magazines before his students and asked them to look through an issue for a project that caught their imagination. After 20 minutes, students shared a project they found in the magazine with the rest of the class. Their homework that night was to dream up a project – either

something based on a project they heard about that day, or something completely original. Students returned the next day with individual ideas for their projects and presented these ideas to the class. After the presentation, Aaron asked students to form groups based on common interest and start working on a shared project vision. He emphasized that they should choose something they thought they would enjoy working on for five months. Before leaving for break, each team gave Aaron a proposal for their project.

After break, Aaron handed the project ideas back to students to get them thinking about the project they proposed again. Mentors attended their first full class session after break, and they used one student's project to showcase project plussing to the whole class. After hearing the student present, mentors asked him questions about the project and gave him ideas to help him get started on the project. After the first full class plussing, mentors circulated to the remaining groups and helped them plus their projects.

The Robotics class met every day for 70 minutes. During the spring semester students met in their Young Maker groups once a week. This weekly meeting included students and mentors. In the month before Maker Faire, students met five days a week for 70 minutes and had the opportunity to work on their projects outside of class. In the final week many of them took advantage of this extra time.

Aaron encouraged his students to develop projects that were novel ideas, extensions of others' projects, or even project that had been done before, but would be difficult to carry out. Although the class is a Robotics class, students were not required to complete a "technical" project, they could pursue a craft project, or a building project. Twenty students worked on 12 projects. These included:

> LED Soccer Ball: Different color LEDs light up depending on the direction of acceleration. In a project like this one, students ended up learning to program an Arduino, used technical specification sheets to use an accelerometer and to figure out how many LEDs one LilyPad Arduino can power, modified a soccer ball to protect the circuitry, and soldered the circuit together.
>
> Interactive Plastic Chandelier: Artfully repurposed, reshaped water bottles surround LED lights, and a distance sensor makes the light display interactive. The three girls in this group started out with a vision of creating an interactive photo frame composed of recycled materials, but after a Young Makers regional meeting at the Exploratorium where they heard from artists working in plastics, they decided they wanted to recycle landfill-bound plastic into a light fixture.
>
> Steerable Hovercraft: Based on designs he found online, this student first built his own working hovercraft. This task alone took the student a couple months as he had to work through many pitfalls on his own. In order to create a working hovercraft, the student modified his first design multiple times and in the end had to build a whole new design. After getting the basic hovercraft working, he embarked on designing a system to steer the craft. This student learned carpentry skills, physics, as well as the power limits of circuits at school; his biggest lesson was, however, that creating a project is an iterative process.

Mentors played the role of an outside consultant; coming from the "real world" gave them quite a bit of credibility with the students. Mentors met with students every one to two weeks. They would check up on the groups' process and help students set goals for the next time they met. While they were meeting, mentors would often teach students to locate and read technical specifications, to find appropriate materials and tools for their projects, to program in a new language, as well as techniques in building their project. It took many of Aaron's students a couple of months to acclimate to working with their mentor, but in seeing their conversations in the last month of the project, it was clear that mentors were an integral part of the process.

To prepare for Maker Faire, Aaron briefly discussed with the class what they could expect to see there. He focused mostly on making sure that they would all be able to get to Maker Faire and bring all the materials they needed to

present. They also thought about how they could present their ideas to people as they walked by. (Next time, Aaron says, his students will be doing much more prep before the event.)

After Maker Faire, Aaron asked students to create posters describing their work on the project. The posters were designed to be similar to posters which scientists and engineers create to share their work at professional and academic conferences. The posters included a description of the project, a key scientific concept the project exhibited, an explanation of how one piece of technology worked on their project, and the students' conclusions about the project.

As school began a few months later, Aaron started his Maker timeline in August, a few months earlier than in his first year (when the program's regional kickoff happened in December.) In the first few months of class, students had "Maker Weeks" focused on soldering, crafting, building, and programming an Arduino. In addition, students mined MAKE Magazine for interesting ideas as a weekly assignment over the first few months. His Robotics students worked on their programming and building skills for two weeks. Then they had a focused introduction to important Maker skills for a week. After the initial phase, students started working on projects in a similar way to how they did it in Aaron's first Maker year, with the added benefit that students had more exposure to the kinds of projects and skills they would later possibly pursue.

Homeschooling: Young Makers Yolo

Suzie, a mom whose two boys are homeschooled, decided to organize a Young Makers chapter after attending an informational meeting at the Exploratorium about six months before Maker Faire. Her family had been to every Maker Faire in the Bay Area, and the kids always looked forward to it; this seemed to her like a nice step toward greater participation. The concepts behind the Young Makers program also meshed very well with their homeschooling philosophy: youth-driven, cross-disciplinary, process-oriented, and non-competitive.

They spread the word to the local homeschooling community and had an initial meeting of four families with eight kids. As the season progressed, this number dwindled down to two families with three kids. Suzie suspects the idea of completing a project in the relatively short time frame was a little overwhelming, as these kids had a lot on their plates. The kids who persevered also had parents who were actively engaged in making things themselves. That is to say, the three Young Makers who did complete projects had a lot of support and encouragement from their families and from each other.

Young Makers Yolo met in each others' homes and in a light, airy warehouse one of the families had access to. The kids worked on projects of their own choosing, and their parents mentored. Two of the boys decided to modify an xBox controller for rapid shooting. The third wanted to learn to program an Arduino board to set off light patterns from a drum pad.

The club met for four official monthly meetings between January and April, with a few informal project days inbetween. They also drove 150 miles roundtrip to attend monthly Open Make Sessions at the Exploratorium. Things got a little tight as the Maker Faire approached, but the kids really rallied to get their projects completed.

As both parent and club manager, Suzie says she especially enjoyed seeing the team of two develop their xBox controller project. They swapped information they found online, shopped for parts, and really kept each other going as they learned circuitry and soldering. Their first attempt did not work as planned; so they did some research, learned that newer model controllers were wired differently, and found a workaround. By Maker Faire time, both had a very thorough understanding of the controllers and could explain their modification and how it worked.

Suzie reports that the experience of exhibiting at Maker Faire was a “mixed bag” for the kids. They had chosen an afternoon slot, not realizing that their energy would have flagged considerably by then. They were drained at the end of the two hours. Nevertheless, they felt quite proud of their exhibitor wristbands and to have been part of Maker Faire.

The group continued monthly meetings through the summer. They were not active project meetings, but simple get-togethers to promote thinking about next year. They used Freecycle to obtain broken machinery, tools, and miscellaneous parts for the kids to experiment with. At one meeting, they brought in a box of old solar garden lights and let the kids remove the solar cells for powering low-voltage objects. Summer also brought new members and even some potential mentors from the community.

Near the start of the season, Suzie started a multi-author blog to chart both group and individual activity, and the kids to post on their projects. While it is slowly building, it provides both a record and a road map for the club.

A long-term goal Suzie and many club managers share is finding ways to encourage participation by kids who do not have experience tinkering at home, including girls and kids whose parents don't own so much as a screwdriver.

Museum-Based: The Exploratorium's Pilot Season

In our first year of the Young Makers program, we ran a pilot that was based at the Exploratorium, and we invited kids from all over the Bay Area to join the group. We developed the format that we've described in this Playbook: an Open MAKE with a skill swap and a mini Maker Faire, a plussing session over lunch, ending the day with time in the theater for a "Meet the Makers" conversation among three to six Featured Makers and Dale Dougherty.

Because the members came from our personal networks as well as an open invitation to the membership of TechShop in Silicon Valley, the students came from all over the Bay Area, many traveling an hour or more to attend meetings. They attended public, private, and homeschools. Their ages ranged from a sophisticated 11-year-old to a 17-year-old veteran Maker Faire exhibitor. Despite all the challenges, the projects they developed really wowed us. Here is a representative sample of that first set of projects.

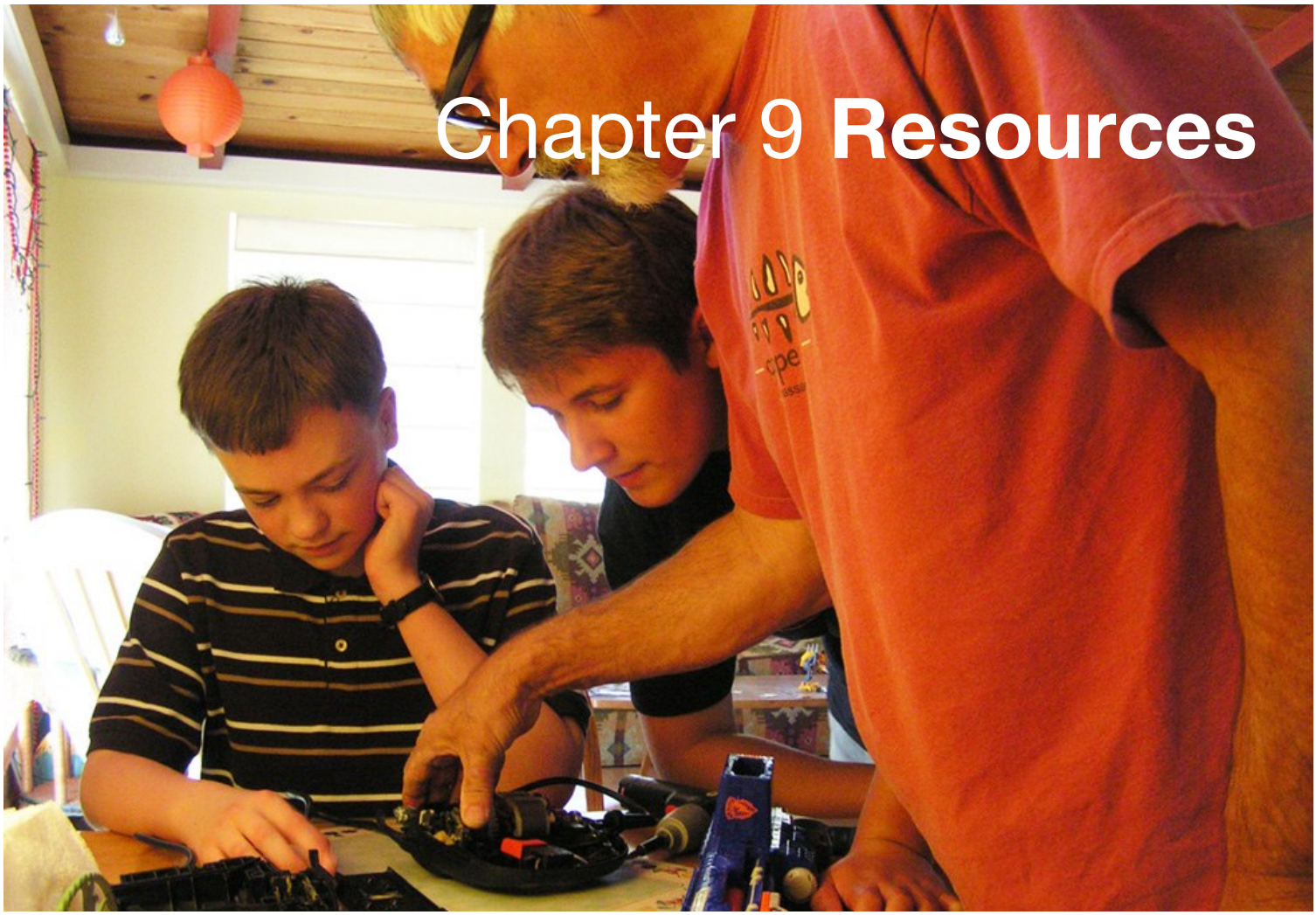
Colin and Joseph went to the same high school, and both mentioned an interest in modding their longboards in their written introductions to us. But they didn't know each other well and certainly had no idea the other one joined Young Makers until they both showed up at their first Young Makers meeting, 60 miles from home. So naturally they worked together. They wanted to change the chucks on their boards to allow for finer control at high speeds. They designed a new mechanism and created it at a local shop equipped with personal fabrication machines.

Evan was shy, but he had a clear goal: he wanted to be able to transport things to the roof. Off-the-shelf products were expensive, and he and his dad Colin had a hunch they could make one cheaper. We were floored by the progress this soft-spoken young man made from month to month, bringing in sketches and to-scale models. He exhibited for the bulk of the weekend. At the end of the program, he was still shy, but his pride in his "Laddervator" energized him to exhibit to our thousands of visitors.

At our first meeting, Hana, Jahnavi, and Pearl, the three girls who joined the program last year gravitated to one another in a room flooded with boys. But they lived on far corners of the Bay Area from one another. They struggled for a long while to choose a project they could work on together. In the end, they dropped the Skype-enabled Rube Goldberg elements of their project in favor of a practical yet aesthetically pleasing project. Their "Habitable" is intended to be a hamster habitat that can be an attractive centerpiece of a living room. It combines the three girls backgrounds: Hana is the fashionista, Jahnavi wants to solve real-world problems and expressed interest in design for the other 90%, and Pearl's mom is an interior designer. Their mentor Yoshi got a little choked up when they presented him with a gift after Maker Faire. All four really bonded as a team while also gaining new skills.

Nathaniel's "Flame Chopper" represents a victory over near-disaster. Saturday at the Faire. Nathaniel and his father Michael arrived early to set up the Flame Chopper, which had been charging all week. But an hour before Maker Faire opened, suddenly it wouldn't start. His whole family, grandparents and aunt and uncle were all there for the big day and to see his project in action. His mentor Shawn was calm and comforting to Nathaniel, but Nathaniel's disappointment was deep. Four YM mentors gathered around the chopper to troubleshoot. It was a wonderful display of teamwork and support. Eventually, they found a malfunctioning diode which they could replace with the supplies they happened to bring along, and Nathaniel was so pleased he asked his folks if he could return to exhibit again on Sunday, which they hadn't planned to do. His mom told us "the biggest success was that a devastating end to his Maker Faire was averted through support, teamwork and tenacity. He learned something about overcoming adversity, and you can't get a better life lesson than that." Nathaniel is coming back this year to show off a pulse jet engine he made with his dad, again as a part of the Young Makers program.

Sam, Alex and Joseph, the boys who created Saphira, an animatronic, fire-breathing dragon, had complementary skills: Sam the mechanical engineer, and Alex the software pro. And please don't forget Sam's brother Joseph who served as documentarian/filmmaker. They have posted a wonderful 40-second "trailer" of the project in which Joseph visually describes the project.



Chapter 9 **Resources**

- Language
- Program Team
- Recommended Suppliers
- Design Guidelines and Assets
- Activity Guide: LED throwies
- Tips from Mentors of the Computer Clubhouse
- Samples and Templates
    - Proposal and budget to submit to a funder
    - Member and Mentor “Job Descriptions”
    - Liability Waiver
    - Project Match for Young Makers and Mentors
    - Mentor Request Form
    - Makers Project Plan
    - Proposal Form
    - Maker Faire Safety Plan
    - Maker Faire Timeslot Worksheet
    - Prep for Maker Faire (condensed Maker handbook)
    - Post-season Survey
- Examples: A Season of Emails to the Mailing List

Language

Throughout your Maker Club season, you will find yourself writing about and explaining Young Makers repeatedly. In an effort to help provide a baseline description of Maker Faire, MAKE Magazine, and O'Reilly Media, as well as the relationship between your Faire and Maker Faire, we have come up with the following language.

We also require that you use this language in an "About" page of your blog or website. This language can also come in handy for the end of press releases and in grant or funding proposals.

About the Young Makers program

> The Young Makers program brings together like-minded young people, adult mentors, and fabrication facilities to help more kids make more things. Its collaborative community celebrates an open-ended culture of creativity, innovation, and experimentation. We are creating an infrastructure to nurture older kids and teens who want to expand beyond the construction kits of early childhood to meld diverse disciplines—math, science, art, craft, engineering, green design, music, and more—into ambitious projects. Members exhibit final projects at a Maker Faire or similar signature event.

About Maker Faire

> Started in San Mateo, California in 2006, and now expanding to Detroit and New York, Maker Faire is the premier event for grassroots American innovation. Held annually in each of these locations, the event may expand elsewhere in the future. Maker Faire is supported by MAKE Magazine (makezine.com) and O'Reilly Media, the premier information source for leading-edge computer technologies. The company's books, conferences and web sites bring to light the knowledge of technology innovators. Community-driven, independently produced Mini Maker Faires inspired by Maker Faire are now being produced around the United States.

About MAKE magazine

> **MAKE** is the first magazine devoted entirely to Do-It-Yourself (DIY) technology projects. MAKE unites, inspires, informs, and entertains a growing community of resourceful people who undertake amazing projects in their backyards, basements, and garages. MAKE celebrates your right to tweak, hack, and bend any technology to your will. MAKE is published quarterly by Maker Media, the division of O'Reilly Media, Inc., that also produces the wildly popular **Make: Online** (www.makezine.com), **CRAFT** (www.craftzine.com), the **Maker Shed** online store for DIY kits, books, and more (www.makershed.com), and the world's biggest DIY festival, **Maker Faire** (www.makerfaire.com

About O'Reilly Media

> O'Reilly Media spreads the knowledge of innovators through its books, online services, magazines and conferences. Since 1978, O'Reilly Media has been a chronicler and catalyst of cutting-edge development, homing in on the technology trends that really matter and spurring their adoption by amplifying "faint signals" from the alpha geeks who are creating the future. An active participant in the technology community, the company has a long history of advocacy, meme-making and evangelism.
>
> "*The Maker movement has brought the pre-1970s world of basement workshops and amateur tinkering into the digital age.*" ***— The New York Times***

Program Team

Dale Dougherty is the founder of MAKE magazine and the creator of Maker Faire, which leads a growing maker movement. He is GM of Maker Media at O'Reilly Media in Sebastopol, California. Dougherty is a co-founder of O'Reilly Media, a technical publisher and conference organizer known for its advocacy of Open Source and the Web. An early Web pioneer, Dale was the developer of Global Network Navigator (GNN), the first commercial Web site launched in 1993 and sold to America Online in 1995. Dale was developer and publisher of Web Review, the online magazine for Web designers from 1995-1999, which was sold to CMP in 1999. He coined the term Web 2.0 as part of developing the Web 2.0 Conference. Make Magazine started in 2005 followed by the first Maker Faire in the Bay Area in 2006. This year, Maker Faire was held in the Bay Area, Detroit and New York City.

Tony DeRose is currently a Senior Scientist and lead of the Research Group at Pixar Animation Studios. He received a BS in Physics in from the University of California, Davis, and a Ph.D. in Computer Science from the University of California, Berkeley. From 1986 to 1995 Dr. DeRose was a Professor of Computer Science and Engineering at the University of Washington. In 1998, he was a major contributor to the Oscar (c) winning short film "Geri's game," and in 2006 he received a Scientific and Technical Academy Award (c) for his work on the mathematics of surfaces. For the past several years he has become passionate about finding ways that Disney and Pixar can help to inspire the next generation of mathematicians, scientists, and engineers.

Karen Wilkinson and Mike Petrich direct the Learning Studio at the Exploratorium in San Francisco. The Learning Studio is an interdisciplinary lab for the design and development of new ways to engage people with hands-on, technology-rich, arts-infused making opportunities. These activities are based on the notion that making is an important way for people to learn, especially in a materials-rich, studio environment, surrounded by others investigating questions of their own. This is the way their group designs and develops new activities, and this is the way they engage visitors on the exhibit floor. The work is messy, sometimes chaotic, a lot of fun, and always innovative. It offers visitors the opportunity to think with their hands. Karen and Mike both have undergraduate degrees in fine art from the Minneapolis College of Art and Design, and both are graduates of the Harvard Graduate School of Education. Most of their real learning, however, has occurred in close proximity to museum visitors, graduate students, prisoners, kindergarteners, and monks, in a variety of learning environments, each trying to figure things out for themselves, despite the best efforts of their formal education.

Michelle Hlubinka is the Education Director for Make and Maker Faire, overseeing educational outreach and programming. Before joining the Maker Faire crew, she worked at the Exploratorium (in the Center for Museum Partnerships) and MIT Media Lab's Lifelong Kindergarten group (her research funded by LEGO and the NSF Playful Invention and Exploration grant.) That work built on previous research at the Harvard Graduate School of Education and as a long-time mentor at the Intel Computer Clubhouse Network. At the very first Maker Faire she demonstrated clay animation. When she's not supporting future Makers, she does some making of her own, most often as a graphic designer and illustrator.

Recommended Suppliers

Here is a list of some good parts suppliers in various categories. Please add your own recommendations.

Electronics

- Sparkfun: Especially good for robotics parts like motors, controllers, etc. http://www.sparkfun.com/
- Electronic Goldmine: They specialize in inexpensive recycled parts. http://www.goldmine-elec.com/
- Maker Shed: Lots of variety, not just electronics. http://www.makershed.com/
- Evil Mad Science: LEDs, open source hardware, and local. (Email for local pickup info in Sunnyvale.) http://www.evilmadscience.com/
- Jameco: Located in Belmont, will-call availability. http://www.jameco.com
- Digi-Key: Excellent prices on coin cell batteries. Ships from Minnesota. http://www.digikey.com/
- Adafruit: More open source hardware. Ships from NY. http://www.adafruit.com/
- Hobby Engineering: A supply store for people who want to build robots, electronic gadgets, kinetic art or anything else that moves, beeps or flashes. http://www.hobbyengineering.com/
- Weird Stuff: Resellers of surplus computer hardware and software. http://www.weirdstuff.com/
- Cool Neon: Electroluminescent wire (it glows!). http://www.coolneon.com/

Mechanical, pneumatic, industrial, fasteners, etc.

- McMaster-Carr: Extensive and well organized online catalog, fast delivery. http://www.coolneon.com/
- Grainger: You need a company account to buy on-line, but they have stores around the Bay Area, including San Rafael and Berkeley. If you call a store and order by 9am you'll have your part by 3pm. http://www.grainger.com
- Olander: Mostly fasteners. Located in Sunnyvale, they have will-call availability. http://www.olander.com/

R/C equipment

- Tower Hobbies: Extensive selection, good prices. http://www.towerhobbies.com/
- D&J Hobby: San Jose, very good selection and not just R/C. http://www.djhobby.com/

Modeling, molding, casting

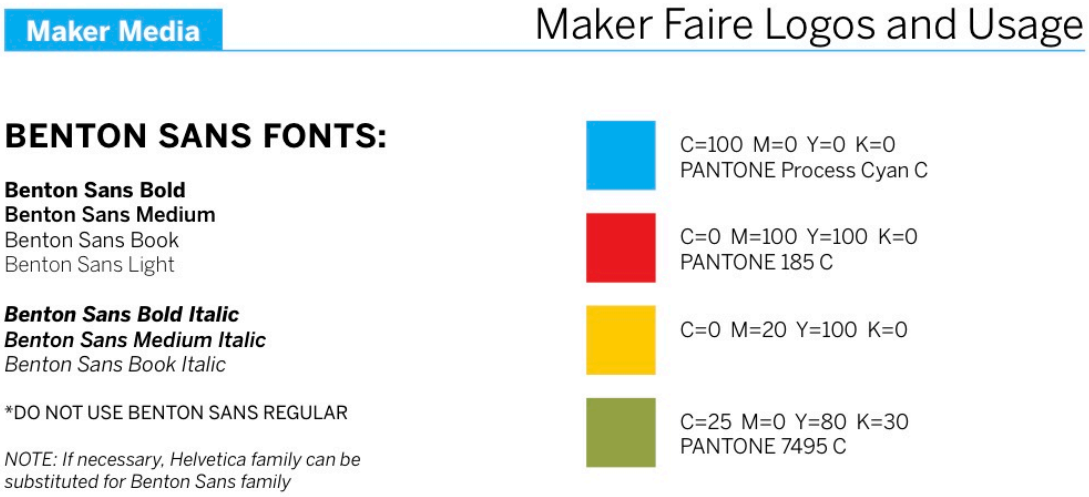
- J. Greer: Carries a wide selection of plastic molding and casting materials. Fast delivery too. http://www.aeromarineproducts.com/
- Douglas & Sturgess: Just about everything you need to model in plaster, plastic, clay, fiberglass, etc. Located in Richmond, but they have an on-line store too. They also have classes. http://www.artstuf.com/
- Tap Plastic: Stores throughout the Bay Area. They are best known for their selection of acrylic sheets, but they also have most molding and casting materials. Kind of pricey but very convenient with a knowledgeable staff. http://www.tapplastics.com/

Design Guidelines

Design aficionados may want to use the “official” Maker font and colors to build design assets for the club and the network. We have also created logos and some pre-designed postcards, posters, and T-shirts you are free to use, under certain conditions.

Font and Colors

MAKE magazine and Maker Faire use a font called Benton Sans. You can buy these fonts for about $40 each at http://new.myfonts.com/fonts/fontbureau/benton-sans/
If you’re only want to purchase one, purchase Benton Sans Bold. The far more common fonts of the Helvetica family closely resemble Benton Sans and serve as a reasonable substitute.



Logo

When you sign up as a Young Makers affiliate, you are agreeing to use the Young Makers and Maker Faire logos in particular ways:

- Use the logo only in conjunction with your Maker Club.
- The only thing you may alter about the logo is the size, and alteration in size must be proportional.
- Don’t combine or overlay the logo with other elements.
- Keep the logo separated by white space (the required rule of thumb is “empty space around the Marks must be X, where X equals ½ the height of the Mark.”)
- Don’t delete the ® symbol(s) or ™ mark in the logo.

Design Elements, Assets and Templates

Young Makers has provided a variety of branded design elements and assets you can use for design direction. This index of links gives you access to these files.

logos *postcards* *posters*
T-shirts *banners* *badges*
presentation

Tips from Mentors of the Computer Clubhouse

Be yourself.
Work with kids in a way that is comfortable for you.

Be reliable.
Young Makers should know when to count on you coming. Your absence will be noticed!

Be consistent.
Be consistent not only in your own attendance but in making sure that you treat all Young Makers fairly and equally. Although you may find yourself engaged with an individual kid, try not to give the impression that you have a favorite Young Maker. Be open to having others participate. The more consistent you are, the more Young Makers will trust you and start to call on you for help and conversation.

Be approachable.
It is important for Young Makers to know that you are available for questions. If you have a chance to work on your own projects, make sure that you are still open to the Young Makers around you. Invite Young Makers to take a look at what you are doing, or ask them for advice on your project. Make sure people know who you are and that you are there to help and to talk.

Be patient.
Everyone learns in different ways, yourself included. Be patient with your own learning and with the learning process of others. Sometimes this means stepping in to help, or stepping back to let Young Makers work to solve a problem themselves. Be patient especially when showing someone how to do something that you may know how to do very well. Try not to do it for the Young Maker, unless safety is an issue. Each person will go through a very different learning process and will take different amounts of time to learn something new.

Participate actively...and avoid lectures.
You are not here to be a textbook. Engage in your own learning while you are mentoring. Collaborate on projects and experiment.

Listen.
As adults we often don't take the time to really listen to the ideas and thoughts of young people. Take the time; you might find you learn amazing things. Show your interest and excitement, observe, and ask questions.

Go with the flow.
Be prepared for the unexpected! Bring ideas for what you would like to do, but be prepared to go with the flow of kids' changing ideas.

Get to know kids and let them get to know you.
Engage a Young Maker in conversation. Ask questions. Offer to share something you know. However, understand that it will take time for the kids to begin to feel comfortable with you.

Treat all participants with respect.
Make sure everyone—young and old—feels welcome, important, and a part of the program. Learn names and greet each other by name. Show your interest in their projects—and in their presence. Respect the kids for who they are and where they are developmentally. We all come from diverse backgrounds and experiences. Take the time to get to know everyone individually. Avoid prejudging who they are, their skills, or their cultures.

Treat kids as individuals, not as a group.
Each person has different learning and communication styles. Get to know the Young Makers, their interests, and the way in which they feel most comfortable interacting. For some it may be through conversation, others through working on a project or showing you what they are doing.

Discover and innovate together.
Don't be afraid to share your ideas, give advice, and be a resource for creative ideas and new knowledge, opportunities, and possibilities. Show a Young Maker a new tool. Challenge them to try something new, or take on something new yourself. Try saying:

- "Have you tried this?"
- "Do you know about this?"
- "Gee, I don't know the answer to that question—let's go find out together."

Figure out your own interests.
Experiment with our resources, work on your own project, and then share your ideas and excitement with Young Makers. One of the best ways to be a role model is to share your own engagement in working with tools, people, and ideas.

Give off energy.
Show your excitement about what Young Makers are doing, and your interest in learning from their work. Share your own excitement and engagement in your ideas, and your own work as a Maker.

Note: This page of tips is adapted from the Mentor Handbook of the Intel Computer Clubhouse Network, computerclubhouse.org, which serves as one model for the Young Makers program.

Sample Proposal and Budget to Submit to a Funder

We propose creating a Maker Club. [*describe your motivations and what the club will do here*.]

Projects made by typical Maker Clubs utilize common tools and supplies in new ways and uncommon ones to build surprising new things. Our Maker Club will need to purchase and acquire tools, a storage shed to keep the tools in, and materials for the students to create their projects. Typically, as a project gets more complex, it tends to become more expensive to build. So greater support from your organization will make more ambitious projects possible.

For example, a grant at the $17,000 level would furnish the Maker Club shop with a laser cutter, which would allow students to create parts for their project out of plastic and wood that are cut very precisely. At the $25,000 level, the Club's shop would be fully equipped with a set of tools which would allow students to build in wood, metal, and plastic as well as design parts on a CAD workstation.

$2,000 grant	Compound Miter Saw	$500
	Hand Tools	$150
	Arduino Microcontrollers	$150
	Student-generated list of consumable materials	$1200
$7,000 grant	**All items above**	**$2000**
	Power Tools	$3000
	Tool Storage Shed	$1500
	Additional consumable materials needed for more complex projects	$500
$17,000 grant	**All items above**	**$7000**
	Epilog Zing24 Laser Cutter	$10000
$25,500 grant	**All items above**	**$17000**
	2 CAD Workstations	$5000
	Laser cutter accessories	$2000
	Additional consumable materials needed for more complex projects	$1500

Sample Member “Job Description”

The Young Makers program brings together like-minded young people, adult mentors, and fabrication facilities to help more kids make more things. Its collaborative community celebrates an open-ended culture of creativity, innovation, and experimentation, melding diverse disciplines—math, science, art, craft, engineering, green design, music, and more—into ambitious projects.

Summary
Members make a project to display at Maker Faire, while also learning new skills for making things.

Responsibilites
- Create something to display at Maker Faire: this can be in the areas of technology, art, craft, engineering, music, science, green design, or other Maker themes
- Document your project as you create it
- Work one-on-one with an expert and/or in groups to design and produce your project
- Improve / “plus” projects with helpful feedback and tips to others (while respecting their projects)
- Engage in your own learning and exploration
- Apply good time-management and project-planning skills (optional, but very helpful!)

Time Commitment
January–May; 6+ hours/month, plus project work time (increases just before Maker Faire)

Cost
Materials for projects are not provided and must be purchased by project team members (although some may be obtained through a donation from retailers or manufacturers.) Any members who cannot afford these costs will be considered for scholarships and discounts. (That is, nobody will be excluded from participation for financial reasons.)

Qualifications
- Aged 12 to 19, and in middle or high school
- A desire to bring to Maker Faire something you created yourself (and/or with a group)
- Enthusiasm and willingness to learn and make things
- Experience and/or strong interest in working with others
- Open to meeting new people and sharing ideas (i.e. you may not be a good fit if you consider yourself "shy")
- A commitment to work as a team and to be a part of the Young Makers community

Benefits
- Priority admission to four Open Make: events at the Exploratorium, held monthly on the third Saturday
- Admission to Maker Faire for you and a parent; access to discounted tickets for additional guests
- Orientation to the Young Makers Program by staff from Disney/Pixar, the Exploratorium, and or Make Magazine / Maker Faire.
- Training as needed, available, and appropriate, in the areas of technology, art, craft, engineering, music, science, green design, or other Maker themes
- A creative, supportive environment to explore one’s own interests alongside others.
- Build something with expert help
- The opportunity to network with other members, program staff and mentors throughout the region

Application Process
To apply, simply send us an email with your name, age, grade level and a paragraph explaining what makes you a Young Maker! Please only apply if you can commit to completing the entire program. Send your application to memberapplication@... please also include your name and the position title “Young Maker Application” in the email subject line.

Sample Mentor “Job Description”

The Young Makers program brings together like-minded young people, adult mentors, and fabrication facilities to help more kids make more things. Its collaborative community celebrates an open-ended culture of creativity, innovation, and experimentation, melding diverse disciplines—math, science, art, craft, engineering, green design, music, and more—into ambitious projects.

Summary
Mentors assist, support, and encourage Young Makers Program members as they learn new skills for making things and complete a project to display at Maker Faire in May 2011.

Responsibilites
- Guide members (in grades 8 to 12)
- Identify members who might need extra support or encouragement
- Provide general help to members
- Offer encouragement to members
- Work one-on-one with members or in groups of up to 4 members
- Offer specific guidance or workshops in areas of expertise
- Organize logistics for projects
- Bring any serious concerns/issues to the attention of program staff
- Engage in your own learning and exploration

Other Optional Duties
- Technical support of project documentation (video, photos, sketchbook, lab notebook, blog)
- Establishing contacts to obtain in-kind donations, sustain member projects, and to give members and mentors possible tips and resources.
- Good time-management and project-planning skills (these are very helpful!)

Time Commitment
Spring 2010 (January–May)
at least 6 hours/month, plus project work time (which increases greatly just before Maker Faire)

Compensation
Unpaid, and/or for course credit

Qualifications
- Enthusiasm and willingness to learn and make things
- Experience and/or strong interest in working with young people ages 12-18
- Skills with technology, art, craft, engineering, music, science, green design, and other Maker themes OR curiosity and commitment to developing such skills
- Open to the experience of meeting new people and sharing ideas (i.e. you may not be a good fit if you consider yourself "shy")
- A commitment to work as a team and to be a part of the Young Makers Program community
- A desire to support the Young Makers philosophy

Benefits
- Free admission to Maker Faire
- Volunteer status at the Exploratorium upon completion of 40 hours (benefits include a one-year Museum membership with associated benefits, including a 20% discount at the Exploratorium store and café, and invitations to special events)
- One-year subscription to Make: magazine
- Orientation to the Young Makers Program by staff from Disney-PIXAR, the Exploratorium, and or Make Magazine / Maker Faire.
- Additional training as needed, available, and appropriate.
- A creative, supportive environment to explore one’s own interests alongside the members.
- Opportunity to help young people build skills and confidence
- Volunteer experience
- The opportunity to network with program staff and mentors throughout the region

Application Process
To apply for this volunteer opportunity in a diverse & dynamic work environment, please submit your cover letter & resume by email to education@makerfaire.com and please include the position title “Young Makers Program Mentor” in the email subject line.

Project Match for Young Makers

We'd like to understand who you are and what you'd like to make while in the Young Makers program, so we can help you find the right mentors and resources.

Name Age Grade level
Address
Home Phone Mobile Phone Email address
Parent names(s), phone(s), and email(s)
Best way and time to reach you

1. On the back, please tell us what makes you a Young Maker. You can tell us about your interests or projects you've completed, or both. *(Use the back!)*

2. Are you able to attend Maker Faire on _____? **yes / no**

3. Have you ever attended Maker Faire? **yes / no** If so, which ones?
   … and have you ever exhibited at any of those events?

4. Take a look at the Maker Faire exhibits listed here: http://makerfaire.com/search.csp Name some you really liked.

5. Some Young Makers start the program with an idea of what they want to make, and others just want to make something, and don't have a specific idea as they begin. Do you know now what you would like to make over the next several months, which you will then exhibit at Maker Faire? **yes / no**
   If yes, please describe it here and SKIP the next question.

---

6. These are some of the content areas for projects at previous Maker Faires. Circle the ones that you wouldn't mind incorporating in your project. (You may also draw an "X" through anything that you wouldn't want to do.)

Ex: I like this thing.
Ex: ~~This is boring.~~
Alternative Energy
Animation
Arduino & Kits
Art Cars
Architecture
Arts
Astronomy / Space
Bicycles
Biology
Chemistry
Circuit Boards
Construction Kits (LEGO, K'NEX, etc)
Crafts
Dance
Electronics
Farming
Fashion
Fire Arts
Flight
Food / Cooking
Gaming
Gardening
GPS
Graphic Design
Hacking
Halloween / Horror
Humor
Kites
Knitting
Lights / Glowing
Mathematics
Mechanics
Microcontrollers
Music
Musical Instruments
Papercraft
Photography
Physics
Printmaking
Programming
Recycling
Robots
Rockets
Rube Goldberg Devices
Sewing
Social Media
Spying/Surveillance
Sustainable Living
Technology
Tesla Coils
Toys
Transportation
Vehicles
Video
Water
Weather
Wind
Wearables
Wireless
Woodworking

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7. Everybody knows how busy kids and their families can be! About how much time do you hope to spend on your project? (You can estimate per week / per month / total time.)

8. Check the box in front of the statement that seems the most true:
   [ ] I really enjoy working with several other people as part of a team.
   [ ] I prefer to work on projects by myself.
   [ ] Sometimes I like to work independently, other times with others. It depends.

9. Is there anything else you'd like to tell us about yourself, your projects, your background or your interests? *(Use the back!)*

Project Match for Mentors

This form is intended to help us understand who you are as a mentor and what kinds of skills and passions you would bring to the Young Makers program, so that we can match you with the right kids.

Name
Address
Home Phone Mobile Phone Email address
Best way and time to reach you

On the back, please tell us about why you'd like to mentor a Young Maker and your experience mentoring, if any.

Are you able to attend Maker Faire on _____? yes / no

Have you ever attended Maker Faire? yes / no If so, which ones?

… and have you ever exhibited at any of those events?

Take a look at the Maker Faire exhibits listed here: http://makerfaire.com/search.csp Name a few that you really liked.

What skills can you share with our Young Makers as an "expert" (or at least as someone very experienced)? What areas do you dabble in—that is, you are very interested in them, have some experience doing them, or are really motivated to learn more about them, enough that you can stay ahead of an equally motivated teenager? We've included a list of some of the kid-friendly content areas from projects at previous Maker Faires to help you brainstorm. Please be specific when appropriate (for example, if you list "Programming", you may want to list your favorite languages.)

I can be an expert on…	I'd like to learn more about …

Alternative Energy
Animation
Arduino & Kits
Art Cars
Architecture
Arts
Astronomy / Space
Bicycles
Biology
Chemistry
Circuit Boards
Construction Kits (LEGO, K'NEX, etc)
Crafts
Dance
Electronics
Farming
Fashion
Fire Arts
Flight
Food / Cooking
Gaming
Gardening
GPS
Graphic Design
Hacking
Halloween / Horror
Humor
Kites
Knitting
Lights / Glowing
Mathematics
Mechanics
Microcontrollers
Music
Musical Instruments
Papercraft
Photography
Physics
Printmaking
Programming
Recycling
Robots
Rockets
Rube Goldberg Devices
Sewing
Social Media
Spy/Surveillance
Sustainable Living
Technology
Tesla Coils
Toys
Transportation
Vehicles
Video
Water
Weather
Wind
Wearables
Wireless
Woodworking

Is there anything else you'd like to tell us about yourself, your projects, background or interests? *(Use the back!)*

Sample Liability Waiver

Assumption of Risk and Release
You agree that you are voluntarily participating in the Young Makers Program with knowledge of the risks of doing so, such as the risks of injury, property damage, or death resulting from the use of potentially dangerous tools or materials, and/or the active or passive negligence of the Young Makers Program sponsors and suppliers, including _____ and their respective officers, directors, employees, agents, and exhibitors (collectively, "we" or "us"). You release us from all liability, claims, damage, or demands arising from or related to your participation in the Young Makers Program.

Recordings
You acknowledge that the Young Makers Program events may be recorded in audio, visual, and/or audiovisual media and you consent to the making and use of such recordings by _____ and/or its licensees for any purpose. You release _____ and its licensees from and waive any claims related to or arising by reason of the making and/or use of any such recordings. You grant to _____ the right to use your name and likeness in connection with the use of the recordings.

Acknowledgment
You acknowledge that you have read this Agreement and understand that it includes an assumption of the risk and a release of liability. We are relying on this waiver to allow you to participate in the Young Makers Program.

Participation
You understand your goal is to define a project and work with other Young Makers and mentors to exhibit your completed project (or evidence of what you've accomplished to that point) at Maker Faire (dates: _____). You agree to use the facilities, tools, and materials in a safe way, and to alert fellow Young Makers, mentors, and/or program leaders when facilities, tools, and materials are being used in a way that could cause harm to themselves or others. You will do your best to come to all meetings. You will provide others with assistance or helpful feedback when you see a way their project could be improved, if such feedback is welcomed. You agree to tell program leaders changes you'd make to the program to improve future workshops. That is: I'll come. I'll make something. I'll help others and stay safe.

Name of Young Maker (printed) _____ Age _____

Signature of Young Maker _____ Today's Date _____

Name of Legal Parent or Guardian (printed) _____

Signature of Legal Parent / Guardian _____ Today's Date _____

Sample Mentor Request Form

This is an online form we've posted. you could do something similar for your club.

To look for a mentor to work with members in your club, there are two first steps: take a look at the list of people who have signed up (it's attached to our Google group) and also define what you need. This form outlines some of the most important points that mentors would need to know to determine if they are a good match for your club

* indicates a required question

1. Club Name *
2. If your club doesn't have a name, tell us the city where you meet.
3. Where does the Club meet?
4. When does the Club meet?
5. What day and time and how often
6. What age or grade level are the Club Members?
7. How many Club Members are there?
8. How many Mentors do you think you need?
   If you have already recruited some, please just say how many you're still looking for.
9. Are there specific projects that the Club Members want to make? Or special skills you need the Mentors to have?
10. Is there anything else we should know about your Club—-or the project(s) that need a Mentor?
11. Who is the Club Manager? *
12. How should Mentors contact you? *

Young Makers Project Plan

Here's most of what you need to think about to stay on target to exhibit at Maker Faire. We recommend shooting to complete the project a week before Maker Faire. That way you'll have a little cushion in case things take longer than you expect (and they almost always do!).

Project Name	
Young Maker's Name	**Roles** ***(if appropriate—ex: software coder, hardware hacker, photographer, videographer, etc.)***
Primary Mentor	
Other Mentors	
Project Description (a short paragraph of 10-30 words)	

Setting Milestones: Plan a timeline for your project. Feel free to adapt this chart as necessary to meet the needs of your project and team. This template is just a starting point. You may want to have one or two milestones each week, or every other week. For each milestone date (a) create sub-goals for each team member and (b) Include the amount of time you think this goal will take to reach.

Date		**Milestone or Event**	**Who?**	**Time**
March 19		Attend Regional meeting at the Exploratorium (Open MAKE theme: metal)		
		Complete Project Plan – Discuss with mentor.		
March 26	**1**			
	2			
April 2	**1**			
	2			
April 9	**1**			
	2			
April 16		Attend Regional meeting at the Exploratorium (Open MAKE theme: wood)		
	1			
	2			
April 23	**1**			
	2			
April 30	**1**			
	2			
May 7	**1**			
	2			
May 14		Project complete		
May 21		Maker Faire begins!		

Sample Proposal Form

(Note: this is similar to the online form)

Your Name(s) / Project Team Name *	
Mentor(s)	**Project Keywords** *(Ex: robotics "wireless sensor" knitting)*
	Pick a category: Arts Crafts Engineering Food Green Music Science
Project Name *(Provide a short, catchy name for your project.)*	
Project Description *(In 225 characters or less, describe your project and what it does. You can also add links to your project's website, a photo, and/or a video on your proposal form.)*	
A little about who you are *(In 50 words or less, describe who made this, whether an individual or the project team.)*	

X	**Special needs:** This project…
	must be outside.
	makes a loud, repetitive or annoying sound.
	requires Internet access.
	makes or uses radio frequencies.
	has to be plugged into an electrical socket.
	needs more than 5 amps of power.
	poses a danger to myself or others.
	could hurt someone.

Describe your Special Needs.
List any safety issues, & be sure to get a Safety Plan turned in by April 11th. Need > 5 amps? Tell us how much and what you will be plugging in. (You can find out how much power you need by looking at the back of the device you are plugging in. Most laptops use 2.5 amps.) Using radio frequencies, tell us which ones., etc….

Schedule Preference: We'll give you a time slot to exhibit of at least 2 hours per team member. When are you available? Circle slots when you'd like to exhibit and mark a big "**X**" through any times you are **UN**available.

Friday, May 20	**Day One of Maker Faire: Saturday, May 21**			**Day Two: Sunday, May 22**	
11am–2pm *extra slot: field trips only "YM Education Day"*	**10am – 2pm**	**1pm – 5pm**	**4pm – 8pm**	**10am – 2pm**	**2pm – 6pm**

[ ] I / We only want to exhibit on only one day, either Saturday or Sunday.
[ ] I / We would like to exhibit at a scheduled time both Saturday and Sunday, if possible.

Be ready to provide basic info for each Project Team Member when you fill out your form online.

Name	Email	Phone	School	City	Previous Maker Faires attended or exhibited

Maker Faire Safety Plan Template

Maker #	
Exhibit Name	
Description	
Placement	
Demonstration Summary	
Qualifications and Previous Experience	
Personnel	
General Safety Precautions and Plan	
Additional Comments	
Maker Name	
Contact number	
Signature	

Sample: Preparing for Maker Faire

CONTACT INFO
[insert your contact info here, including email and all phone numbers]

Maker Faire Bay Area 2011
San Mateo Event Center
May 21, 2011: 10 a.m. – 8 p.m.
May 22, 2011: 10 a.m. – 6 p.m.
www.makerfaire.com

Maker Faire is a fun, interactive maze of demonstrations, exhibits, workshops, and displays, like an old state fair where everyone arrives with their wares and sets up their exhibit. We try to keep it environmentally friendly and simple in design. We'll have a special exhibit area just for the participants in the Young Makers program.

This is an overview of the official *Maker Manual,* which we distribute to the Makers who will be exhibiting for the full event. Please have your parent, teacher or guardian review the complete Manual for additional Rules and Regulations as the signature on the Maker Participation Agreement confirms that they agree to the terms in the Maker Manual.

As a Young Maker, there are two options for exhibiting your project at Maker Faire:

1) You can exhibit for a limited number of hours during the faire, usually 2-4 hours, after which you remove your project, so that another Young Maker can exhibit at the same location. To sign up for this option, fill out the Young Makers Entry Form. [Add Link to Google Form]
2) You participate as a Maker exhibiting throughout the weekend. If you prefer this option, please complete the Call for Makers Entry Form, which is the standard application for all Makers not participating in the Young Makers program. http://makerfaire.com/bayarea/2011/callformakers/

Checklist

- ☐ Read this doc to plan setup and to learn what to expect.
- ☐ Identify unusual needs for your project on your entry form. If it has any fire or safety issues, you will need to submit a Safety Plan.
- ☐ Fill out the appropriate entry form indicating your time slot preference. Plan to arrive ahead of time to set up.
- ☐ Design the "look and feel" of your project. Create the best way to showcase or demo it. Determine what props you'll use – supplies, descriptive signage, etc. to share how you made it and to enhance the attendee experience.
- ☐ Start a checklist of all items that you need to bring with you. Who will help you set up? How can you pack for easy setup? Come prepared with all you need for set up. And pack comfy shoes, layers of clothing for variable weather, and maybe even rain gear!
- ☐ Are you carpooling to Maker Faire? Using public transit? Planning for the time it will take to get from parking to your exhibit on show days? Check makerfaire.com for updates on available parking and traffic route recommendations.
- ☐ Tell your friends and family that you will be at Maker Faire by adding web badges to your website and email signature. Thanks for spreading the word!
http://makerfaire.com/bayarea/2011/badges.csp

Deadlines

- ☐ **April 1** Submit details about your project on the appropriate form.
- ☐ **April 11** Submit General Safety Plan / Fire Safety Plan if you have anything slightly dangerous happening in your project.
- ☐ **April 16** Sign Maker Faire Participation Agreement – Parents/Guardians and Young Makers (posted in our Google group)

If you selected Option 1 above and will be exhibiting at a scheduled time during the day, please allow extra time to arrive and park. It will be very crowded during Maker Faire. Also, please consider how you will transport your project through the crowd. If you are concerned about this, consider bringing everything ahead of time on Friday and let us know on your entry form if you will need to 'store' your project before or after your scheduled time.

Where to Go
The San Mateo County Event Center is at 2495 South Delaware Street in San Mateo, but the 1346 Saratoga Drive entrance is the best for Maker Check-In and the Main Gate entrance. At Maker Check-In they will tell you where the Young Makers exhibit area is and how to get there.

What We Have for You
If you need anything besides what's listed below, you need to bring it! Anyone who is setting up for the whole weekend or who has particularly bulky items that require load-in from a car will want to look at the official *Maker Manual* for more details.

Wristband and Tickets: Your status as a Maker grants you entry for both days with a Maker wristband, which you will receive at Maker Check-in and a one-day Adult ticket for a parent, guardian, or friend.

You can also buy up to 6 more Adult tickets per exhibit at a discounted rate of $15 each.

Space: We will provide table space and chairs.

Hand Cart Checkout: At Maker Check-in, Makers can use dollies and carts to move their exhibit materials. Ideally, if you have something bulky, bring everything to your exhibit location before 9:45 a.m. on the day you exhibit if possible.

Electrical: There will be power available at your exhibit space if you have indicated your power requirements on your entry form.

Signage/Web: You'll have a small sign for your project and a page on our website. Feel free to make additional signs for your exhibit that help the attendees understand what you are making and how you made it!

Internet Connectivity and Radio Frequencies: Please indicate on your application if you must have internet and/or use radio frequencies for your project to function.

Free Parking: On Saturday & Sunday, parking is free at the Franklin Templeton parking lot on Saratoga. You will need to plan for a 15 minute walk. On Thursday & Friday, there is free parking at the Fairgrounds for set-up.

Paid Parking: During Maker Faire (Saturday & Sunday), public parking at the Event Center via the Saratoga entrance is $17 per car per day.

Bike Valet: Secure Valet Bicycle Parking is provided by the Silicon Valley Bicycle Coalition.

Food for Purchase: Concession stands will be open during the show and the cafeteria will be open for set-up on Friday. No outside food or beverages are permitted (based on the rules of the Event Center.)

Minimal Security: If it is valuable, take it with you! Maker Faire Production will maintain 24-hour roaming perimeter security Friday to Sunday.

Emergency Services: In the event of a medical emergency, notify security personnel or anyone with a radio or walkie-talkie. They will contact the on-site EMT personnel, who have a direct line to the San Mateo Response Dispatch. If someone dials 911 from their cell phone, the above procedure still needs to be followed for the best possible care, as this will expedite the response of medical assistance. Please report all incidents to the Maker Faire Security Office located in the Public Service Center Building.

Recycling and Disposal: We will be collecting aluminum cans, plastic bottles and cups, glass bottles and jars. We will have recycling stations for all types of paper, plastic containers # 1 thru # 7, steel and scrap metal, plastic bags and packing materials. There will also be an area for corrugated cardboard. Non-toxic waste and general trash receptacles will also be available. Let's all work together to reduce Maker Faire's environmental footprint!

Volunteer Opportunities for your friends: We welcome volunteer participation at the Maker Faire Bay Area. Volunteers make a valuable contribution. More details at makerfaire.com/bayarea/2011/volunteer

Posters: Spread the word with a poster at your school or on your neighborhood bulletin board makerfaire.com/bayarea/2011/posters.csp

The weather in previous Maker Faire years was clear, warm, and sunny but in the case of rain, the show will go on!

We very much appreciate your taking the time to read this document, and we hope your participation in Maker Faire is a wonderful experience.

Maker Faire Timeslot Worksheet

Timeslot	Booth spot #1 (electrical)	Booth spot #2 (no electrical)	Booth spot #3 (large footprint)
Saturday 10:00–1:30			
Saturday 1:30–4:30			
Saturday 4:30–8:00			
Sunday 10:00-2:00			
Sunday 2:00–6:00			

Sample Post-Season Survey

Young Makers Program: Maker Faire Bay Area 2011 Feedback

We'd like to see the Young Makers Program grow, and you can help. Please take a few minutes to let us know what aspects of the program worked, and what didn't. If you have other ideas and reflections that could improve the program, we'd love to hear them, the good, the bad, and the funny. Anecdotes are most welcome!

Questions Just for Young Makers

- How old are you?
- Were any of your mentors your mom or dad?
- How much help did you get from your mentor(s)?
- What did you think of the following elements of the Young Makers Program this year?
    - Your project vision
    - Your completed project
    - Help you got from your mentor(s)
    - Your experience exhibiting at Maker Faire 2011
    - Our monthly, regional meetings at the Exploratorium (Part 1): OPEN Make workshops
    - Our monthly, regional meetings at the Exploratorium (Part 2): plussing (feedback) sessions
    - Our monthly, regional meetings at the Exploratorium (Part 3): Featured Maker talks after lunch
    - Overall: the whole Young Makers Program this year
- What part of the Young Makers Program was the most fun for you?
- What was the least fun or most frustrating?

Questions for Adult Participants

- Which of these describe your role(s) in the Young Makers Program in 2010-11?
    - Mentor (helped at least one Young Maker complete her/his project)
    - Club Manager (organized a local Maker Club, recruited participants, etc.)
    - Shop Host (shared access to fabrication facilities with Young Makers)
    - Parent Volunteer (organized participation at Maker Faire, or helped with a club, but not as a club manager/shop host/mentor)
- How many projects did you help with?
- Were any of the team members you helped your children?
- How satisfied were you with the following elements of the Young Makers Program this year?
    - The project vision of the Young Maker(s) you helped
    - The completed project(s) of the Young Maker(s) you helped
    - How engaged the project team members were
    - Our monthly, regional meetings at the Exploratorium (Part 1): OPEN Make workshops
    - Our monthly, regional meetings at the Exploratorium (Part 2): plussing (feedback) sessions
    - Our monthly, regional meetings at the Exploratorium (Part 3): Featured Maker talks after lunch
    - Your experience exhibiting at Maker Faire 2011
    - The quality of the shop facilities you used?
    - Your experience (as a mentor, club manager, and/or parent volunteer)?
    - Overall: the whole Young Makers Program this year
- Please elaborate on any of your answers above in this space if you want to say more about those answers.
- What aspects of the program were the most rewarding, inspiring, and successful?
- What aspects were the least successful or frustrating?

Questions for All Participants

- If a friend asked you to describe the Young Makers Program in 10 seconds or less, what would you say? *(My goodness, that's a very busy, impatient friend! We just want you to describe it really briefly.)
- If you could change one thing about the program, what would it be? This is the place to give more feedback that didn't fit any of the questions we've asked. Suggest changes would you like to see for next year, or ways to reduce any frustration you felt.
- Share your success stories! Tell us anything we might share when we try to get other kids and adults excited about the program. Young Makers, you can tell us about things you learned or new skills you gained. You can even describe anything at Maker Faire that interested or inspired you in this.
- Do you think you'll take part in the Young Makers Program again in the future?
- Optional: Your Name (especially if you've said something you'd like us to follow up on.)
- Optional: Your Maker Club's Name and/or Location
- Spreading the word: If you know someone who should hear about this program, please give us their email address(es) here

Examples: a season of e-mails to the mailing list

Sample e-mail: Invitation to participate (used for pilot program)

We are working with the folks at MAKE magazine / Maker Faire, The Exploratorium, and Pixar to create a program designed to support kids who like to build things. A pilot launches in January.

There are two components to the program:
1. Open MAKE: a series of public talks with Featured Makers and related drop-in workshops Saturdays (Jan 15, Feb 19, Mar 19, & Apr 16) at the Exploratorium

2. Maker Club: a group of 8-10 kids who are paired with adult mentors to work on more intensive projects for exhibit at Maker Faire (May 21-22).

NOW ACCEPTING APPLICATIONS

Read more about the program at http://youngmakers.org

We would like to invite any interested Young Makers (in grades 8 through 12) to apply for consideration to participate in our local Maker Club. To apply, simply send us an email with your name, age, grade level and a paragraph explaining what makes you a Young Maker! Please only apply if you can commit to completing the entire program.

(Note that, while your application does not guarantee participation in the core group, the public talks and workshops at the Exploratorium are available to anyone who wants to attend them, and anyone who wants to exhibit at Maker Faire in May can do so by submitting a proposal in the spring, whether or not they are part of the Young Makers program.)

Sample e-mail: Invitation to look for mentors and collaborators

I just sent an invitation to a document to this mailing list. We hope you can use this spreadsheet to find co-located people who have signed up to participate as mentors, club managers, and shop hosts in the Young Makers program this spring. Please feel free to identify a few people you'd like to reach and email them directly. We hope this will help you get your club up and running, and if you run into any problems please be in touch so we can help.

Sample e-mail: Early season update

Hello Young Makers, Mentors, potential Shop Hosts and Club Managers, and friends & family,

We're just about 3 weeks out from our first regional meeting of the Young Makers program at the Exploratorium (Jan 15th), and there's an adults-only meetup on Jan 6th too. Time for updates....

Clubs are forming! We have about 16 clubs up and running, or just getting started / in the idea stage. check them out here...

http://www.youngmakers.org/ymp-clubs

Young Makers: You should identify a local Club to join if you haven't yet. If there isn't one that fits your needs, let us know and we can talk to you about getting one started.

Mentors:
(1) There are a few Clubs that are already keen to have your help! Take a look at the Clubs page (link above) and contact the Club Manager for those you can help.
(2) Come to the meetup on Jan 6th (see below).

Club Managers: Let us know what you have and what you need at this point.
(1) Need Mentors? We hope to tell our wider Maker community about specific mentorship opportunities, so the more details you can tell us about what you might need the better. This is just your first, not your last, opportunity to find mentors for your members.
(2) If you're starting a Club and we don't yet have you on the Clubs page (link above), please contact us.
(3) Come to the meetup on Jan 6th (see below).

Shop Hosts: Hang tight! Projects will likely start up in January. Come to the meetup on Jan 6th (see below).

.....
MEETUP for all adults in the program (mentors, club managers, shop hosts, parent volunteers, etc.): The Exploratorium has offered to host a monthly Mentor meetup on the evening of their wildly popular AfterDark events, the first Thursday of each month. Any Young Makers program Mentor can come to the meetup and the event free of charge if they rsvp online one week before the event. In January, then, the "Chill" event is 6-10pm on Thursday, January 6th, and you would have to rsvp by December 30th here:
https://sites.google.com/site/youngmakersprogram/january-afterdark
Mentors will meet during the AfterDark festivities--we'll notify those signed up about where and when to meet in the museum.

Sample e-mail: First meeting anouncement

Dear Young Makers,

In the past month there has been a LOT of behind-the-scenes organization, particularly in the formation of nearly 20 Young Makers clubs around the Bay Area. We've also been hard at work planning the regional meetings at the Exploratorium, and filling out materials on the website. Be sure to check out what's available at youngmakers.org.

The first of our four Regional Meetings at the Exploratorium is fast approaching. It will be held a week from today, next Saturday, January 15 from 10am-2pm. Here's what to expect for the day, along with some steps you can take to prepare for it. We can't wait -- it should be very exciting!

.....
Between now and January 15th

Young Makers should be brainstorming about project visions. You'll have a chance to share your project ideas (and any progress you might have made toward your vision) in the "plussing session". Plussing sessions give everyone a chance to see what others are up to, what challenges they're facing, and what progress they've made since the previous month.

If you're still looking for project ideas (most of you are), take a look at the Finding a Project Vision page for some suggestions of where to look:
http://youngmakers.org/finding-a-project-vision

In this first plussing session don't worry if you don't have anything to share. There will be time for that in the coming months. If you do have something to share, consider bringing sketches or other visuals to help describe your ideas. If you have several ideas for a project and haven't yet decided upon one, consider briefly describing them all. If you have work in progress, by all means bring pictures, artifacts or other materials to talk over.

.....
Schedule for January 15th

10-11:30am: Open MAKE in the Tinkering Studio. The Tinkering Studio is located along the left (east) wall about 3/4 into the museum. There you will be able to take part in a hands-on activity facilitated by museum staff.

11:30am-12pm: Lunch Break. Details about which space we'll use will be in our reminder message. Be sure to bring a bag lunch and plenty of water to drink.

12-1pm: Plussing Session in the classrooms.

1-2pm: Featured Maker Interviews in the McBean Theater. The theater is located to the left (east side) just inside the main entrance. Each month Dale Dougherty will be interviewing several notable makers, with a different theme each month. The theme for January is plastics. See the end of this message for details.

See you soon, and let us know if you have any questions or need help with some aspect of your project, club, or whatever. You can reach us at contact@youngmakers.org.

.....
About Open MAKE

A collaboration between the Exploratorium, MAKE Magazine, and Pixar Animation Studios, Open MAKE is a monthly program highlighting the tools, techniques, and ingenuity of local Makers. Visitors are invited to participate in tinkering and making activities inside the Tinkering Studio, where Makers from around the Bay Area will share their work. In addition, Dale Dougherty, founder and editor of MAKE Magazine, will interview Featured Makers in the McBean Theater.

This month's theme is PLASTIC. We'll celebrate this most ubiquitous of modern materials in a number of ways:
• Shih Chieh Huang ("CJ") will display one of his mind-bending multimedia art pieces. He uses recycled plastic and found objects to create otherwordly installations.
• Lanny Smoot will showcase his incredible strobing zoetrope. You'll be able to lipsync a Ping-Pong ball to your voice!
• Virginia Fleck will host a workshop on building a collaborative, inflatable meditation cushion made of recycled plastic bags.
• Shawn Lani's Strobe Flower lanterns will be installed in the Tinkering Studio. A simple plastic bag becomes a thing of beauty.
• Karen Wilkinson will show you how to fuse plastic bags to make fabric.
• Michael Schiess will let you play with some of his transparent pinball machines.
• Michael Shiloh will help you build a simple electronics project on a breadboard.
• Julie Yu will make homemade shrinky dinks with discarded plastic.

Sample e-mail: Reminder for first meeting

Dear Young Makers Participants,

We're looking forward to our meeting on Saturday. We write to share some reminders and changes, plus a map and a checklist. We apologize for the length of this message, but it contains important information for you to review and act on before Saturday.

Things to bring:
(1) A printed and signed waiver, one for each attendee regardless of age:
http://tinyurl.com/YM-2011-01-tkt
Please note that while anyone is welcome to Open MAKE, these complimentary admissions are being generously offered by the museum only for our program members.
(2) Layers of clothing --- in case we move outside. While it won't be raining, it may be cold. Bring sweaters and coats to bundle up!
(3) Some lunch and water
(4) Things to share about your project if you've started already. We'll have the first plussing session this week. This will be a little like a micro-mini Maker Faire -- informal, low-key. Bring whatever you have. Read more about what to expect here: http://www.youngmakers.org/plussing-sessions
(5) A map that includes a detailed schedule of events and locations -- you can print it ahead of time (or load it onto your smart phone). http://tinyurl.com/YM-2011-01-map

When you arrive:
(1) Directions to the Exploratorium and information about parking can be found here:
http://www.exploratorium.edu/visit/location_directions/
(2) Be sure to check in at the Welcome Desk. It'll be in the foyer just inside the museum doors.
(3) After checking in, enter the museum by handing your completed waiver to the receptionist. The waiver is your ticket into the museum. Your first stop will be the Tinkering Studio area, indicated as #1 on the map (http://tinyurl.com/YM-2011-01-map)
(4) If you experience problems, you can call Tony at 415-000-0000 or Michelle at 415-000-0000.

Not coming? Catch an hour of it....
If you are unable to attend this Saturday's meetings, you may still tune into the "Meet the Makers" Featured Maker interviews online via the Exploratorium webcast:
http://www.exploratorium.edu/tv/?project=91&program=1179&type=webcast

See you soon!
The Young Makers Team

.....message sent a few days ago (edited with updates) .....
[The original meeting announcement was repeated here, but has been deleted in the Playbook for brevity.]

Sample e-mail: First meeting recap

Dear Young Makers Participants,

Yesterday was the first regional meeting of the Young Makers Program. The meeting was part of the Exploratorium's Open MAKE series, the theme of which this month was "plastics". What a terrific meeting it was!

Roughly 100 Young Makers Program participants were on hand. Activities included hands-on opportunities in the Tinkering Studio, exhibits by various Makers (including Shawn Thorsson and his amazing Halo Costumes), and talks by four accomplished Featured Makers hosted by Dale Dougherty. The Featured Makers were CJ Huang, Virginia Fleck, Lanny Smoot, and Shawn Lani. We also held our first plussing session where a number of you shared your current project thoughts, sketches, and initial designs.

A few pictures of the event are available here; a webcast of the Featured Maker talks is also available. Please let us know if you have additional pictures or video to share.

It was an all around inspiring day of Making. We can't wait to see you again next month, the theme of which is Cardboard.

Sample e-mail: Mid-season meeting announcement

Dear Young Makers,

Our next Regional Meeting at the Exploratorium will be held a week from tomorrow, on Saturday, March 19th from 10am-2pm.

.....
Between now and March 19th

Most of you have settled on a project vision and have a good idea of the steps needed to get there. We suggest that this is a good time to rough out a project plan for how to get everything done in time for Maker Faire. We've put together a template you can use to sketch out milestones. Download it here as a PDF or an editable Word document:
     http://tinyurl.com/YMP-ProgramPlan-PDF
     http://tinyurl.com/YMP-ProgramPlan-DOCX
Like last month, be prepared, once again, to bring sketches and "stuff" -- your materials, any prototypes or making you've done to share during the plussing session.

.....
Schedule [listed with all events, deleted for brevity in the Playbook] .

See you soon, and let us know if you have any questions or need help with some aspect of your project, club, or whatever. You can reach us at contact@youngmakers.org.

Sample e-mail: Mid-season post-meeting recap

For those who missed the meeting on Saturday or didn't catch what we announced, here are some helpful links.

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Upcoming Dates
April 1: Deadline to submit details about your project in order to exhibit at Maker Faire by this special YM-only extended deadline. (This applies for both those exhibiting in our area and those exhibiting on their own.)
April 7: Exploratorium AfterDark and optional mentor meetup
April 11: Deadline to submit General Safety Plan / Fire Safety Plan if your project might hurt you or someone else.
April 16: Next Regional Meeting, and deadline to sign Maker Faire Participation Agreement (which we'll have for you soon)

**For that April 1st deadline to register your project, the way you sign up depends on which of two options you choose for exhibiting your project at Maker Faire:

(1) You can exhibit for a limited number of hours during the faire, usually 2-4 hours (to be determined), after which you will remove your project, so that another Young Maker can exhibit at the same location. To sign up for this option, fill out the Young Makers Application:
https://sites.google.com/site/youngmakersprogram/resources/young-maker-application
(2) You (or members of your class or project team trading off) may participate as a Maker exhibiting throughout the weekend. If you prefer this option, please complete the Call for Makers Entry Form, which is the standard application for all Makers not participating in the Young Makers program. Even though the deadline has passed, we have special permission to take an entry from a Young Maker.
http://makerfaire.com/bayarea/2011/entry/

.....
Two handouts. We have posted some useful items on our website on the Resources page, which you can access in the "Attachments" section at the bottom of the page:
http://www.youngmakers.org/resources

The last two are the ones I brought on Saturday and they may be of some interest to you:

(1) YoungMakers-proposal-2011.pdf
http://tinyurl.com/YMProgramProposalPrep
This is a paper version of what you will fill out online when you apply for Maker Faire if you want to exhibit in the Young Makers area for less than the full weekend. It's not an official entry form, just a sheet you can use to figure out what you want to put into the proposal form, with all of the important info you need to think through before sitting down to enter it online. (We imagine this will make it easier for groups to fill out the online form.)

(2) YoungMakers-MFoverview-2011.pdf
http://tinyurl.com/YMProgramPrep4MF
Provides a 2-page glimpse of what to expect at Maker Faire. There's a much longer version of this available on makerfaire.com website

.....
Keep It Up! We know that we're a little more than halfway from the time we all first met to the time we'll all be celebrating our projects at Maker Faire, and that this is a time when the energy you have for your work may be flagging a bit, if you've hit some snags or the time just seems to be passing too quickly. On Saturday, we started sharing tips for keeping the momentum going. If you have any favorites of your own, please share your tips for getting things done. (Everyone on this list, young and not-so-young, is welcome to add to our list--we'll be compiling them for the makezine blog and sending them to the list, too.)
One thing that may help, as we mentioned last week, is to plan your next couple of months. On the Resources page (youngmakers.org/resources), you can also find the Project Plan for pacing your progress between now and May 21 so that you'll be ready to show your project at Maker Faire.

.....
Webcast. We have a link for the "Meet the Makers" interviews Dale led on Saturday. If you weren't able to come, at least you get to enjoy the last hour of our meeting!
http://www.exploratorium.edu/tv/index.php?project=91&program=1178
(And I will get the live link out before the meeting next month so that those who can't make it Saturday morning can tune in real time. Sorry if you were missing that!)

.....

Wow, that's a lot of information! Let us know if you have any questions or concerns.

Sample e-mail: Proposal reminder

Hello everybody,

Some of you have already submitted your proposals to exhibit your projects at Maker Faire (thanks!), but many of you haven't yet. We extended the proposal deadline to this Friday, April 1.

As a Young Maker, there are two options for exhibiting your project at Maker Faire:

(1) You can exhibit for a limited number of hours during Maker Faire, usually 2-4 hours, after which you remove your project, so that another Young Maker can exhibit at the same location. To sign up for this option, fill out the Young Makers Application.

http://tinyurl.com/YMP-MFBA2011-app
http://www.youngmakers.org/resources/young-maker-application

(2) You participate as a Maker exhibiting throughout the weekend. If you prefer this option, please complete the Call for Makers Entry Form, which is the standard application for all Makers not participating in the Young Makers program. While it says the deadline has passed, we have special permission to submit our proposals late. Make sure you identify yourself as a Young Maker!
http://makerfaire.com/bayarea/2011/callformakers/

We can't wait for the visitors to Maker Faire to see what you've made. If you have any questions (or if you need us to warm up any cold feet), drop us a line!

Sample e-mail: Final meeting announcement

Dear Young Makers,

Our next Regional Meeting at the Exploratorium will be held a week from tomorrow, on Saturday, April 16th from 10am-2pm.

.....
Between now and April 16th

If you haven't completed your proposal to secure a timeslot yet, please do so here:
http://www.youngmakers.org/resources/young-maker-application

As in previous months, be prepared, once again, to bring sketches and "stuff" to our meeting -- your materials, any prototypes or making you've done to share during the plussing session. Some of you are still getting started on simpler projects, others are far along on some more advanced projects. Bring what you have!

Feeling really far behind? Those of you who haven't started may want to think about ways to create an interactive experience at Maker Faire, rather than a finished project, if you'd like to participate but feel like you've run out of build time. Be in touch with your club manager and mentors if you still need to brainstorm, and drop us a line too.

And take a look at our new blog! Special thanks to the first of our "official" bloggers for the program, Suzie Lee, who has been doing a fantastic job documenting the work of the Young Makers Yolo and the program's regional meetings. If anyone else would like to contribute content to the blog, please be in touch with us.
http://youngmakersprogram.blogspot.com/

.....
Schedule [listed with all events, deleted for brevity in the Playbook] .

See you soon, and let us know if you have any questions or need help with some aspect of your project, club, or whatever. You can reach us at contact@youngmakers.org.

Sample e-mail: Final meeting reminder

Hi everybody,

Just a reminder that we hope to see you Saturday morning for our last official meeting and Open MAKE session before Maker Faire.

Come with:
-- Your printed tickets http://youngmakersapr2011.eventbrite.com/ (pwd YMP2011)
-- A beverage to accompany PIZZA! We will celebrate our last meeting of this season with slices!
-- Oh, and your project stuff of course.

See you Saturday!

[previous announcement copied at end of message]

Sample e-mail: Final meeting re-cap

Hello Young Makers and mentors,

Our final regional meeting before Maker Faire was last weekend, and we write to share a note of encouragement and some announcements we made there, since some of you were away on vacation.

First, we are proud of you. Perhaps a few of you have your projects nearly done (four weeks ahead of schedule! way to go!), but we expect that far more of you are feeling like you don't have much to show yet and that you are running out of time. Don't lose heart! The extraordinary creativity and innovation that you've all demonstrated this season is really inspiring. We frequently see an expression of wonder and surprise as we describe to people some of the projects you've undertaken.

Did you know that Make always sponsors the "Most Spectacular Failure" award at The Tech Challenge? There is no shame in taking on something beyond your reach, and you have done great work already. Keep going, and if you hit some stumbling blocks along the way, keep documenting what they are, and be proud to share whatever progress you made at Maker Faire. Whether your project is a tangled heap of lots of great ideas that didn't pan out when you sit down with your project at Maker Faire---or it's a fabulously finished realization of your original design---we can assure you that it'll be great and attendees will be impressed.

Though many of you still have a lot of work left, we think you'll find that the interest and excitement you can expect from attendees at the Faire is worth it. Keep it up, and let us know if there is anything we can do to help you complete your vision. And thank you for setting such an incredible example of what can be accomplished when kids and adults come together to make things.

Project Confirmation. Please verify that we have your project in our system if you plan to exhibit in the Young Makers booth. Here's a list of the ones we are scheduling (thanks to Jessica and Aaron for your help with the schedule--and we'll be sharing it soon, everyone.)
http://graphics.pixar.com/projectPage.html

Late / Missing Project Proposals. If you don't see your project in the list above, be sure to fill out the form as soon as possible here:
http://www.youngmakers.org/resources/young-maker-application

Project photos. Only a few of you have sent in pictures to use on your project poster. Please send an image link (or an image) to me by replying to this message by April 30.

Want to be interviewed? If you are interested in talking to the press (newspapers, TV, radio, blogs, etc.) about your project, email Sherry Huss at sherry@oreilly.com and cc: Michelle at binka@oreilly.com please.

Get ready. We've posted a 2-page overview of what Young Makers can expect at Maker Faire here:
http://tinyurl.com/YMProgramPrep4MF
There's a much longer version of this available on makerfaire.com website. Please note that if you are signed up to exhibit in our booth, identify yourself as a Young Maker when you get to Maker Check in at Maker Faire. They'll have your name on the list there if and only if your project is listed above or if you fill out the proposal in the next few days.

Maker Faire Free Fun Stuff: If you didn't get your Maker Faire car magnets, yard signs, buttons, posters, postcards at the meeting, and you want to help spread the word to your friends and neighbors, let me know what you'd like and how many of each and what your address is, and we'll get those right out to you!

Couldn't make it last Saturday? If you missed our final meeting, you can read Suzie's account of it here:
http://youngmakersprogram.blogspot.com/2011/04/open-make-session-4.html
and watch the video of the four wonderful presenters in the Meet the Makers talk here:
http://www.exploratorium.edu/tv/index.php?project=91&program=1181

Invite your teachers (for free!) and your classmates. If you want your class teachers to come visit Maker Faire for FREE or to bring your class to a "preview" of Maker Faire on Friday, May 20, send them to this link: makerfaire.com/education where we explain our educational outreach.

Happy making!
The Young Makers Team

Sample e-mail: Pre-Faire logistics (for exhibiting groups only)

Dear Young Makers,

We're looking forward to having you participate in the 6th Annual Maker Faire Bay Area 2011! If you are getting this message, we're expecting you to show off your project in the Young Makers booth on Saturday and/or Sunday.

We'd like to explain the process leading up to Maker Faire, which starts in less than two weeks. This is a long email because there's a lot to know. Please stick with it and read through.

(1) Gather your stuff. For most of you who are exhibiting in our space, we will provide space on a folding table and a chair to sit in. We ask that you bring all other items required for your exhibit. If you need something beyond this, and you indicated so in your entry, we may contact you to discuss these details, but you can email me to double-check. We will also provide a small sign for your exhibit. If you have any questions, big or small, about your exhibit or changes to it, email me at binka@oreilly.com please.

(2) Plan ahead for bringing your projects in. How will you get all your stuff into our area? We suggest that you plan to arrive before Maker Faire begins and enjoy the show until you have to set up your project. Unless your project pieces are very bulky or have precious, expensive equipment, we'll be able to stash your stuff under our nine tables in our 20x20 space. If you arrive after Maker Faire begins, it'll just be a little more complicated, but we can work it out. By the way, there's info on getting to Maker Faire by car and other alternatives linked to the MF page:
http://makerfaire.com/bayarea/2011
NOTE: All go-karts, cars, and outdoor exhibits, anything that won't be on a table: please send us the size of your exhibit's footprint as soon as possible if you haven't yet. How much floorspace does it need? Were you hoping to park it before/after your timeslot, or can you take it back to a car?

(3) Keep your weekend free. You told us when you would like to exhibit your project in the Young Makers booth, and for most of you we have placed you in a timeslot you said worked very well for you (see the tentative list at the end of this message.) Again, Maker Faire is May 21st and 22nd. (Not this weekend, but the next.) If you can come on Friday, May 20th, we have a field trip program going from 11am-2pm and a special late afternoon Maker Networking event. Let us know if you can make it to either one.

Most of you will not exhibiting the entire Maker Faire, so you'll want to save time on the day you are exhibiting to go enjoy the rest of Maker Faire too.

The current timeslot assignments are listed below my signature at the end of this message, alphabetical by project name. We will send a follow-up email with your confirmed date and time and additional details in the next week.

Here's the preliminary Maker Faire schedule so you can plan ahead:
Fri, May 20 (10am-8pm) -- Setup
Fri, May 20 (11am-2pm) -- Educ Day field trips, tell us if you want to be there
Fri, May 20 (5pm-8 pm) -- Maker Networking Event, rsvp required
Sat, May 21 (10am-8pm) -- Maker Faire
Sun, May 22 (10am-6pm) -- Maker Faire

(4) Read the Maker Faire overview. We put together an overview just for Young Makers:
http://tinyurl.com/YMProgramPrep4MF
It will help you prepare for Maker Faire and answer many of your questions.

(5) Accept the Participation Agreement. It is attached. This agreement indicates that you've read the overview and that we've agreed on the specifics of your exhibit. It is geared towards adults, which means that your parent or guardian is reviewing it and signing it for you. NOTE: All exhibiting Young Makers must have their parent or guardian sign and email, fax, or bring it with you to check in in order to participate in Maker Faire. This is especially important to know if you will not be coming to Maker Faire with a parent or guardian!

(6) Tell your story. We encourage you to design your exhibit and to make it interactive and fun. You'll also want to bring early sketches, models, or prototypes, whatever you need to help explain how and why you made your project. You can lay out images on the table, put them in a binder, or put them on a poster board -- whatever you think works best. Think about how you can tell the story behind your project and your process in 20 seconds and also in 2 minutes. How did you get started, and what might you do next on this project or your next one? Practice talking about your project

with family and friends. By the way, if your project is mobile or doesn't really fit on a tabletop, you'll want to think ahead to how you can display your poster and process materials.

(7) Spread the news! We've created some Maker Faire graphics that you can use on your website and email signatures to let people know about your appearance. We appreciate any efforts on your part to promote Maker Faire to friends, family, and coworkers. You will find these graphics at http://makerfaire.com/bayarea/2011/badges.csp

You can also link to your Maker Faire page, and if you have a photo of your project now, please send me a link to it so we can add it to your project page.

All YM projects are linked to this page:
http://makerfaire.com/pub/e/5346

(8) Write down this number: 5346. You will use that at Maker Check-In. Directions to Maker Check-in and maps will be sent in the next email. Check-in opens Saturday, May 21st at 7:30 am and Sunday, May 22nd at 8am. You can arrive anytime after those hours, but please plan on arriving one hour before your scheduled time to allow for traffic, parking, the shuttle (if you park in a remote lot), finding your way to the Young Maker booth, and setting up your exhibit. Keep in mind, traffic will be busy, and it will be very crowded at Maker Faire. When you arrive at Maker Check-in, identify yourself as a "Young Maker and part of Maker Exhibit #5346."

You'll be able to bring in one adult with you for free, and you can buy $15 tickets for other adults at Maker Check-In. Don't worry about buying tickets for a mentor who isn't your mom or dad--we'll take care of them separately. Maker Check-In crew will tell you where to find us in the middle of the south half of Expo Hall, just east of the Exploratorium's area and south of the Make and Craft areas. It's a prime location!

Those were a lot of details, and guess what--we'll be sending at least one more email with even more details in the next week or so. We look forward to seeing you all at Maker Faire!

Sample e-mail: Pre-Faire logistics (for everybody)

Hello Young Makers group,

If you are planning to exhibit at Maker Faire, you should have received an email from me with the subject line, "Getting Ready for Maker Faire, Young Makers area." I just sent it a few minutes ago, but I know that I sometimes end up in spam filters because of my crazy last name. If you didn't get it, please email me right now, as it may indicate we don't have you in our system, and we have to fix that right away!

For the rest of you who are not exhibiting, here are some things that may nonetheless be of interest to you:

Schedule for MF weekend:
Fri, May 20 (11am-2pm) -- Education Day field trips -- http://makerfaireeducationday.eventbrite.com
Sat, May 21 (10am-8pm) -- Maker Faire
Sun, May 22 (10am-6pm) -- Maker Faire

Where we'll be:
To find the Young Makers area, go to the middle of the south half of Expo Hall, just east of the Exploratorium's area and south of the Make and Craft areas. It's a prime location! Some of our projects will be located outside and roaming the event too, to be determined, but we'll have info about this at the booth.

See our projects:
All Young Makers projects are linked to this page: http://makerfaire.com/pub/e/5346

Mentor tickets:
Mentors without your own kids in the program: I told the exhibiting Young Makers not worry about buying tickets for a mentor who isn't their mom or dad--let me know what project you helped and what day you plan to come so I can add you to our list.

Spread the news about Maker Faire!
We've created some Maker Faire graphics that you can use on your website and email signatures to let people know about the event. We appreciate any efforts on your part to promote Maker Faire to friends, family, and coworkers. You will find these graphics at
http://makerfaire.com/bayarea/2011/badges.csp

We look forward to seeing you all at Maker Faire!

Sample e-mail: Post-Faire congratulations

Greetings, Young Makers....

Wow, what a weekend....We hope that you enjoyed Maker Faire as much as we did....or more! How does the "real world" look after a weekend spent in an environment of glowing, bleeping, spinning, scooting, buzzing, humming wonderfulness? (I'm still adjusting!)

We wanted to thank everyone who participated in the Young Makers program as creators, mentors, supporters, and in so many other roles we don't even know about. We are so very proud of the results of all your hard work. Let's all shout a special congratulations to the 100 amazing Makers who exhibited this weekend and to our dedicated, patient, and talented mentors who helped bring so many wonderful projects to fruition. A big big thanks to all of you. (I'd also personally like to thank Jessica, Molly, Cheryl, and Aaron who helped set up and cover the YM area over the weekend.)

People may ask you about how they can start a Maker Club or get involved in the Young Makers Program. You may wonder how to answer them! Here's a quick Q&A to commit to memory....

Q: How big was the program this year?
A: For Maker Faire, we had about 150 people (100 students, 50 adults) in about a dozen clubs around the Bay Area exhibiting about 40 projects. Our mailing list of people interested in the program has grown to over 500 subscribers.

Q: How can I get involved?
A: First, go to youngmakers.org to read about the program. Then, sign up using the form linked on the left. Next, check out the "How to participate" page for information on the various roles that participants play. Lastly, once you start a Maker Club, send us a little blurb about it so we can add you to our site.

In the next week or so we'd like to send you an anonymous survey to gather feedback for improvement next year. If you have something you want to tell us right away before you forget, please do so now.

We also plan to have an informal get-together over the summer. We'll let you know when we have details about that.

We've heard some really great feedback on your Maker Faire projects -- and we'd like to hear from you some of the things you heard from visitors this weekend.

There have been a few recent press reports that have featured or at least mentioned the Young Makers. Take a look:
[links deleted for brevity in Playbook]

Please let us know if there's anything you've seen that we've missed. Or if you talked to a reporter, tell us who so we can keep our eyes and ears open for the result of your interview. The team from the PBS Newshour spent about an hour in our area on Sunday, so I imagine that some of you will be on the national news soon.

Congratulations, again!

Sample e-mail: Request for Feedback

Hi everyone,

Moments ago I sent a message to all those who exhibited at Maker Faire or who mentored a project which was displayed there. If you didn't get a message from me but you did exhibit/mentor, please email me so I can forward it to you.

The message is about a survey for both the Young Makers and the adults in the program to give feedback on how they thought the program went this year, missing project photos, and keepsakes and goodies I should have given you while you exhibited (but I may have missed some of you.)